AIRPORT COLLABORATIVE
DECISION MAKING

A-CDM Operations Manual – Toronto Pearson Edition

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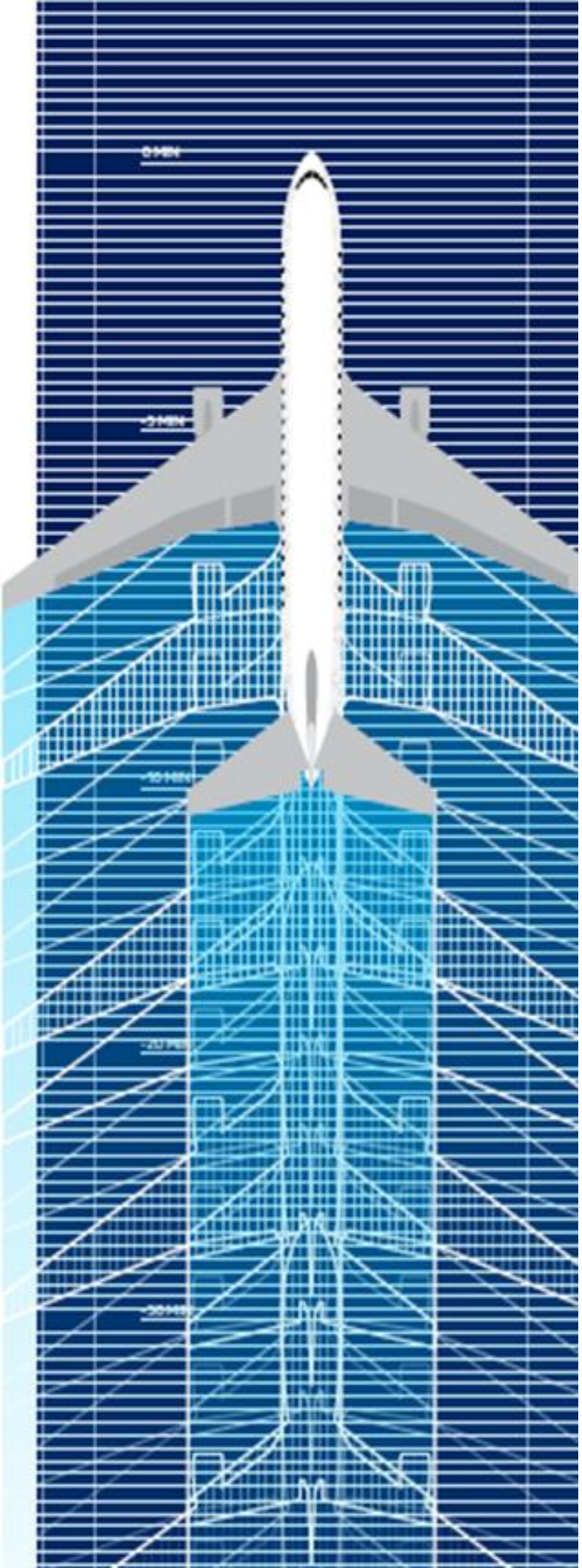

CACOM_YYZ ED1 List of Amendments

Amendment Number	Date	Reason for change/Parts affected

Attention! All screenshots in this document are still subject to updating. Those currently included serve as illustration only.

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INTRODUCTION

The A-CDM Operations Manual (OPMAN) YYZ Edition is the single point of reference for all operational aspects of the A-CDM system implemented at Toronto Pearson International Airport.

The OPMAN is organized around the roles and their responsibilities as defined in the A-CDM enterprise.

The content covers the applicable operational procedures as well as the steps required to operate and manage the available A-CDM user functions.

While the sections dedicated to individual roles are self-contained and provide all the information a given role needs to properly perform its tasks, it is recommended that users read not only their own part, but also those of the other roles. This ensures a better understanding of what the partners are doing and how they approach their tasks.

A given version of the Operations Manual relates to a specified configuration version of the A-CDM system. Changes to the system are reflected, as needed, in new versions of the Operations Manual.

The OPMAN contains only information related to the live operational aspects of the A-CDM system. Information on managing the available services, business rules, user profiles, system parameters and general system set-up is contained in the A-CDM Technical Manual (TECMAN) YYZ Edition.

Users are reminded that the responsibilities and tasks listed for the individual roles are limited to those identified as relevant to the A-CDM operation. Other responsibilities and tasks may be applicable as defined by the respective organizations and contained in the job descriptions developed by those organizations. The A-CDM-related responsibilities and tasks shown in the OPMAN should always be additional to, and never a replacement of, those responsibilities and tasks developed by the organization to which a given role belongs.

1 Institutional Provisions

1.1 A-CDM Historical Background

1.1.1 The origins of A-CDM

The Beginning

In the 1980s, airlines in the United States were increasingly dissatisfied with the way air traffic management worked. Representations to the FAA did not bring the improvements they sought, so the airports joined together, and under the leadership of US Airways, they began investigating the various problems they encountered in daily operations, determined to identify the root causes and do something about them.

Although many expected to find things that would fault the FAA for less than satisfactory management, what they found was very different. There were many areas in which the FAA could have improved, but it was certainly not the sole responsible for the difficulties. To a large extent, the behavior of the airlines themselves needed to be improved if the problems were to be remedied. Airports were also found to be one of the causes of the operational difficulties.

It is worthwhile to highlight that, generally, the airline investigation revealed that the aviation industry was generating prodigious amounts of information but very little of that information was being shared among the partners despite its importance to effective operational decision-making. The world appeared to be composed of silos: each partner working in their own closed environment irrespective of the fact that decisions in their own silo impacted each of the silos individually and together.

Big Problems, Simple Solutions

This ground-breaking work at first focused on two airports, where airlines were having a particularly large number of problems. This is how Atlanta and Philadelphia became icons of the early A-CDM initiatives.

At Atlanta Airport (home of Delta Airlines), terminals are positioned as a series of parallel buildings, with aprons between them. When an aircraft pushes back, it can be turned left or right, depending on the runway to be used for take-off. Before A-CDM, the Delta dispatcher could not predict which runway a given aircraft would be getting. The pushback was virtually a guessing game which could result in some aircraft having to taxi for long periods of time to get to the runway it could have reached in minutes had it been given proper directives. The airline team looking into problems discovered that this issue could be solved if the FAA tower and the Delta dispatcher had a direct phone link to coordinate the take-off runway. Anecdotal evidence suggests that when the proposal was put forward to the FAA, they agreed in principle but said that they did not have a budget for the phone. In the end, the airlines themselves purchased two red telephones and these were put in operation when it was discovered that the landline between the two workplaces did exist. Afterwards, departure delays for Delta airlines dived at a rate never seen before. Although this is a story from many years ago, the message is still clear:

Even the most serious operational problems may in fact be solvable by simple fixes. Furthermore, working closer together is primarily a working method and not something necessarily needing complicated technology.

The other important message, also from the early days, comes from Philadelphia. The Philadelphia airport was already very congested and airport slots were the rule of the day. The potential maximum capacity of the airport was not being reached, with the actual number of movements consistently less than what it could have been. When the troubleshooting team looked into the matter, they found out that one of the airlines was cancelling many of their flights on the day of operation, but they never told anyone about their plans to cancel, even in cases when the airline was aware beforehand that the flight would not be operated. As a result, the airport had many slots which were not utilized. It took a great amount of time and persuasion to convince the airline in question that telling the airport about the cancellations would not hurt their business interests, that competitors would not siphon their passengers and that overall, they as well as the others would benefit if there was greater trust between the partners.

Trust

There is a great amount of important information held by the various partners but often this information is not shared for fear of competitive disadvantage and abuse. In fact, well-organized sharing of information is beneficial to everyone and harms no one. Building trust between the partners is what makes information sharing possible.

Following these humble beginnings, collaborative decision-making, as a concept and practice, grew in sophistication but has always kept its basic premise: share information on a basis of trust and keep things simple. Collaborative decision-making is a way of working and not avant-garde technology. Modern information technology is indeed useful, but all things considered, A-CDM is what the partners make of it by working in the CDM spirit.

How Do We Achieve This?

By watching carefully how the airport operations progress (i.e. aircraft turnarounds) and comparing progress to the conceptual milestones established to measure the progress, problems become visible much earlier. Because the partners share all the relevant information between themselves, timely and effective decisions can be taken to avoid these problems or at least reduce their impact.

This is called “improved predictability” and this is the goal of A-CDM.

1.1.2 A-CDM in Europe

The Early Days

Although the concept of collaborative decision-making was first defined by the airlines in the United States, it did not gain significant traction, the early successes notwithstanding. The reasons for this were many, some of them political, and the FAA’s initial reluctance to participate also contributed to this. In the end, A-CDM became a serious proposition when the International Air Transport Association (IATA) brought it to Europe and the Organization for the Safety of Air Navigation in Europe (EUROCONTROL) took it upon themselves to develop a scientific approach to the further development and implementation of the concept. Interestingly, back then the concept was being referred to as “CDM”, without the “A”. This is logical, considering that the original idea of making decisions collaboratively was meant to encompass the complete air traffic management sphere, without singling out any area or discipline. The first attempts by EUROCONTROL to engage the European Air Navigation Service Providers (ANSP) were not very successful, not least because of the fragmented nature of the European air traffic management (ATM) environment. The idea was put forward that CDM implementation might be more successful if the effort was focused on the airports, who, as competitive entities, would be more motivated to look at a new method of improving efficiency. The CDM description specifically targeting the airport environment was then renamed Airport CDM or A-CDM for short.

EUROCONTROL broke down the A-CDM concept into a number of Concept Elements, each addressing a particular area where predictability needed to be increased and common decision-making, based on a shared situational awareness, would benefit all the participating partners. For instance, CDM Information Sharing was to ensure that all partners had access to information on a timely basis, Variable Taxi Time Calculation would reduce the uncertainties associated with widely varying taxi times while the Milestones Approach would provide a tool to follow the evolution of the aircraft servicing during the turnaround. The Concept Elements, when implemented, would ensure that partners had a common appreciation of the complete operation as well as early indications of impending problems, normally leaving enough time to eliminate or at least mitigate the adverse effects of those problems. For example, a late departure would result on a late arrival of the return leg of the same aircraft and this might impact the activities in the turnaround for the next rotation. A specific concept element defined for handling adverse conditions was added later.

Slow Start and Continental Expansion

The implementation of A-CDM was initially a voluntary activity, although EUROCONTROL increased effort to convince airports of the benefits of applying the new concept and associated working methods. Among others, EUROCONTROL had published an A-CDM Implementation Manual, which describes in great detail what A-CDM is all about and what needs to be done to implement it. Updated regularly, this publication continues to be the main reference for all A-CDM implementation. After the initial hurdles, more and more airports in Europe concluded that A-CDM had indeed the potential to improve the efficiency of their operations. All the cost-benefit analyses carried out showed that investing in A-CDM was a savvy investment and there was little to no risk of losing money.

A-CDM was subsequently included in the new air traffic management strategy for Europe and as such, it became an element to be considered for implementation by all the States that signed up to the new ATM Strategy.

With 20+ airports having implemented A-CDM, the potential benefits of connecting these airports into a network became the next goal to achieve.

The European environment is special in the sense that there is a central flow management unit which not only collects, checks and then redistributes the flight plans, but which also issues departure slots for flights that are subject to air traffic flow management measures. The increased predictability and improved accuracy of operations to and from A-CDM airports was something this central unit was keen to exploit to improve its own slot management operation.

A new concept element was defined which ensures that pre-departure planning data is sent automatically from the A-CDM airports to the Central Flow Management Units (CFMU), resulting in a much more accurate air traffic demand picture and better departure slots that align well with the actual demand. In the meantime, the CFMU has been renamed European Network Manager and the close co-operation with the A-CDM airports continues. It has been demonstrated that the additional benefits from the networked A-CDM airports are concrete and come as an addition to the A-CDM benefits already enjoyed by the airports on an individual basis.

The European Commission Implementing Rule Makes A-CDM Mandatory

In Europe, air traffic management development takes place in accordance with a European ATM Master Plan. The content of the Master Plan is agreed upon by the Member States of the European Union and their actual implementation is made mandatory via Implementing Rules. Recognizing the importance and effectiveness of A-CDM, it has been made the subject of an Implementing Rule. This means that the 25 airports to which the Implementing Rule applies, are obliged to implement A-CDM at the latest by January 2021.

1.1.3 CDM in the United States

It is just “CDM” in the US

CDM traces its origins to September 1993, when the Federal Aviation Administration (FAA)/Airline Data Exchange (FADE) experiment highlighted the benefits of National Airspace System (NAS) users providing updated schedule information, allowing for improved decision-making by Traffic Flow Managers.

The Collaborative Decision-making (CDM) program is a joint government/industry initiative aimed at improving air traffic flow management through increased information exchange among aviation community partners. It is comprised of representatives from government, general aviation, airlines, private industry and academia who work together to create technological and procedural solutions to the Air Traffic Flow Management (ATFM) challenges faced by the NAS. As such, the CDM Program focuses on several air traffic management initiatives and is not a single goal, but a philosophy of business.

One Paradigm Applied to Many Situations and Tools

CDM is an operating paradigm where ATFM decisions are based on a shared, common view of the NAS and an awareness of the consequences these decisions may have on the system and its partners. There are two central tenets to CDM; that better information will lead to better decision-making, and that tools and procedures need to be in place to enable air navigation service providers and the airlines to more easily respond to changing conditions. By sharing information, values and preferences, partners learn from each other and build a common pool of knowledge, resulting in optimized ATM decisions and actions.

The leadership team behind CDM is the **CDM Stakeholders Group (CSG)**. The CSG meets monthly and provides recommendations to the FAA on CDM priorities and activities, oversees the general direction and mission of CDM and provides prioritization and tasking on possible technology, communication tools, etc., towards enhancing system efficiencies for the NAS. The CSG will form sub-teams and assign specific tasking to develop options for potential opportunities that may be presented to the FAA for action.

The current sub-teams are **the Flow Evaluation Team (FET)**, **the Future Concepts Team (FCT)**, **the CDM Training Team (CTT)**, **the Weather Evaluation Team (WET)**, **the Surface CDM Team (SCT)**, **the CDM Automation Team (CAT)** and the **PERTI**

Evaluation Team (PET). The sub-teams are comprised of members of the FAA and Industry and serve at the discretion of the CSG. *See Attachment 2 for links to their respective web pages.*

The Focus: ATFM in General

The FAA kept the original meaning of CDM and does not restrict it to the airports. With CDM recognized as a philosophy and being applied to a wide range of activities, all ATM disciplines are covered.

There is a major difference between how CDM evolved in the US and in Europe. The common element is the aim to create a shared situational awareness and to improve decision-making by basing decisions on shared information. Other than this, the differences reflect the contrast in the air traffic management environment of the US and Europe. The European focus on airports is reflected in the use of the prefix "A" before "CDM".

After many years of following their own interpretation of CDM, the US is considering adopting some of the procedures defined for A-CDM in Europe.

1.1.4 A-CDM in the rest of the world

Modeling after Europe

Following its success in Europe, many major airports in the world decided to implement A-CDM themselves. They typically took the EUROCONTROL A-CDM Implementation Manual and, using the help of consultants, created a version that answered their own operational needs. One of the important differences between Europe and the rest of the world is that there is no central flow management facility outside Europe and the US, so the networking aspects of A-CDM could not be considered in places such as Singapore, Hong Kong or Seoul (*see Attachment 2 for links to the respective web pages*). Nevertheless, the rest of the A-CDM concept and its benefits were more than enough to make the effort worthwhile. The focus on the airports also typically remained, although there are regional initiatives in the Middle East and in South America, which might bring back the original meaning of CDM when they apply it to both regional flow management and airport operations.

Canada, the Special Case

Canada is a special case. With its aviation environment showing similarities to that of Europe, and with the airlines operating at the airports similarly to in the United States, the A-CDM concept required several adaptations to make it suitable for the Canadian environment while simultaneously remaining fully compatible with the rest of the world to avoid pilots having to follow different procedures specifically in Canada. This adapted version of A-CDM is known also as CDM 2.0 and will be described in greater detail below.

1.2 A-CDM in YYZ

1.2.1 Short history of the A-CDM project

A dynamically growing airport

Toronto Pearson International Airport has been growing dynamically for several years, serving Canada as well as a large part of the US market because of increasing congestion at the New York, Boston and Chicago areas' airports. Canada's two largest airlines, Air Canada and WestJet, as well as the world's largest carriers, have also been drivers of this growth.

The strategic vision of the Greater Toronto Airports Authority (GTAA) is to become a mega-hub with the goal of also being the best airport in the world.

As growth was forecast to outstrip the possibilities of infrastructure expansion, the GTAA started looking at various methods of meeting the demand by increasing the efficiency of the existing infrastructure. Such methods would provide the time required to accomplish the necessary infrastructure expansions without impact on the passenger experience. In an ideal case, it would be possible to always be ahead of the demand curve by optimizing the capacity of old and new infrastructure. This approach would also bring benefits in the form of delayed capital investment.

A-CDM to the Rescue

GTAA experts had identified A-CDM as one proven method that could help the airport realize its growth plans. After a thorough selection process, the Société Internationale de Télécommunications Aéronautiques (SITA) was selected to provide the initial consulting services. The aim was to establish the suitability of A-CDM as the method of choice for supporting the airport's growth in a safe, efficient and cost-effective way. The output of this phase, in the form of a Concept of Operations and a Cost-Benefit Analysis among others was then used to evaluate the potential of A-CDM as it applied specifically for YYZ and to provide advice to management on whether or not to proceed with the implementation.

The result of the consultancy phase, concluded in 2016, was very clear. A-CDM, if properly adapted to the Toronto Pearson environment, had the potential to bring all the inherent efficiency benefits and that the investment required would be recovered within 2-3 years of operations. Based on these conclusions, the go-ahead was given to implement A-CDM at Toronto Pearson.

A Very Thorough Approach

The GTAA took a very thorough approach to the implementation. A project team was set up, led by the IT department in partnership with the business side of the GTAA as well as all the partners (airlines, ground handling agents, etc.) to ensure that they would be able to contribute from day one and remain aware of the requirements they will need to fulfill. It was also decided to create a very detailed Functional Requirements Document (FRD), which would then be used to communicate to the vendors what they needed to offer if they were wishing to bid for the delivery of the A-CDM system. This was the best guarantee for the system to meet the vision outlined in the Concept of Operations.

Vendor selection finally favored SITA and the organization was contracted to deliver the A-CDM system, including the development of those elements not already available in their existing product.

1.2.2 Special features of A-CDM in YYZ

Breaking New Ground

Following the development of the Concept of Operations and taking due account of the operational complexity and growth plans of Toronto Pearson, a decision was made to adopt a modified, more advanced approach to the A-CDM system. This new approach retains full backwards compatibility with earlier A-CDM implementations in the world and brings a more flexible and effective modular structure that is also a good basis for future enhancements of all possible kinds. This version of A-CDM is a trajectory-based, service-oriented re-interpretation of the original concept. One of the most significant characteristics of this modified approach is the fact that it is completely transparent, consistent on a system-wide level while at the same time flexible and adaptable on the underlying services level. The result is that pilots will encounter the same A-CDM procedures at every airport having chosen to implement this modified approach, even while the system fully serves the specific needs of the airport concerned.

The Trajectory as the Glue

Trajectory-based operations make use of the concept of trajectories and are also applied in air traffic management and airline operations. Instead of tracking individual flights, the system tracks the trajectories and their interactions, both in the air and on the ground. With trajectories that a given aircraft will perform on a given day being linked together, the way problems ripple through the system become visible and it is possible to make deductions about the future effects of ripples observed in the present. This improves overall predictability substantially.

Completely Integrated System

While many A-CDM implementations are composed of different modules, on the business level, the YYZ A-CDM system is seamlessly integrated and presents a single unified picture to its users.

Integration with Air Traffic Management

The YYZ A-CDM implementation has been designed from the ground up to be able to work seamlessly with the NAV Canada system and the ONTIME project. Sharing of information between the two environments brings quality improvements for both sides.

Comprehensive Event Handling System for Operation in Adverse Conditions

Based on the very efficient but manual procedure in force to deal with adverse conditions (e.g. snowstorm, infrastructure failure, etc.), a completely new, computer-supported event management system was designed and built for YYZ. It provides comprehensive logistical and communications support common to all partners to deal even more efficiently with adverse conditions of any type.

Upwards-Open Functional Architecture

Instead of prescriptive concept elements, as used in the original A-CDM concept, business services have been defined that perform the various tasks required for the proper evolution of the aircraft trajectory, for instance during the turnaround. The behavior of the services and their interactions with each other is governed by business rules that form an integral part of the business services. If a new task or action is required, a corresponding service with its business rules can be created and implemented, whereupon the system will carry out the new function seamlessly integrated with the existing services.

Scalability and Adaptability

The trajectory based, service-oriented approach of A-CDM is easily scalable and adaptable to different environments. The initial set of business services which have been defined for Toronto Pearson reflect the needs of the Canadian airport operations and air traffic management environment and are optimized within that to the requirements of YYZ. If other airports in Canada decide to implement A-CDM and they also choose this modified version, a seamless, consistent A-CDM system can be created for the whole of the country.

1.2.3 The benefits to be realized by the A-CDM partners

Many Types of Benefits

A-CDM has the potential to provide a diverse set of benefits, both quantifiable (those which can be expressed in monetary terms) and unquantifiable (those that do not represent a direct monetary advantage but are still recognizable as a desirable outcome). For example, reduction of delays is a quantifiable benefit while a better working sphere in the tower (less stress) is an unquantifiable benefit.

The potential benefits can only be realized if the partners involved follow the agreements and adhere to the rules. The magnitude of the benefits is not the same for every partner but the improvements in efficiency of the airport will benefit each partner beyond the individual benefits.

The Most Important Benefits

The most important benefits A-CDM will bring to YYZ can be summarized as follows:

- The predictability of the operations improves
- Earlier identification of impending problems, allowing more time for collaborative resolution
- Common situational awareness, based on shared data, resulting in decisions being made with the impact on partner operation considered
- Pre-departure sequencing resulting in a more organized, more efficient flow of traffic towards the runway
- More accurate estimates resulting in fewer last-minute holds at the runway
- Reduced taxi times

- Handling of diverse adverse conditions even more effective with faster recovery times

It is important to emphasize that the realization of these benefits is dependent on the use partners make of the A-CDM system. There are certain basic requirements that must be fulfilled, otherwise no benefits will result. For instance, constantly updated runway capacity figures and throughput of the deicing facility, when applicable, are essential for the pre-departure sequencing to work. Similarly, the availability of updated significant times, such as the Target Off-block Time (TOBT) is needed for the same reason. Although the additional effort needed to keep the A-CDM system operating is not significant, the system does need attention and adherence to the agreed procedures.

1.2.4 Future enhancement plans

A-CDM 2.0: A Good Basis for the Future

The very flexible and expandable A-CDM version being implemented in YYZ is also an excellent basis for progressing beyond the functional scope of A-CDM as it exists today. Tracking the flow of passengers, baggage and cargo to and from the aircraft is a natural first enhancement step.

The performance-based approach to navigation (PBN) has already shown the power of replacing the legacy prescriptive thinking with a performance-based method in which capabilities, and not equipment, are set as requirements. A very similar approach is now taking shape, called Performance Based Airport Management (PBAM). This is in fact a further enhancement of Total Airport Management (TAM) that brings into the picture the performance-based paradigm.

What is clearly visible is the fact that the airports are seen increasingly as important elements of the overall air traffic management network, and as such, have a double role. On the one hand, as competing entities they need to ensure that their operations provide an outstanding passenger experience while they also create an efficient environment in which airlines and handling agents can operate profitably. On the other hand, the airports feed the ATM network and accept traffic from that network, thereby having a direct impact on the business results of the airlines using the ATM network.

With demand growing, airports need to introduce ever more sophisticated tools and think about new operating modes to remain competitive and able to accommodate the demand.

The flexibility inherent in A-CDM 2.0 ensures that progress towards the more advanced concepts can be planned and realized in a way that fully reuses the elements already in place while allowing new and expanded elements to be added with minimum effort.

The GTAA concept for the future is thus not limited by early technology choices and will always be a leading airport in terms of introducing advanced concepts and innovative solutions.

1.3 The YYZ A-CDM Enterprise (YYZ/ACE)

1.3.1 Purpose and scope

Adhering to the published A-CDM procedures is mandatory for all IFR GAT flights operating at YYZ. Participating in the project that defined and manages the A-CDM operation is recommended and there is no penalty for not participating. At the same time, only partners participating in the project can directly influence the decisions being made concerning the A-CDM operation.

The totality of partners participating in or managing the A-CDM project and operation is called the Toronto Pearson A-CDM Enterprise (YYZ/ACE).

The purpose of the Enterprise is to provide an informal framework for the partners who are able and willing to participate in the A-CDM project, providing expertise and financial or in-kind contributions to its success.

The Enterprise partners write their own Charter and the scope of participation is also agreed upon by the partners. The GTAA acts as an honest broker and ensures that the CDM spirit of cooperation is always maintained.

1.3.2 Enterprise governance

In order to ensure that the potential benefits of A-CDM are fully realized and shared in an equitable manner, efficient and effective enterprise governance arrangements will be agreed upon, implemented and maintained by the enterprise partners. Details of these arrangements will be made available in a separate document.

1.3.3 A-CDM Enterprise publications

YYZ A-CDM Website

The YYZ A-CDM Website (https://www.torontopearson.com/acdm) is the one-stop shop for all YYZ A-CDM-related information. The contents of the website are validated by the A-CDM Enterprise partners, and as such, can be considered as official communication from the A-CDM project and team. Although every effort is made to keep the contents of the website current, it should not be considered as a replacement of the usual aeronautical information channels (AIP, NOTAM, AIC, etc.). For operational purposes, always consult the latest AIS publications.

A-CDM Operations Manual

The A-CDM Operations Manual (this document) is the official reference guide to all aspects of the A-CDM operations in Canada, including the airport-specific aspects for YYZ and, later, also those of other airports. The manual is published in several editions, each dedicated to a given airport. The manual is built of several chapters, the first of which contain descriptive materials about the history and other anecdotal aspects of A-CDM. Later chapters describe the procedures to be followed by the different partners participating in the A-CDM operation. The Manual also describes the proper procedure to follow in case the A-CDM system is in contingency state.

The Operations Manual is updated regularly so that it always reflects the latest changes in the operational A-CDM system.

If you have comments, suggestions or other contributions concerning this edition of the A-CDM Operations Manual, please write to a-cdm@gtaa.com.

1.4 A-CDM Information sharing and protection

1.4.1 Data and information

A-CDM's purpose is to create a shared view of the operating environment by sharing and properly using information. Decisions are improved in turn because they are no longer made in isolation but collaboratively, based on the shared information. Such decisions consider the impact they will have on partner operations, thus, adverse effects can be reduced or eliminated.

In an environment so focused on information, it is important that we have a common understanding of the difference between data and information and how each can be used to promote an efficient airport operation.

At a basic level, systems that measure something, such as a position, a time, a distance or a direction, generate data. Co-ordinates for a position, kilometers for distance, degrees from North for a direction, and so on. For example, geographical coordinates at a point represent a first set of data. Upon determining its distance from another point, a new set of data is created, but it is not any more meaningful than the first set. For the data to become meaningful, the data needs to be given context. In the above example, if the first set of data represents an aircraft approaching Toronto Pearson and the second represents another aircraft on the same runway, the distance suddenly becomes meaningful: it is now considered to be **information**. It must then be considered whether the distance between the two aircrafts is greater or less than the prescribed minimum. If the distance is smaller than this minimum, there is a problem. From this example, it is demonstrated that the definition of information is *data put in context.*

A great amount of raw data is generated in the A-CDM system and most of it is put into context so that useful information is offered to the users. However, the information obtained by the system may be of a sensitive nature and it becoming common property may hurt the interests of one or more of the original data generators. Sharing data is essential for creating the common situational awareness so important in A-CDM, but if the shared data can be abused by someone by extracting sensitive information from it, nobody will share anything.

This issue of information sensitivity has been recognized since the earliest days of A-CDM and effective measures are in place also in the YYZ A-CDM environment to protect information from any kind of abuse.

1.4.2 Sensitivity types

Commercial sensitivity

Commercial sensitivity refers to information that discloses something an airline or other organization would not such as to share as it concerns methods, preferences, solutions, financial details, etc. that reflect directly on the organization and its operations. Examples of information traditionally considered as commercially sensitive are the number of passengers on board a given flight, flights to be cancelled on a given day and the climb-out profile from a given runway. Experience shows that airlines tend to be very cautious when it comes to designating some information as commercially sensitive and refuse to share the corresponding data. Closer examination however often reveals that there is no real potential for competitors to abuse the information. The YYZ A-CDM system meets all requirements established to protect commercially sensitive information.

Security sensitivity

Security, in this context, refers to activities which mitigate the risks that may be present as a result of malevolent intent. Terrorism, insurance fraud, or other similar threats are common concerns. Any information that may result in a reduction of the effectiveness of counter measures, if it gets into the wrong hands, is considered "security-sensitive". The A-CDM system rarely interacts with the security operation other than providing passenger volume information and this is a one-way flow, from A-CDM to security. However, even there, appropriate measures are needed to prevent any kind of security breech. The YYZ A-CDM system meets all requirements established to protect security-sensitive information.

State-level sensitivity

State-level sensitivity concerns data and information generated in the context of operations that carry the "STATE" designation in their flight plans. These flights are engaged in military, customs or police services and as such, are on Crown business. The aircraft Air Force One (the US president) and Rainbow One (Her Majesty the Queen) are the ultimate examples of State flights. But a helicopter on assignment for the Border Services Agency conducting a smuggling interdiction mission is also in the STATE category. The information concerning these operations is extremely sensitive and hence it is handled in a way that is such as security sensitivity. The difference is that security sensitivity concerns mainly normal passenger flights, while State-level security is in the domain of government agencies, the Royal Family or Head of State of other nations. The level of protection is in line with the requirements of this environment. The YYZ A-CDM system meets all requirements established to protect State-level sensitive information.

1.4.3 Data sharing principles

Data Ownership

"Owner of data" refers to the organization that is responsible for the provision of data and its accuracy and timeliness. At any point, only the owner may change, delete or otherwise manipulate any given data element. For example, the Estimated Off-Blocks Time (EOBT) comes from the flight plan and is owned by the aircraft operator. The Target Off-Blocks Time (TOBT) is set by the A-CDM system and updated by the aircraft operator or ground handler, but the owner is still the aircraft operator whose flight the TOBT applies to. The Target Start-up Approval Time (TSAT) is also generated by the A-CDM system but it is owned by the GTAA Apron Management Unit (AMU) and as such may only be directly changed by them.

By common agreement, a data element may be co-owned by more than one organization. For instance, EOBT is usually co-owned by the airline and their handling agent. In such cases, internal agreements between the partners concerns regulate which owner may do what with the data element in question.

The owner of a data element may change over time.

It is important to recognize that in the YYZ A-CDM system data ownership concerns not only data related to trajectories but also data related to infrastructure. An example of this is data on closed taxiways (including the period of closure).

The GTAA is in a privileged position as defined roles (see below) have ownership rights to all data available in the system. They exercise this ownership in accordance with strict rules agreed upon by the Enterprise partners.

Roles

The A-CDM system recognizes several defined roles which are defined as the collection of tasks, responsibilities and data access privileges, established to perform defined jobs in the A-CDM environment. Roles are then allocated to human persons or,

increasingly, to applications that perform tasks previously carried out by human persons or tasks previously not done at all. Automatic taxi and docking guidance and automatic foreign object debris are examples of the latter. Not all roles are always necessarily active.

The roles that a given person may assume are regulated by his user profile and activated on login. A single person may have several roles allocated to him/her.

Roles may also be allocated to an organization, in which case the tasks, responsibilities and data access privileges will be available to any person logging in with the given organization's credentials.

Access to Data

Access to data is of two classifications: data is visible, or data is unlocked for manipulation. In general, a given role will be authorized to view data that is of importance for the performance of the tasks of the given role; similarly, data that the given role may change or delete as part of the execution of its tasks will be unlocked for manipulation. The scope of data visible and data that is changeable is governed by agreed-upon rules and they may change in the future (in accordance with the agreed-upon rules).

So-called super-user roles are available in the system and they may be authorized to see everything and change everything or just see everything. This latter is normally reserved for management level persons.

Internal rules ensure that under no circumstances can data that is restricted by the owner be seen or be open for manipulation by unauthorized roles.

Preventing Abuse

The proper and responsible use of the A-CDM system is predicated on the professionalism of the people working in the A-CDM Enterprise. The primary motivation for using the powerful data sharing environment for the common good comes from the pride every one of them takes in their work and in practice this usually proves to be more than enough.

The only active protection measures considered necessary relate to malicious intent originating from outside the Enterprise. Restricted sharing of sensitive information takes care of partner concerns about sharing such information at all.

The whole YYZ A-CDM system operation is subject to detailed recording and the possibility of playing back any situation in real time. This facility helps to ensure quality and provides additional motivation for people to follow the rules and prescribed procedures.

1.5 Financial Arrangements

Financing the A-CDM Enterprise

Adherence to the published A-CDM procedures is mandatory unless one of the defined exceptions are applicable. There is no separate fee chargeable to users of the airport on account of Toronto Pearson being an A-CDM airport.

All owned communications costs as well as equipment and software costs incurred by the users are payable by themselves.

1.6 Measuring performance

1.6.1 Key Performance Indicators

The overall purpose of implementing Airport Collaborative Decision-making (A-CDM) is to help achieve the strategic objectives of Toronto Pearson International Airport while also helping the Enterprise partners in achieving their own objectives.

A-CDM improves the predictability of airport operations generally and that of the aircraft turnaround specifically. The effectiveness of A-CDM is measured using Key Performance Indicators or KPIs. KPIs are measurable values that show how effectively an organization is achieving selected key business objectives.

Agreeing on the Objectives

Transparency requires that the Enterprise partners agree on the objectives, both for the overall implementation and their own businesses, for which the KPIs are selected and agreed upon.

Having agreed on the objectives early in the YYZ A-CDM project facilitated the establishment of the KPIs needed to get an accurate overall picture of the effectiveness of the system and to track problems if the implementation does not deliver the results expected.

The Scope of the KPI Set

The scope of the KPI set was dictated by the objectives whose achievement required measurement. The more the number of objectives and the higher the complexity of those objectives, the wider the scope of the KPI set tends to be. It should also be kept in mind that the level of achievement of certain objectives cannot be measured directly with a single Key Performance Indicator. In some cases, several indicators need to be observed together to obtain a reliable picture of system performance. A good example of this is the objective “Efficiency” which requires several performance indicators to cover all its numerous aspects.

The Rules for Selecting KPIs

Several rules were observed when selecting the YYZ A-CDM KPIs. Observing these rules ensured that the effort required, and the result produced, were well balanced and the indications obtained would be reliable. Below are the rules for selecting KPIs:

- Know what requires measurement and select KPIs that enable the measurement of those quantities. Sometimes more than one KPI is needed to get the whole picture.
- KPIs must be measurable.
- The definition of the KPI (what it is measuring and what the result means) must be clear and validated.
- It is important that historical data (actual or expert judgment) is available for the values to be measured as a KPI. If no such data is available, a KPI can only be used to measure additional incremental improvements after A-CDM has been implemented.
- KPIs must be selected in agreement with all the partners.
- The definition of the KPIs must be agreed by all the partners (each to the extent they are concerned with a given KPI).
- Partners may select additional KPIs for their own use, however costs associated with such KPIs must be borne by themselves.
- The KPI set must be reviewed periodically to ensure that they still properly represent the level of performance achievement desired.
- If changes are made to the A-CDM environment, the KPIs must be reviewed and eventually new ones introduced to ensure continued proper performance measurement.

The Nature of KPIs

The KPIs provide a picture of the effectiveness of the A-CDM implementation, including the source(s) of eventual problem(s).

A no-blame culture is essential so that no partner feels the need to hide their shortcomings when a problem is traced to their operations. The A-CDM spirit does recognize that necessary improvements cannot be realized overnight, and some partners will always move faster than others, even if the same level of goodwill is present in all the partners.

Problems deduced from the KPIs need to be addressed together and if a given partner encounters problems, a solution should be proposed on a collaborative basis.

The Definition of KPIs

KPIs are defined as follows:

- Strategic objective – this is the objective to be achieved and to which the KPI is relevant
- Strategic performance driver – this is the means of achieving the strategic objective
- Performance driver – this is the method of achieving the objective
- Performance indicator – this is what results from the measurement. It is the result of the specified relationship between two measurable quantities. This is an index and the trend are the KPIs.
- Performance measurement – this is how the indicator is measured

1.6.2 Managing the Key Performance Indicators

The KPIs are reviewed regularly to ensure that their relevance is maintained and that the measured values are still appropriate. Partners requesting new KPIs must send a request to GTAA at a-cdm@gtaa.com. Each request will be evaluated by GTAA and shall be subject to an approval process before the resulting KPI is entered the software update cycle for implementation.

1.6.2.1 Creating and modifying Key Performance Indicators

Information on how to create new KPIs and how to modify existing KPIs is contained in the Technical Manual.

2 A-CDM System primer

2.1 A-CDM System basics

2.1.1 Use of the trajectory

Trajectory-Based Operations

Trajectory-based operations is an approach to managing aircraft in the air and on the ground, focusing on their trajectories and the interactions of the trajectories, rather than individual aircraft. The aircraft trajectory is defined as the series of geographic points an aircraft has occupied or will occupy in the future, with each point expressed in 5 dimensions. These dimensions are the 3 spatial dimensions, the time and the economic value. The trajectory exists in the air and on the ground. When an aircraft is not moving (e.g. is in turnaround at the stand), the trajectory is idle, with only the time dimension evolving. The 5th dimension, the economic value can be used to express the priority of a given trajectory against other trajectories of the same operator.

Initially, trajectories are simply plans, but from a given time onwards, each trajectory has an airframe associated with it. A given airframe may have several trajectories allocated to it, comprising the series of rotations the airframe will perform on a given day.

Those trajectories relate to each other via the associated airframe, therefore, any disturbance on a given section of the trajectory will show up as a knock-on disturbance on the subsequent sections. Trajectory based operations mean that we focus on the interaction of the trajectories rather than on individual flights, gaining comprehensive insight into the current and future traffic demand situation.

The aircraft operators provide the initial trajectory of each of their flights and this initial trajectory represents the business intentions of the aircraft operator. The closer the actual operation stays to this initial trajectory, the better the air traffic management system is.

In the A-CDM system, the trajectory information is the vehicle that carries all the information relative to the flights concerned. As such, it acts such as the glue that ties all system elements and all partners together. In other words, by sharing the trajectory, the basis is set for common situational awareness.

In the trajectory-based approach to A-CDM, we look for influences that can potentially distort the trajectory (e.g. delay, early arrival, change of route, etc.) and try to take timely action to avoid or minimize the trajectory distortions.

Processes to be Considered

A process is defined as the sum-total of activities that must be completed to achieve a given business aim on a timely basis with the required quality. In the A-CDM context, we select processes based on their ability to distort the trajectory. A-CDM procedures are then used to act on the process to avoid, minimize or at the least make predictable any potential trajectory distortion.

The selection of processes is up to the implementers and will depend on many local circumstances.

One of the processes that can have a major influence on trajectory distortion is the aircraft turnaround. This is also one of the processes selected for application of A-CDM to in YYZ.

The other process to consider is collaborative decision-making under difficult conditions, covering situations where the demand handling ability of YYZ is compromised by natural or man-made causes.

2.1.2 Business services and business rules

Business Services are the entities that perform defined tasks that a process needs to complete successfully. As an example, the Trajectory Management Service monitors the evolution of the trajectory and if a disturbance is noted, it generates warnings and other outputs to other services, systems or human operators. Business Services are created as needed to support one or several processes.

Business Rules are formal statement(s) contained in the description of the Business Services, prescribing how the Business Service is to behave in different operational circumstances. The Business Rules agreed upon by the Enterprise partners and they are tuned during operations to enhance performance and meet changing requirements.

2.1.3 Milestones

A-CDM enhances the predictability of airport operations by providing a very detailed, dynamic picture of the evolution of individual trajectories and their impact on each other and the airport resources. This is achieved by assigning milestones with estimates and target times to the trajectories and monitoring the completion of the milestones and compliance with the target times. Problems are discovered earlier and there is more time to implement common measures to minimize or eliminate the impact of the impending problems.

The milestones may mark a single event (e.g. actual in-block) and the times associated with it will be estimates or actual, depending on the status of the trajectory. Milestones may also exist in pairs, marking the start time and end time of an activity (fueling, grooming, etc.). In all cases, the milestones have significance in showing how a given process, e.g. the turnaround, is progressing compared to the plan. A delay in the completion of a milestone, or premature completion, may mean that the given trajectory is being distorted (time dimension is shifting to the right or left); this will impact the rest of the operation. A timely warning enables the adverse effects to be minimized or eliminated.

2.1.3.1 The most important milestones

The two most important milestones are the Target Off Block Time (TOBT) and the Target Start-up Approval Time (TSAT).

The TOBT is system-generated but may be adjusted by the aircraft operator/handling agent. It signifies the time when all the activities of the aircraft turnaround will be completed, and the aircraft will be ready to push. Everyone involved in the turnaround process will be working towards achieving the TOBT and if other milestones indicate that it may not be met, it is mandatory to update it. The result of this is that the TOBT is a very accurate and reliable point on the trajectory and the subsequent milestones can be calculated based on the TOBT with their accuracy being on the same high level. Changes to the TOBT will propagate downstream clearly showing any potential trajectory distortion that may result from the TOBT change.

The TSAT is system-generated and is used to modulate the start-up sequence of aircraft in order to create an optimized pre-departure sequence when this is necessary. This sequence considers all the restrictions the affected trajectories are subject to, such as traffic management initiatives, deicing, etc.

2.1.4 A-CDM in adverse conditions

Collaborative decision-making and defining solutions together is particularly important when operations are affected by natural or human created circumstances that call for specific measures to keep traffic flowing and to recover from disruptions.

The Toronto Pearson A-CDM implementation uses a very advanced event-management solution to deal with adverse conditions. This approach enables the pre-definition of various event types and the system support required for each. When a given, pre-defined type of event occurs or is expected to occur (e.g. major snow storm), all partners involved in the planning for the event and the execution of the resolution plan are supported by the A-CDM system in the form of shared precise demand information, what-if functionality, documents, useful background information and enhanced communications possibilities.

The event-management solution is not limited to events that reduce capacity. It is equally usable in cases where demand peaks as a result of special occasions of any type. Shared, common planning with system support can then be applied to the problem to ensure the best overall handling of the unusual peak demand.

2.1.5 A-CDM System User Interface conventions

In the following paragraphs, a list of the most important user interface conventions is provided. These conventions are enforced across the A-CDM system.

2.1.5.1 Indication of a TSAT change

Whenever there is a change of the TSAT, the new value will flash for a short time to call attention to the change.

2.1.5.2 An extinguished element may have its own meaning

There are several elements on the User Interface which have specific shapes, and which also change color to indicate a specific situation, status, etc. Such an element, in some cases, may be greyed out initially to indicate that the original value (e.g. TOBT) is still valid and no update has been made to it. If an update occurs, the element changes to a specific color.

2.1.5.3 Collective user interface elements

Normally, user interface elements (e.g. the squares indicating the status if the Milestones) are dedicated to a single conceptual artifact (e.g. a milestone). Color changes indicate the status of that artifact. In some cases, to save space, it is necessary to collect several artifacts under one user interface element. When this happens, the color of the user interface element indicates whether any of the underlying artifacts needs attention or action from the users.

2.1.5.4 Trajectory View behavior

There are two types of Trajectory Views. The view “All trajectories” is read-only and accessible to all partners with the appropriate credentials. All the trajectories available in the A-CDM system are visible, however, no changes to any of the trajectories can be made in this view. There are also three types of “Own Trajectory Views”, as follows: The airline-specific view is the landing page for airlines that have their own credentials (e.g. Air Canada, WestJet) and it shows only the trajectories which belong to flights of the given airline or airline family. The ground-handler-specific view shows the trajectories in the portfolio of the given ground handler. Finally, the general aviation/business aviation view shows all the general aviation/business aviation trajectories. These views allow the editing of the trajectories by the respective owners.

2.1.5.5 Date of flight input

The date of flight is automatically filled in as today’s date. If the time is modified and the time is on the same date, only the new time needs to be entered. If the new time is on a different day, the date needs to be manually modified.

3 Turnaround operational procedures

3.1 Toronto Pearson A-CDM procedure management

3.1.1 Mandatory A-CDM procedures

The normal A-CDM operating state of Toronto Pearson International Airport is based on the application of the published A-CDM procedures. These procedures imply that each flight (unless subject to exemption) must have a correct Target Off-Block Time (TOBT), updated as necessary. Also, a Target Start-Up Approval Time (TSAT) is calculated for each flight not subject to an exemption and departures are sequenced based on their TSAT. Adherence to these times and making the required radio calls on the appropriate frequency is mandatory when the airport is in normal A-CDM operating state.

When the airport is in normal A-CDM operating state, the statement “A-CDM PROCEDURES IN PROGRESS” is included in the ATIS broadcasts for some time following the start of operations. A decision on whether to retain this element in the ATIS broadcasts will be made later.

3.1.2 Suspension of the A-CDM procedures

If circumstances such as technical problems or other considerations require, the Airport Duty Manager (ADM) may decide to suspend the application of the A-CDM procedures. This decision is executed by the Manager Operations – Airport Flow (MO-AF). In this case the airport reverts to the “first come first served” operating state with no TSAT sequencing.

Local partners will be informed of the suspension by the MO-AF via the A-CDM messaging facility if it is operational. If not, other available communications means are to be used.

Suspension of the A-CDM procedures is announced by NOTAM.

When the airport is in this no-CDM operating state, the statement “A-CDM PROCEDURES SUSPENDED” is included in the ATIS broadcasts.

When the airport is in this no-CDM operating state, the AVDGS displays “NO CDM” followed by “CONTACT APRON” followed by “NORTH on” or “SOUTH ON” followed by the appropriate frequency.

When the airport is in this no-CDM operating state, the CDM portal is not reachable and the text “NO CDM” is displayed instead.

3.1.3 Return to normal operating state

When it is determined by the Airport Duty Manager that return to the normal operating state is possible, the time at which such reversion becomes applicable is promulgated via the available channels. The reversion and its promulgation must not be greater than 30 minutes apart.

Local partners are informed of the reversion by the MO-AF via the A-CDM messaging facility.

Return to the normal operating state is announced by NOTAM.

The statement “A-CDM PROCEDURES IN PROGRESS” is included in the ATIS broadcasts from the time forward starting with the published reversion time.

When A-CDM operations are resumed, the AVDGS displays the TOBT and TSAT for the flight concerned.

3.1.4 Transition arrangements

Whenever a transition takes place from normal A-CDM operating state to suspension of the A-CDM procedures, or vice-versa, handling of aircraft in the 15 minutes following the transition is subject to flexibility at the discretion of the MO-AF, Apron Management Unit (AMU) or Air Traffic Management (NAV Canada), as appropriate, to facilitate the transition of flight crews who may not be aware of the operating state taking place.

3.2 Airlines (ACA, WJA, Jazz, TSC, SWG, AAL, UAL and DAL) procedures.

3.2.1 Responsibilities and tasks

Airlines, as an aircraft operator with a base at Toronto Pearson airport, has the following responsibilities and tasks:

Mandatory:

- Provide the schedule data on a timely basis
- Maintain TOBT (ETD) in existing Ops systems or directly into the A-CDM Portal
- Pilot "call ready" 24/7 (+/- 5 min of TOBT)
- Pilots and GH utilize VDGS for TOBT and TSAT updates where available
- Participate in the A-CDM Event Management (CEM) activities

Optional:

- Utilize A-CDM for flight prioritization, swapping, setting trajectory to standby and updating "private" TOBT/ETD's

3.2.2 Accessing the A-CDM Portal

3.2.2.1 Obtaining user credentials

All employees must receive individual logins to access the A-CDM Portal. For security purposes, generic logins will not be permitted.

To request valid credentials, the designated central point of contact of your enterprise must fill out the application form published on the A-CDM Portal https://www.torontopearson.com/acdm or must contact the GTAA I.T. Service Desk at 1-416-776-HELP (4357) or it.servicedesk@gtaa.com.

Your enterprise is also responsible to inform the GTAA I.T. Service Desk (it.servicedesk@gtaa.com) when personnel leaving the service no longer require A-CDM access. An email must be sent to the Administrator indicating names and date of revocation of the access. The GTAA shall respond to all such requests within 24 hours.

3.2.2.2 Logging into the A-CDM portal

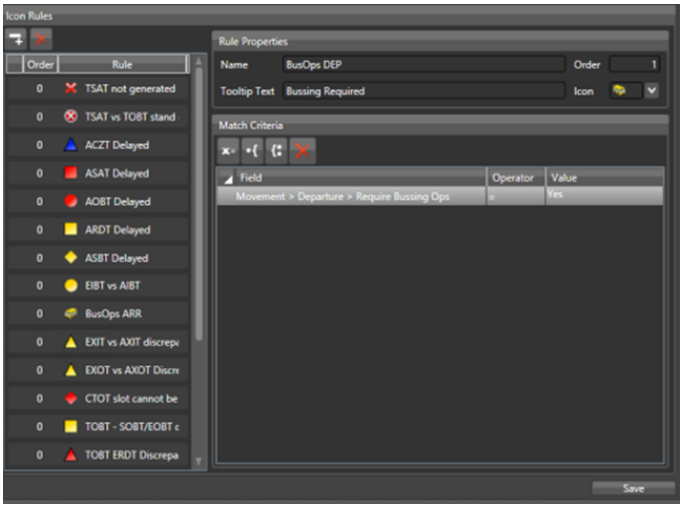
NOTE: You must use Google Chrome to access this webpage. Other web browsers are not supported.

1. In Google Chrome, open https://acdm.gtaa.com/.
2. In the dialog box, type your **Username** and **Password**, and then click **Login.**
3. On the top left of the screen, click the three horizontal bars appearing next to the Toronto Pearson logo ( ).
4. Click **Trajectory Views**.

At the login page, type your **Username** and **Password** for Trajectory View access, and click **Login**.

3.2.3 Cautions/warnings and their management

Cautions indicate a situation where the user's attention is drawn to a status or development which may, at some later point in time, require action from the user. Some cautions may escalate into warnings as time passes. Warnings indicate a situation where the user's immediate intervention is required.



3.2.4 System functions to be carried out/available

3.2.4.1 Provide TOBT

TOBT is provided via the following methods:

- Use the airline feed – providing the ETD via the airline feed results in the TOBT being set in the A-CDM system.
- File a flight plan – the EOBT in the filed flight plan will be interpreted as the TOBT.

The A-CDM system will use the last communicated time as TOBT.

3.2.4.2 Update TOBT

The TOBT must be updated in existing Ops system or in the A-CDM portal via your dedicated Trajectory View.

If the initial or last-communicated TOBT changes by +/- 5 minutes or more, the TOBT must be updated. Since the TOBT is used as one of the key performance indicators, keeping the TOBT accurate to the +/- 5 minutes margin is very important.

Because the TOBT and its resulting TSAT will be used to sequence the departures off the gate, it is even more important that the TOBT is always accurate within the prescribed +/- 5 minutes tolerance.

TOBT update limitations apply:

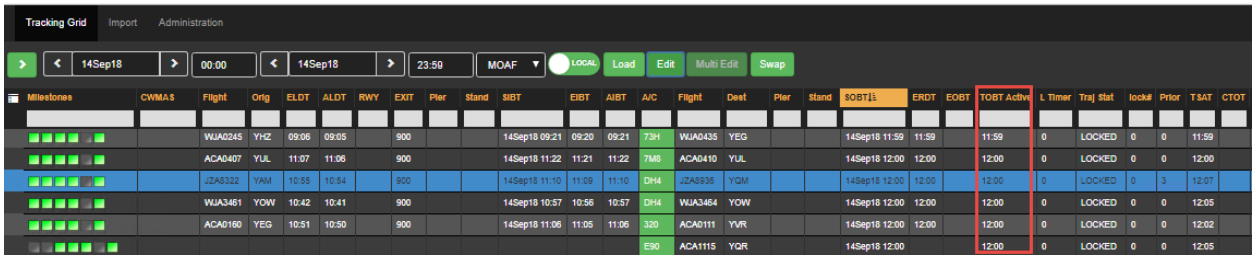
The TOBT may be updated as many times as necessary until 10 minutes prior to the TOBT. Thereafter only two more updates are possible. Should a third update be necessary, you must contact the Manager Operations, Airport Flow (MO-AF) on the following phone number for further instructions: 1 416-776-ACDM (2236).

3.2.4.3 Update the TOBT directly in the A-CDM portal

1. In the A-CDM Portal's Trajectory View, *click on the row of the trajectory to update*
2. Click **Edit.**

3. In the **ETD Update (TOBT)** dialog box, update the **Time** field.
4. Click **Save/Exit.**

The new TOBT will be visible on all trajectory views where the updated trajectory is visible.



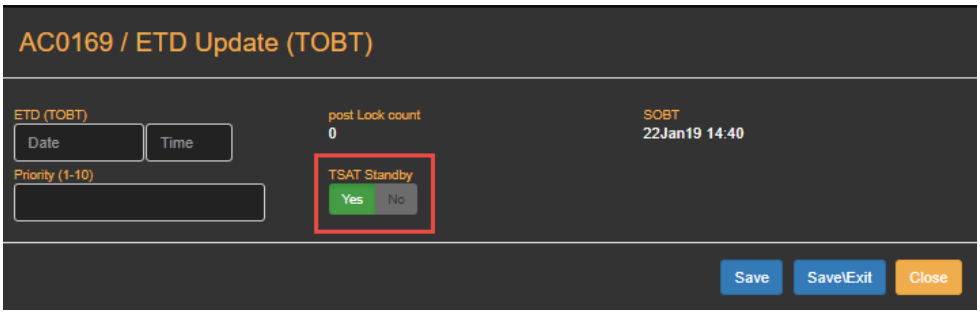
3.2.4.4 Set Trajectory to Standby

When a flight experiences a delay and no new TOBT can be provided, the corresponding trajectory's status must be set to Standby. This provides an opportunity for other trajectories not yet in a locked status to be given a more favorable TSAT. Only trajectories with a TSAT allocated may be set to Standby. Carry out the following steps to set the status if a trajectory to Standby.

Prerequisite: The TSAT for the trajectory must already be visible in the Trajectory View.

1. In the Airline Trajectory View, click on the row for the trajectory to be modified.
2. Click **Edit**.

3. In the **ETD Update (TOBT)** dialog box, set the **TSAT Standby** option to **Yes**.



4. Click **Save/Exit.**

The TOBT is deleted for the selected trajectory, and the trajectory is placed into standby.

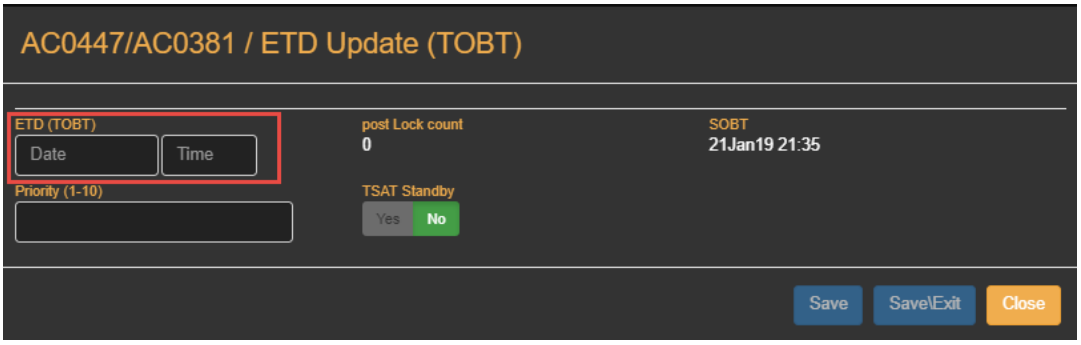
Note: Once a new TOBT is assigned/updated, a new TSAT will be calculated and will appear in the TSAT column.

3.2.4.5 Set trajectory to Active

A trajectory that has been set to Standby can be reactivated by entering a new TOBT. This will result in a new TSAT being calculated and displayed.

1. In the Airline Trajectory View, click on the row of the trajectory to be set to Active.
2. Click **Edit**.

3. In the **ETD Update (TOBT)** dialog box, provide an updated **Date** and **Time** as needed.



4. Click **Save\Exit**.

The trajectory has been changed from Standby to Active.

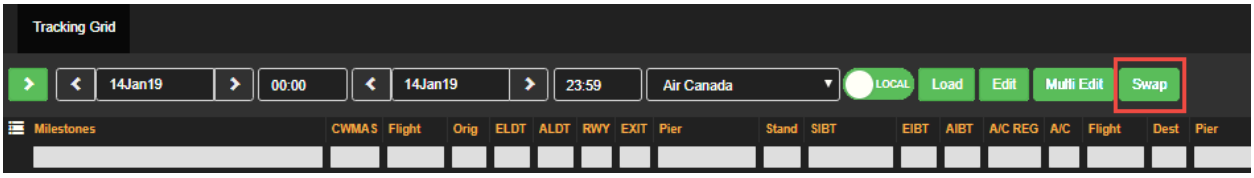
3.2.4.6 Swap TSAT

Airlines may swap the TSATs between eligible trajectories of its own operator family. The following conditions must be met for a trajectory to be eligible for a TSAT swap:

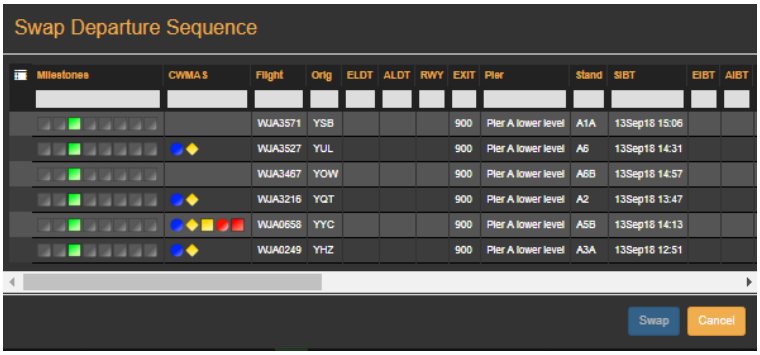
- A TSAT must be already allocated to the trajectory concerned.
- The trajectory concerned has not yet "called Ready".
- The flight is not designated as a special flight by the inclusion of an appropriate designator in Item 18 of the flight plan.
- Trajectory is not subject to a Calculated Take Off Time (CTOT).
- All eligible trajectories must have the same runway.
- The trajectories have not been previously swapped.
- Contact the RMU (For Terminal 1 Gating, call 416-776-0100) to notify them of the planned TSAT swap.
  NOTE: For Terminal 1 Gates 128 through to 143A, RMU notification of TSAT swapping is not required if gates managed by GTAA are not affected by the swap.

To swap TSATs:

1. In the Airline Trajectory View, click on the row of the trajectory with the TSAT to be swapped.
2. Click **Swap**.



The Swap Departure Sequence dialog box opens, displaying trajectories eligible for a TSAT swap. If there are no eligible trajectories to swap, the dialog box will be empty.



3. In the Swap Departure Sequence dialog box, click on the trajectory to swap with and then click **Swap**.

The dialog box closes and the swapped TSATs flash for a short time in the Trajectory View to indicate a change.

3.2.4.7 Set the priority of the trajectories

Setting the seasonal priority

To assign top priority to a specific flight in the sequencing throughout a given schedule period, a request must be sent to the GTAA I.T. Service Desk at 1-416-776-HELP (4357) or it.servicedesk@gtaa.com and request that Trajectory Dimension 5 – Economic Value of the flight be set to the highest level (or in fact any level). If on the day of operation an airline wants to change the Dimension 5 value, this can be done directly in the A-CDM system.

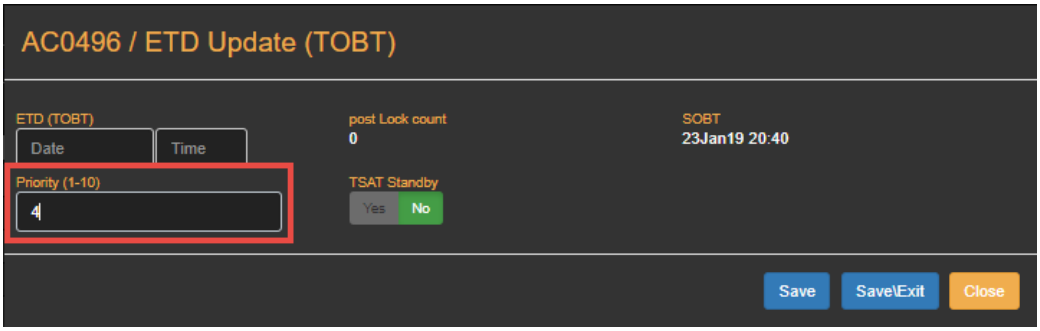
Setting Dimension 5 (Economic Value) on the day of operation

To set or change Dimension 5 (Economic Value), do the following:

1. In the Airline Trajectory View, click on the row of the trajectory to be set or changed.
2. Click **Edit**.

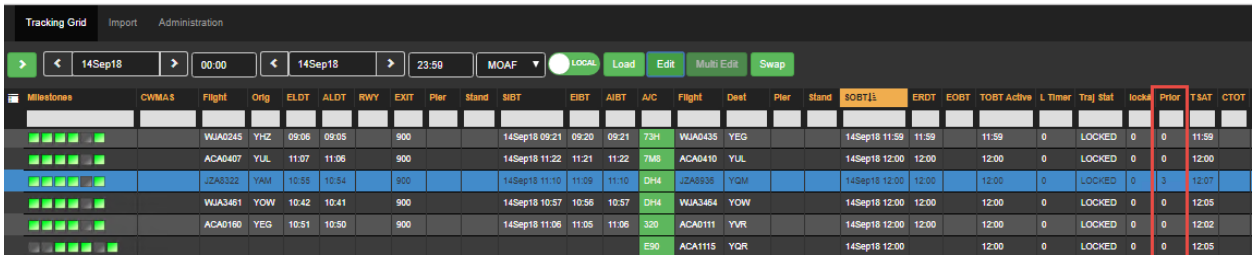
3. In the **ETD Update (TOBT)** dialog box, update the **Priority (1-10)** field with a value between 1 and 10.

   NOTE: A value of 1 represents the lowest priority, and 10 represents the highest. Trajectories with identical values are treated as being equal in priority.



4. Click **Save/Exit**.

   The **Prior** (Priority) field for the trajectory concerned shows the assigned priority which will be considered in calculating the TSATs.



3.2.4.8 Cancel flight

Airlines may cancel any of their flights by calling the RMU or per existing procedure. The A-CDM system records and works with many actual times, such as AIBT (Actual In-block Time). These times are entered into the system either automatically or manually as standard. Manual input is also the fallback mode of entry in case the automatic function is not available. The following table lists the actual times concerned and their standard and fall back mode of entry, together with an indication of what system element or which role is responsible for making the entry concerned.

Field	Description	Data Sources	Primary Data Source	Secondary Data Sources
ALDT	Actual Landing Date and Time	- AODB (via Airline Feed, Manual RMU user Entry, SITATEX) - EXCDS (NAV Canada HUB)	AMAN/EXCDS	AODB
AIBT	Actual In-Block Time	- AODB (via Airline Feed, Manual RMU user Entry, SITATEX) - AVDGS	AVDGS (if present at the stand)	AODB
ASAT	Actual Start-up Approval Time	- Not available until future release		
AOBT	Actual Off-Block Time	- AVDGS - AODB (Airline Feed, Manual Entry)	AVDGS (if present at the stand)	AODB
ATOT	Actual Take Off Time	- EXCDS (NAV Canada HUB)	EXCDS	
ARDT	Aircraft Ready time	- EXCDS (NAV Canada HUB)	EXCDS	

3.2.5 TOBT-related procedures

3.2.5.1 Requirement for all flights to have a current TOBT

The TOBT is used to indicate when the aircraft will be ready to push back and start its engines. The initial TOBT is obtained by the A-CDM system from one of the following sources, in the order of priority shown:

1. ETD provided by an operator via the appropriate communications channel.
2. EOBT from the Flight Plan.
3. SOBT from the schedule data held by the GTAA.

3.2.5.2 Access to the TOBT for aircraft operators

The TOBT will be shown and accessible via the A-CDM Portal as soon as it is set in the A-CDM system.

3.2.5.3 Access to the TOBT for flight crew

The TOBT will show and be communicated from one of the following sources:

1. Advanced Visual Docking Guidance System (AVDGS) where available
2. Any specific means of communication that may exist between the Enterprise and the flight crew. This means of communication may be shared with other operational communications
3. A-CDM portal

Note: Plan to ensure that flight crew at gates without AVDGS receive their TOBT and TSAT

Flight crews at gates without AVDGS must receive their TOBT via whatever communications means is available, or via the A-CDM portal. It is the Airline's responsibility to ensure that flight crews receive their TOBT via one of the available means when they are at a gate without AVDGS.

3.2.5.4 Updating the TOBT

Airlines are obliged to update the TOBT if there is a difference of +/- 5 minutes compared to the initial or previously updated TOBT.

Note: Failing to update the TOBT will result in a Target Start-Up Approval Time (TSAT) that is no longer operationally correct. This in turn may cause the flight to be subject to unnecessary delay.

3.2.5.5 TOBT update limitations

The TOBT may be updated as many times as necessary until 10 minutes prior to the TOBT. Thereafter only two more updates are possible. Should a third update be necessary, the airline must call the Manager Operations, Airport Flow (MO-AF) for further instructions at 1-416-776-ACDM (2236).

3.2.6 TSAT related procedures

3.2.6.1 Pre-departure sequencing – TSAT generation

Based on the TOBT, a TSAT is generated by the A-CDM system for every flight. The TSAT is used to indicate the sequence in which aircraft can expect to receive pushback and start-up approval, ensuring an optimal flow of traffic to the assigned runways. An update to the TOBT will always result in the recalculation of the TSAT, however, this may not always result in a different position in the sequence for the flight concerned.

Any applicable constraints, such as the CTOT resulting from flow management initiatives, taxi times and eventual deicing time are considered in the calculation of the TSAT, ensuring that such constraints are always met.

3.2.6.2 Access to TSAT for aircraft operators

The TSAT will be shown in the A-CDM Portal as soon as stand and runway information are both available in the A-CDM system.

3.2.6.3 Access to TSAT for flight crew

The TSAT will be displayed for the Flight crew on all channels except the AVDGS as soon as it is set in the A-CDM system.

The TSAT will be displayed for the flight crew as follows:

1. 10 minutes before TOBT; or
2. 20 minutes before TOBT if the TSAT is 20 minutes or more later than the TOBT (as may be the case due to Traffic Management Initiatives)

The TSAT may also be communicated to the flight crew via any specific communications means that exist between the Airline and the flight crew as soon as the TSAT is set in the A-CDM system.

3.2.7 Procedures for extended times between TOBT and TSAT

The time between the TOBT and the TSAT assigned to the flight may be substantial. The standard airport policy is for aircraft to stay at the gate until the assigned TSAT time. In cases where the gate is required for another flight, or on the specific request of the Airline, the aircraft concerned will be relocated to a waiting area.

3.2.8 A-CDM-related information on the AVDGS

The AVDGS may display the following A-CDM-related information:

- TOBT (time) = A-CDM operational
- TOBT (time) and TSAT (time) = A-CDM operational
- “NO CDM” (followed by instructions to contact the appropriate frequency of the Apron Management Unit) = A-CDM procedures have been suspended
- Blank = System state unknown

3.2.9 Contribution to the Daily Briefing

The Daily Briefing is a daily news bulletin published twice a day by the Manager Operations, Airport Flow (MO-AF) and updated as required during the day. It contains A-CDM-related information that is helpful for the partners in planning their activities.

Any material considered useful for the Daily Briefing is to be communicated to the MO-AF via the A-CDM messaging function.

3.2.10 Collaboration in A-CDM Event Management (CEM)

Note: Details of the use and associated procedures of the CEM are contained in Section 4.

3.2.10.1 Event creation authority

Airline may not initiate the creation of any event. The MO-AF must be contacted to initiate the creation of events.

3.2.10.2 Event collaboration authority

Airline is a recipient for all event types created by others.

3.2.11 Contingency operation

Information about the suspension of A-CDM procedures comes via the A-CDM internal messaging system if it is available or any other available communications means if it is not. The same information is also included in the ATIS broadcasts and a NOTAM.

When the A-CDM procedures are suspended, the airport returns to the first come, first served mode of operation and there is no pre-departure sequencing. Nevertheless, TOBTs must continue to be supplied to ensure that the A-CDM system has the necessary planning data when the A-CDM procedures are reactivated.

While the A-CDM procedures are suspended, the AVDGS shows the text “NO CDM”, followed by instructions to contact the appropriate Apron Management Unit Frequency. The A-CDM Portal is not reachable and the text “NO CDM” is displayed instead.

When the A-CDM procedures are resumed, information about this comes via the A-CDM internal messaging system. The same information is also included in the ATIS broadcasts and a NOTAM.

3.2.12 Getting help on operational issues

To get help on urgent operational issues, call the Manager Operations, Airport Flow (MO-AF) at 1-416-776-ACDM (2236).

To get help on issues not of immediate concern or to send suggestions and comments, send an email to the MO-AF at a-cdm@gtaa.com

3.2.13 System error handling and support

If a system error is encountered or support is needed that is related to IT rather than A-CDM operations, contact the GTAA I.T. Service Desk at 1-416-776-HELP (4357) or it.servicedesk@gtaa.com.

3.2.14 System set-up support

The A-CDM system is an extremely flexible environment that has many adaptable features. If any users wish to propose changes to the existing functions, user interface details or other aspects of the system, an email is to be sent to the MO-AF (a-cdm@gtaa.com) with the subject “SYSTEM SETUP”, providing a detailed description of the reason a change is being proposed and the change itself. The proposal will be submitted to the appropriate body for consideration and possibly implementation. The originator will be informed of the decision and the date of implementation of the change if the proposal is accepted.

3.3 Flight crew procedures

3.3.1 Responsibilities and tasks

Flight crew are responsible for carrying out the following actions:

- Prepare to receive their TOBT and TSAT;
- Perform all necessary actions allocated to them to ensure that the aircraft is ready for push-back and start-up at the published TOBT;
- Report being ready to the appropriate unit within +/-5 minutes of the TOBT;
- Prepare to start the push-back and start-up procedure within 2 minutes of receiving approval to do so;
- Report to the appropriate unit and request guidance if the push-back/start-up does not commence within 2 minutes of having received approval to do so or if the push-back/start-up process is interrupted after the aircraft has left the stand or is expected to take longer than normal.

3.3.2 TOBT and TSAT delivery channels

Several channels are provided for the delivery of the TOBT and TSAT to the flight crew. Airlines may use any of the following available channels:

1. Advanced Visual Docking Guidance System (AVDGS) where available
2. Any specific means of communication that may exist between the Enterprise and the flight crew. This means of communication may be shared with other operational communications
3. A-CDM portal

3.3.2.1 Access to the TOBT and TSAT

The TOBT will be displayed for the flight crew on all channels as soon as it is set in the A-CDM system.

The TSAT will be displayed for the flight crew on all channels except AVDGS as soon as it is set in the A-CDM system.

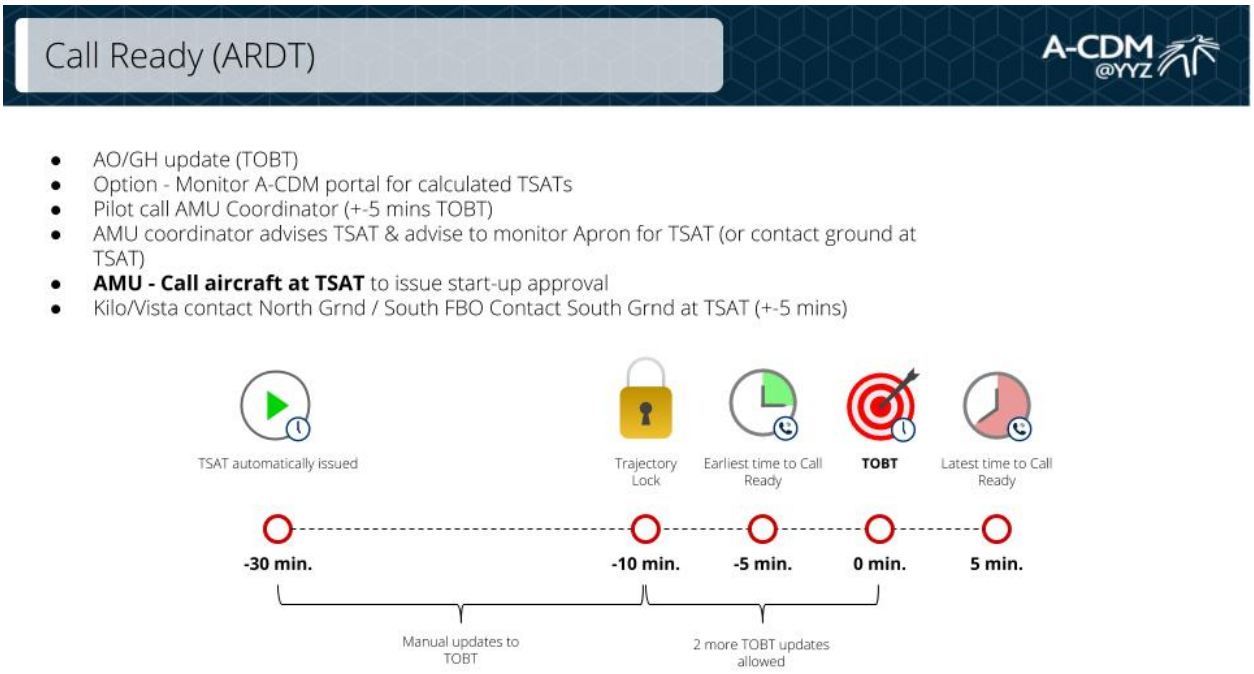
The TSAT will be displayed for the flight crew on the AVDGS as follows:

- 10 minutes before TOBT; or
- 20 minutes before TOBT if the TSAT is 20 minutes or more later than the TOBT (as may be the case due to Traffic Management Initiatives).

3.3.2.2 Call Ready Procedure

The flight crew must call the Apron Management Unit (AMU) on radio frequency 122.875 MHz at TOBT +/- 5 minutes to confirm that the flight is ready as defined for the TOBT and state the location “gate”. Thereafter they contact North Ground on radio frequency 121.650 MHz at TSAT +/- 5 minutes.

If the flight crew fails to call within the specified time window, it will be assumed that the TOBT is no longer valid and the corresponding TSAT will be removed from the sequence. The operator or ground handler needs to provide a new TOBT for a new TSAT to be generated. This may result in a substantial delay for the flight concerned.



Procedures for extended times between TOBT and TSAT

The time between the TOBT and the TSAT assigned to the flight may be substantial. The standard airport policy is for aircraft to stay at the gate until the assigned TSAT time. In cases where the gate is required for another flight, or on the specific request of the Airline, the aircraft concerned will be relocated to a waiting area.

3.3.2.3 Pushback/Start-up approval

The detailed pushback instructions and start-up approval will be issued by North Ground. Sequencing will be carried out on a first-come, first-served basis, taking all applicable constraints into account.

If the pushback and start-up process does not commence within 2 minutes of the time the approval was issued, the flight crew must call the AMU on the appropriate radio frequency explaining the situation and requesting guidance on how to proceed. If this call is neglected, it will be assumed that the TSAT has expired and the trajectory is set on Standby. This means the flight will be removed from the sequence. The operator or ground handler need to provide a new TOBT for a new TSAT to be generated. This may result in a substantial delay for the flight concerned.

If the pushback and start-up process is interrupted for any reason after the aircraft has cleared the stand area or if the start-up process is expected to take longer than normal, the flight crew must call the AMU on the appropriate radio frequency, explaining the situation and requesting guidance on how to proceed.

Flight crew are reminded that the actual order of pushback and start-up approval depends on the operational decisions of the AMU, hence, a difference may exist between the system sequence and the sequence as established by the AMU. However, even after such manual intervention, the applicable constraints such as CTOT will be fully met by the modified sequence.

3.3.2.4 Procedures for flights in the Hangar area

The procedures for such flights (e.g. training flights, ferry flights etc.) are identical to those described above, except that they will call the AMU on radio frequency 122.875 MHz, and then contact North Ground on radio frequency 121.650 MHz at TSAT +/- 5 minutes.

3.3.2.5 Deicing operations

The need for deicing has a substantial impact on the standard A-CDM procedures, particularly in view of the extended taxi times needed for accounting for the duration of the deicing operation. In order to ensure that the deicing needs of individual flights are properly considered, the following additional procedures are applicable during deicing operations:

- Standard request for deicing - A request for de-icing must be transmitted by the flight crew on the clearance delivery frequency 121.300 MHz;
- Request for deicing after clearance delivery - If the flight crew determines, following clearance delivery, that de-icing is required, they must contact the AMU on radio frequency 122.875 MHz and request deicing.

3.3.3 A-CDM flight crew procedures for Commercial Air Transport Operations

3.3.3.1 Normal operating state check list

Checklist Item	Action	Notes
Are you A-CDM exempt?	Check if Flight Plan Item 18 contains any of the following designators. If it does, flight is exempt. • **STS/FFR** Fire fighting • **STS/HEAD** Flight with Head of State status • **STS/HOSP** Flight on an actual medical mission • **STS/MEDEVAC** Life critical medical emergency evacuation • **STS/SAR** Flight engaged in a search and rescue • **STS/STATE** Flight on military, customs or police services • **STS/FLTCK** Flight performing NAVAID checks	Helicopters are also exempt from following the A-CDM procedures.
Check your TOBT	As soon as TOBT is set in the A-CDM system, it is displayed in the following ways: • Advance Visual Docking Guidance System (AVDGS) where available • Any specific means of communication that may exist between the Enterprise and the flight crew. This means of communication may be share with other operational communications • A-CDM Portal	Interpreting AVDGS displays: • TOBT = A-CDM operational • TOBT and TSAT = TOBT operational • "NO CDM" = A-CDM procedures have been suspended (the display includes instructions to contact the appropriate frequency of the Apron Management Unit, • Blank = System state unknown See the next table for guidance on how to proceed in these cases.

Checklist Item	Action	Notes
Check your TSAT	TSAT is displayed: • On the AVDGS 10 minutes before TOBT or 20 minutes before TOBT if TSAT is 20 minutes or more later than the TOBT • In the A-CDM Portal as soon as TSAT is set in the A-CDM system • Via any other aircraft operator/flight crew communication means that may be available	If you estimate that a TSAT assigned to you and the applicable CTOT are not compatible, contact your operator or ground handler to resolve the issue via the MO-AF.
Be aware of the possibility of a TSAT swap	An operator or ground handler may swap the TSATs between its own operator family flights. This is coordinated by the operator or ground handler with the flight crews concerned.	
If you are aware of a delay in getting ready, TOBT must be updated	If you notice that the TOBT displayed is not updated even though you know that there will be a delay in excess of 5 minutes, contact your operator or handling agent and demand that the TOBT be updated. The TOBT may be updated any number of times until 10 minutes before the TOBT. Thereafter only two more updates are possible. Should a third update be necessary, the operator or their designated representative must contact the Manager Operations Airport Flow (MO-AF) for further instructions at 1-416-776-ACDM (4357).	Failing to update the TOBT will result in a Target Start-Up Approval Time (TSAT) that is no longer operationally correct. This in turn may cause the flight to be subject to unnecessary delay.
Call ready procedure Step 1	Call the Apron Management Unit (AMU) on radio frequency 122.875 at TOBT +/- 5 minutes to confirm that the flight is ready as defined for the TOBT. In the call, state your location (gate/stand number).	If the flight crew fails to call within the specified time window, it will be assumed that the TOBT is no longer valid and the corresponding TSAT will be removed from the sequence. The operator or ground handler must provide a new TOBT for a new TSAT to be generated. This may result in a substantial delay for the flight concerned.
Call ready procedure Step 2	Change to and monitor the appropriate radio frequency for push-back and start-up approval.	The frequency depends on the stand the aircraft is at as published in the CAP/ AIP.
Call ready procedure for flights proceeding via Taxiway K or to from Vista Cargo and for flights in the Air Canada Hangar area	Call the AMU on 122.875 MHz to announce ready then at TSAT +/- 5 minutes contact North Ground on 121.650 MHz for push-back and start-up approval.	
Pushback and start-up approval	Commence the pushback and start-up within 2 minutes of the time the approval was issued.	The detailed pushback instructions and start-up approval will be issued on the appropriate radio frequency by the AMU at TSAT +/- 5 minutes without a need for the Flight crew to make an additional call (except in the case of flights proceeding via Taxiway K or to/from Vista Cargo, see above).
Pushback cannot commence within 2 minutes of the time it was approved	Call the AMU on the appropriate radio frequency explaining the situation and requesting guidance on how to proceed.	If this call is neglected, it will be assumed that the TSAT is no longer valid and it will be removed from the sequence. The Operator or Ground Handler needs to provide a new

Checklist Item	Action	Notes
		TOBT for a new TSAT to be generated. This may result in a substantial delay for the flight concerned.
Pushback and start-up process is interrupted for any reason after the aircraft has cleared the stand area or if the start-up process is expected to take longer than normal.	Call the AMU on the appropriate radio frequency, explaining the situation and requesting guidance on how to proceed.	
Winter operations	• Standard request for deicing: contact the Clearance Delivery frequency on 121.300 MHz not later than 30 minutes before TOBT and request deicing. • Request for deicing after clearance delivery: contact the AMU on 122.875 MHz and request deicing.	Winter operations at Toronto Pearson are from 01 October to 30 April yearly.

3.3.3.2 Contingency operations checklist

Checklist Item	Action	Notes
AVDGS shows TOBT or TOBT and TSAT	Follow the call ready procedure	
AVDGS shows the text NO CDM	A-CDM procedures have been suspended, disregard A-CDM procedures	Call the frequency displayed by the AVDGS after the words “NO CDM”
AVDGS is blank or display uncertain	Check A-CDM Portal for TOBT and TSAT. If found, follow the call ready procedure • If no TOBT/TSAT found on the portal, check the ATIS broadcast for A-CDM status information • If no A-CDM status information is contained in the ATIS broadcast, contact the Apron Management Unit and report the problem, then follow their guidance • If TOBT and TSAT is received via specific operator/flight crew link, follow the call ready procedure	
If at gate/stand with no AVDGS	If you have not received a TOBT via the alternative channel and/or the ATIS broadcast informs you that the A-CDM procedures have been suspended, call the Apron Management Unit when you are ready for further instructions	

3.3.4 A-CDM Procedures General and Business Aviation Operations

3.3.4.1 Normal operating state check list

CHECKLIST ITEM	ACTION	NOTES
Prior permission to operate required	Obtain permission to operate from the GTAA not earlier than 72 hours and not later than 60 minutes prior to operation.	Permission can be obtained at www.yyzaro.com

CHECKLIST ITEM	ACTION	NOTES
	YYZ based GA/BA tenant operators may request permission to operate up to 30 days prior to EOBT.	
Are you A-CDM exempt?	Check if Flight Plan Item 18 contains any of the following designators. If it does, flight is exempt. • **STS/FFR** Fire fighting • **STS/HEAD** Flight with Head of State status • **STS/HOSP** Flight on an actual medical mission • **STS/MEDEVAC** Life critical medical emergency evacuation • **STS/SAR** Flight engaged in a search and rescue • **STS/STATE** Flight on military, customs or police services • **STS/FLTCK** Flight performing NAVAID check	Helicopters are also exempt from following the A-CDM procedures.
Check your Target Off-Block Time (TOBT)	TOBT is displayed in the A-CDM Portal at https://acdm.gtaa.com as soon as it is set by the A-CDM system	Requests for credentials to access the A-CDM Portal must be sent to the GTAA I.T. Service Desk at 1-416-776-HELP (4357) or it.servicedesk@gtaa.com. The information available is General and Business allows access to the information of General and Business Aviation flights only. The request may be made by individual pilots or ground handlers as appropriate.
Check your Target Start-up Approval Time (TSAT)	In the A-CDM Portal, TSAT is available as soon as it set in the A-CDM system	If you estimate that a TSAT assigned to you and the applicable Calculated Take Off Time (CTOT) are not compatible, contact your operator or ground handler to resolve the issue via the MO-AF.
If you are aware of a delay in getting ready, TOBT must be updated	If you notice that the TOBT displayed is not updated even though you know that there will be a delay in excess of 5 minutes, contact your operator or ground handler and demand that the TOBT be updated. The TOBT may be updated any number of times until 10 minutes before the TOBT. Thereafter only two more updates are possible. Should a third update be necessary, the operator or their designated representative must call the Manager Operations, Airport Flow (MO-AF) for further instructions at 1-416-776-ACDM (2236).	Failing to update the TOBT will result in a TSAT that is no longer operationally correct. This in turn may cause the flight to be subject to unnecessary delay.
Call ready procedure 1	Call the Apron Management Unit (AMU) on radio frequency 122.875 MHz at TOBT +/- 5 minutes to confirm that the flight is ready as defined for the TOBT. In the call, state your location (gate or stand number).	If the flight crew fails to call within the specified time window, it will be assumed that the TOBT is no longer valid and the corresponding TSAT will be removed from the sequence. The operator or ground handler needs to provide a new TOBT for

CHECKLIST ITEM	ACTION	NOTES
		a new TSAT to be generated. This may result in a substantial delay for the flight concerned.
Call ready procedure 2	Change to and monitor the appropriate radio frequency for push-back and start-up approval.	The frequency depends on the stand the aircraft is at as published in the Canada Air Pilot (CAP). Publication.
Call ready procedure for flights proceeding via Taxiway K or to from Vista Cargo	Call the AMU on 122.875 MHz to announce ready then at TSAT +/- 5 minutes contact North Ground on 121.650 MHz for push-back and start-up approval.	
Pushback and startup approval	Commence the pushback and startup within 2 minutes of the time the approval was issued.	The detailed pushback instructions and start-up approval will be issued on the appropriate radio frequency by the AMU at TSAT +/- 5 minutes without a need for the Flight crew to make an additional call (except for flights proceeding via Taxiway K or to from Vista Cargo, see above).
Pushback cannot commence within 2 minutes of the time it was approved	Call the AMU on the appropriate radio frequency explaining the situation and requesting guidance on how to proceed.	If this call is neglected, it will be assumed that the TSAT is no longer valid and it will be removed from the sequence. The Operator or Ground Handler needs to provide a new TOBT for a new TSAT to be generated. This may result in a substantial delay for the flight concerned.
Pushback and startup process is interrupted for any reason after the aircraft has cleared the stand area or if the start-up process is expected to take longer than normal.	Call the AMU on the appropriate radio frequency, explaining the situation and requesting guidance on how to proceed.	
Winter operations	• Standard request for deicing: contact the Clearance Delivery frequency on 121.300 MHz not later than 30 minutes before TOBT and request deicing. • Request for deicing after clearance delivery: contact the AMU on 122.875 MHz and request deicing.	Winter operations at Toronto Pearson are from 01 October to 30 April yearly.

3.3.4.2 Contingency operations checklist

CHECKLIST ITEM	ACTION	NOTES
No TOBT found in the portal	• Check the Automatic Terminal Information Service (ATIS) broadcast for CDM status information • If no information is available on the ATIS or the ATIS broadcast informs you that the A-CDM procedures have been suspended, call the AMU when you are ready for further instructions	

3.3.4.3 Procedures for aircraft performing NAVAID checks

Aircraft staging

If the flight check aircraft is being staged to Toronto Pearson ahead of the flight check activity, its incoming and outgoing flight is considered as a normal general aviation operation with all corresponding rules being applicable. In particular:

- Coordinate with the airport to agree on the most suitable date and time for the flight check activity
- Apply for permission to operate (reservation) for both the incoming and outgoing flights in accordance with the agreed flight check program (e.g. arriving one day earlier, departing one day later)
- Do make sure to cancel/change the reservation on a timely basis if necessary
- File a flight plan for both incoming and outgoing flights
- Operate in accordance with the approved reservation
- Provide a TOBT and expect to be sequenced on the outgoing flight

Flight check activity

The flight check aircraft will be exempt from all A-CDM requirements while carrying out its flight check program, on condition that the following procedure is observed:

- File a flight plan with STS/FLTCK in Item 18
- Follow the "Call ready" procedure as prescribed for general aviation operations

The flight will be handled outside of the normal A-CDM pre-departure sequence.

Other scenarios

It is possible that the flight check activity takes place under a scenario different from that described above. For instance, the flight check may take place without the aircraft landing at Toronto Pearson. In all cases, prior coordination with the airport is necessary and arrangements will be made to ensure that the flight check program can be completed as quickly as possible with minimum impact on the operation of the airport.

3.4 Airline (all others) & Ground Handler procedures

3.4.1 Responsibilities and tasks

Ground handlers operating at Toronto Pearson airport have the following responsibilities and tasks:

- Provide the schedule data on a timely basis
- Maintain TOBT (ETD) in existing Ops systems or directly into the A-CDM Portal
- Pilot" call ready" 24/7 entire period (+/- 5 min of TOBT)
- Pilots and GH utilize VDGS for TOBT and TSAT updates where available
- Participate in the A-CDM Event Management (CEM) activities
- Remind the aircraft-operators being served to inform the GTAA of the specific ground handling services they are using

3.4.2 Accessing the A-CDM Portal

3.4.2.1 Obtaining the user credentials

Note: Only GH employees must receive individual logins to access the A-CDM Portal. For security purposes, generic logins will not be permitted.

To request valid credentials, the designated central point of contact of your enterprise must fill out the application form published on the A-CDM Portal https://www.torontopearson.com/acdm or must contact the GTAA I.T. Service Desk at 1-416-776-HELP (4357) or it.servicedesk@gtaa.com.

Your enterprise is also responsible to inform the GTAA I.T. Service Desk (it.servicedesk@gtaa.com) when personnel leaving the service no longer require A-CDM access. An email must be sent to the Administrator indicating names and date of revocation of the access. The GTAA shall respond to all such requests within 24 hours.

3.4.2.2 Login procedure

1. In Google Chrome, open https://acdm.gtaa.com/.

   NOTE: You must use Google Chrome to access this webpage. Other web browsers are not supported.

2. In the dialog box, type your **Username** and **Password**, and then click **Login.**
3. On the top left of the screen, click the three horizontal bars appearing next to the Toronto Pearson logo ( ).
4. Click **Trajectory Views**.

5. At the login page, type your Username and Password for Trajectory View access, and click **Login**.

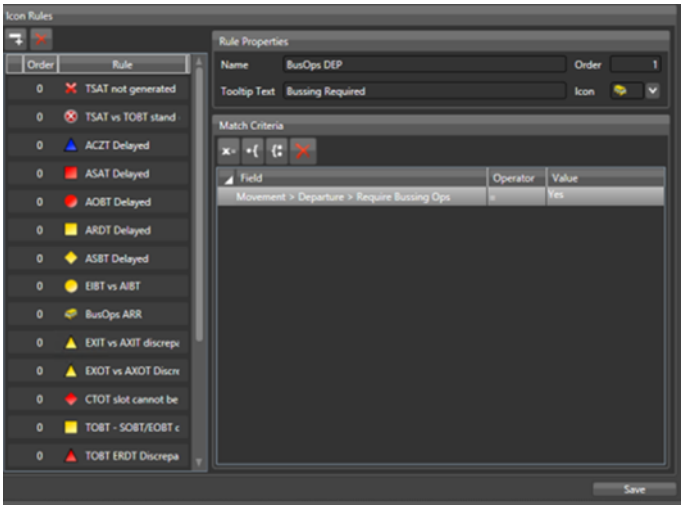
3.4.3 A-CDM Trajectory Views available

To switch from viewing trajectories of flights managed by the Ground Handler to viewing all trajectories:

- At the top of the Trajectory Views screen, click the *airline* list, and select *View All Trajectories*.

3.4.4 Cautions/warnings and their management

Cautions indicate a situation where the user's attention is draw to a status or development that may, at some later point in time, will require action from the user. Some cautions may escalate into warnings as time passes. Warnings indicate a situation where the user's immediate intervention is required.



3.4.5 System functions to be carried out/available

3.4.5.1 Provide TOBT

Provide the TOBT (ETD) in existing Ops systems or via the A-CDM portal.

3.4.5.2 Update TOBT

The TOBT must be updated in existing Ops system or in the A-CDM portal via your dedicated Trajectory View.

If the initial or last-communicated TOBT changes by +/- 5 minutes or more, the TOBT must be updated. Since the TOBT is used as one of the key performance indicators, keeping the TOBT accurate to the +/- 5 minutes margin is very important.

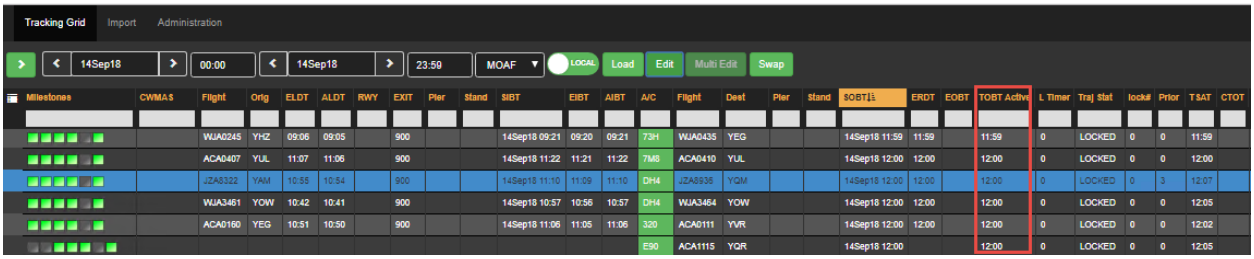
Ground handlers update the TOBT in the A-CDM system by providing and updated ETD to the RMU to be input into RMS. (For Terminal 1 Gating, call 416 776 0100, For Terminal 3 Gating, call 416 776 5254). This will automatically update the TOBT in A-CDM.

3.4.5.3 Update the TOBT directly in the A-CDM portal

5. In the A-CDM Portal's Trajectory View, *click on the row of the trajectory to update*
6. Click **Edit.**

7. In the **ETD Update (TOBT)** dialog box, update the **Time** field.
8. Click **Save/Exit.**

The new TOBT will be visible on all trajectory views where the updated trajectory is visible.



3.4.5.4 Cancel a flight

A ground handler can cancel any of the flights handled by them in the A-CDM system by calling the RMU and asking them to cancel the flight concerned.

3.4.6 TOBT-related procedures

3.4.6.1 Requirement for all flights to have a current TOBT

The TOBT is used to indicate when the aircraft will be ready to push back and start its engines. The initial TOBT is obtained by the A-CDM system from one of the following sources, in the order of priority shown:

1. ETD provided by an operator via the appropriate communications channel
2. EOBT from the Flight Plan
3. SOBT from the schedule data held by the GTAA

3.4.6.2 Preferred way of providing the TOBT to the GTAA

Ground handlers are reminded that using the SOBT may result in an inaccurate TOBT. It is therefore highly recommended to explore the options for providing the ETD via the appropriate communications channel. This can be done by contacting the Manager Operations, Airport Flow (MO-AF) at acdm@gtaa.com.

3.4.6.3 Access to the TOBT for ground handlers

The TOBT will be shown and accessible via the A-CDM Portal as soon as it is set in the A-CDM system.

3.4.6.4 Access to the TOBT for flight crew

The TOBT will be:

- Shown and accessible via the A-CDM Portal as soon as it is set by the A-CDM system;
- Shown on the AVDGS as soon as it is set by the A-CDM system;
- Communicated to the flight crew via any specific communications means that may exist between the ground handler and the flight crew as soon as it is set by the A-CDM system.

3.4.6.5 Updating the TOBT

Ground handlers are obliged to update the TOBT if there is a difference of +/- 5 minutes compared to the initial or previously updated TOBT. The TOBT is to be updated using the appropriate function in the A-CDM Portal.

Note: Failing to update the TOBT will result in a Target Start -Up Approval Time (TSAT) that is no longer operationally correct. This in turn may cause the flight to be subject to unnecessary delay.

3.4.6.6 TOBT update limitations

The TOBT may be updated as many times as necessary until 10 minutes prior to the TOBT. Thereafter only two more updates are possible. Should a third update be necessary, the ground handler must call the Manager Operations, Airport Flow (MO-AF) for further instructions at 1-416-776-ACDM (2236).

3.4.7 TSAT related procedures

3.4.7.1 Pre-departure sequencing – TSAT generation

Based on the TOBT, a TSAT is generated by the A-CDM system for every flight. The TSAT is used to indicate the sequence in which aircraft can expect to receive pushback and start-up approval, ensuring an optimal flow of traffic to the assigned runways. An update to the TOBT will always result in the recalculation of the TSAT, however, this may not always result in a different position in the sequence for the flight concerned.

Any applicable constraints, such as the CTOT resulting from flow management initiatives, taxi times and eventual deicing time are considered in the calculation of the TSAT ensuring that such constraints are always met.

3.4.7.2 Access to TSAT for ground handlers

The TSAT will be shown in the A-CDM Portal as soon as stand and runway information are both available in the A-CDM system.

3.4.7.3 Access to TSAT for flight crew

The TSAT will be displayed for the flight crew on all channels except the AVDGS as soon as it is set in the A-CDM system.

The TSAT will be displayed for the flight crew on the AVDGS as follows:

1. 10 minutes before TOBT; or
2. 20 minutes before TOBT if the TSAT is 20 minutes or more later than the TOBT (as may be the case due to Traffic Management Initiatives)

The TSAT may also be communicated to the flight crew via any specific communications means that exist between the ground handler and the flight crew as soon as the TSAT is set in the A-CDM system.

3.4.8 Procedures for extended times between TOBT and TSAT

The time between the TOBT and the TSAT assigned to the flight may be substantial. The standard airport policy is for aircraft to stay at the gate until the assigned TSAT time. In cases where the gate is required for another flight, or on the specific request of the ground handler, the aircraft concerned will be relocated to a waiting area.

3.4.9 A-CDM-related information on the AVDGS

The AVDGS may display the following A-CDM-related information:

- TOBT (time) = A-CDM operational
- TOBT (time) and TSAT (time) = A-CDM operational
- “NO CDM” (followed by instructions to contact the appropriate frequency of the Apron Management Unit) = A-CDM procedures have been suspended
- Blank = System state unknown

NOTE: Plan to ensure that flight crew at gates without AVDGS receive their TOBT and TSAT

Flight crews at gates with AVDGS will receive their TOBT and TSAT via the AVDGS display where available. Flight crews at gates without AVDGS must receive their TOBT via whatever communications means is available, or via the A-CDM portal. It is the enterprise’s responsibility to ensure that flight crews receive their TOBT via one of the available means when they are at a gate without AVDGS.

3.4.10 Contribution to the Daily Briefing

The Daily Briefing is a news bulletin published twice a day by the Manager Operations, Airport Flow (MO-AF) and updated as required during the day. It contains A-CDM-related information that is helpful for the partners in planning their activities.

Any material considered useful for the Daily Briefing is to be communicated to the MO-AF via the appropriate facility.

3.4.11 Collaboration in A-CDM Event Management (CEM)

Note: Details of the use and associated procedures of the CEM are contained in Section 4.

3.4.11.1 Event creation authority

Ground handlers may not initiate the creation of any event. The MO-AF must be contacted to initiate the creation of events.

3.4.11.2 Event collaboration authority

Ground handlers are an addressee for all event types created by others.

3.4.12 Contingency operation

Information about the suspension of A-CDM procedures comes via the A-CDM internal messaging system if available or any other communications means if it is not. The same information is also included in the ATIS broadcasts and a NOTAM.

When the A-CDM procedures are suspended, the airport returns to the first come, first served mode of operation and there is no pre-departure sequencing. Nevertheless, TOBTs must continue to be supplied to ensure that the A-CDM system has the necessary planning data when the A-CDM procedures are reactivated.

While the A-CDM procedures are suspended, the AVDGS shows the text “NO CDM” followed by instructions to contact the appropriate frequency of the Apron Management Unit. The A-CDM Portal is not reachable and the text “NO CDM” is displayed instead.

When the A-CDM procedures are resumed, information about this comes via the A-CDM internal messaging system. The same information is also included in the ATIS broadcasts and a NOTAM.

3.4.13 Getting help on operational issues

To get help on urgent operational issues, call the Manager Operations, Airport Flow (MO-AF) for further instructions at 1-416-776-ACDM (2236).

To get help on issues not of immediate concern or to send suggestions and comments, send an email to the MO-AF at a-cdm@gtaa.com.

3.4.14 System error handling and support

If a system error is encountered or support is needed that is related to IT rather than A-CDM operations, contact the GTAA I.T. Service Desk at 1-416-776-HELP (4357) or it.servicedesk@gtaa.com.

3.4.15 System set-up support

The A-CDM system is an extremely flexible environment that has many adaptable features. If any users wish to propose changes to the existing functions, user interface details or other aspects of the system, an email is to be sent to the MO-AF (a-cdm@gtaa.com) with the subject “SYSTEM SETUP”, providing a detailed description of the reason a change is being proposed and the change itself. The proposal will be submitted to the appropriate body for consideration and possibly implementation. The originator will be informed of the decision and the date of implementation of the change if the proposal is accepted.

3.5 Air traffic management procedures (NAV Canada)

3.5.1 Responsibilities and tasks

NAV Canada, as the air traffic management organization, is responsible for the following:

- Providing up to date runway capacity/rates and runway configuration figures
- Providing CTOT values as appropriate
- Providing information on flights diverting to their alternates or to Toronto
- Issuing push-back/start-up approval via the Ground North frequency 121.650 MHz for flights proceeding via Taxiway K or to/from Vista Cargo
- Managing the ATIS broadcast content in case of A-CDM procedure suspension and resumption
- Contributing to the Daily Briefing
- Issuing the A-CDM procedures suspension and resumption NOTAM in accordance with the existing procedures

3.5.2 Practical use of the A-CDM generated pre-departure sequence

The TSAT calculated by the A-CDM system represents the best possible push-back and start-up sequence calculated within the capabilities of the pre-departure sequencing algorithm. The TSAT considers all applicable constraints and as such, is also the best guarantee that the flights concerned will not miss their CTOTs. Normally, North Ground is expected to follow the guidance of the pre-departure sequencer provided TSATs. Nevertheless, the TSATs are for guidance only. If North Ground considers that a temporary deviation from one or several TSATs is necessary to further improve efficiency, avoid a potential ground movement conflict or any other safety or operational reason, they are free to act in accordance with their best operational decision.

3.5.3 Accessing the A-CDM Portal

3.5.3.1 Obtaining the user credentials

To request valid credentials required to access the A-CDM Portal, the designated central point of contact at NAV Canada must contact the GTAA I.T. Service Desk at 1-416-776-HELP (4357) or it.servicedesk@gtaa.com.

NAV Canada shall also inform the GTAA I.T. Service Desk when personnel leaving the service no longer require A-CDM access. An email must be sent to the Service Desk indicating names and date of revocation of the access. The Administrator shall respond to all such requests within 24 hours.

3.5.3.2 Login procedure

1. In Google Chrome, open https://acdm.gtaa.com/.

   NOTE: You must use Google Chrome to access this webpage. Other web browsers are not supported.

2. In the dialog box, type your **Username** and **Password**, and then click **Login.**
3. On the top left of the screen, click the three horizontal bars appearing next to the Toronto Pearson logo ( ).
4. Click **Trajectory Views**.
5. At the login page, type your Username and Password for Trajectory View access, and click **Login**.

3.5.4 List of milestones

The A-CDM system has the capability of tracking a very high number of milestones to ensure that the evolution of the trajectory is visible with the required level of detail. At the same time, not all pre-defined milestones have been implemented in the initial system. The following table shows the milestones implemented.

Number	System Milestone Number	Name
Inbound		
1	020	Take-off from Outstation (ATOT)
2	030	Radar Update
3	040	Final Approach
4	050	Landing (ALDT)
5	060	In Block (AIBT)
Turnaround		
6	001	Flight Plan Activated
7	010	2 Hours (EOBT)
8	100	TOBT Update
9	110	TSAT Issue
Outbound		
10	120	Aircraft Ready (ARDT)
11	130	Start-up Request (ASRT)
12	140	Start-up Approval (ASAT)
13	150	Off Block (AOBT)
14	180	Deicing Starts (ACZT)
15	190	Deicing Ends (AEZT)
16	220	Take Off (ATOT)

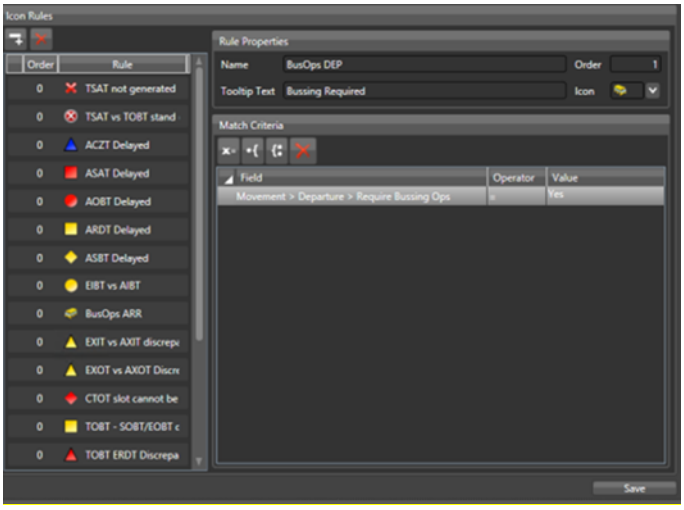
3.5.5 A-CDM Trajectory Views available

NAV Canada will only have a non-editable tabular display of the trajectories.

3.5.6 Cautions/warnings and their management

Cautions indicate a situation where the user's attention is draw to a status or development that may, at some later point in time, will require action from the user. Some cautions may escalate into warnings as time passes. Warnings indicate a situation where the user's immediate intervention is required.

Table showing the agreed Cautions/Warnings.



3.5.7 System functions to be carried out/available

3.5.7.1 Provision of CTOT

The CTOT is provided via the appropriate function of EXCDS.

3.5.7.2 Provision of runway capacity

Runway capacity is provided via the appropriate function of EXCDS.

3.5.7.3 Pushback and start-up approval

Flights proceeding via Taxiway K or to/from Vista Cargo as well as the Air Canada hangar area, announce their ready status to the Apron Coordinator. The pushback and start-up approval at TSAT +/- 5 minutes is provided by North Ground after a call from the flight concerned.

3.5.7.4 Actual time input

The A-CDM system records and works with a large number of actual times, such as for instance AIBT – Actual In-Block Time. These times are entered into the system either automatically or manually as standard. Manual input is also the fallback mode of entry in case the automatic function is not available. The following table lists the actual times concerned and their standard and fall back mode of entry, together with an indication of what system element or which role is responsible for making the entry concerned.

Field	Description	Data Sources	Primary Data Source	Secondary Data Sources
ALDT	Actual Landing Date and Time	- AODB (via Airline Feed, Manual RMU user Entry, SITATEX) - EXCDS (NAV Canada HUB)	AMAN/EXCDS	AODB
AIBT	Actual In-Block Time	- AODB (via Airline Feed, Manual RMU user Entry, SITATEX) - AVDGS	AVDGS (if present at the stand)	AODB
ASAT	Actual Start-up Approval Time	- Not available until future release		
AOBT	Actual Off-Block Time	- AVDGS - AODB (Airline Feed, Manual Entry)	AVDGS (if present at the stand)	AODB

Field	Description	Data Sources	Primary Data Source	Secondary Data Sources
ATOT	Actual Take Off Time	- EXCDS (NAV Canada HUB)	EXCDS	
ARDT	Aircraft Ready time	- EXCDS (NAV Canada HUB)	EXCDS	

3.5.7.5 Contribution to the Daily Briefing

The Daily Briefing is a daily news bulletin published twice a day by the Manager Operations, Airport Flow (MO-AF) and updated as required during the day. It contains A-CDM-related information that is helpful for the partners in planning their activities.

Any material relevant to airport flow and considered useful for the Daily Briefing is to be communicated to the MO-AF via email to their email address a-cdm@gtaa.com.

3.5.7.6 Collaboration in A-CDM Event Management (CEM)

Note: Details of the use and associated procedures of the CEM are contained in Section 4.

Event creation authority

NAV Canada does not create events. The MO-AF must be contacted to initiate the creation of events.

Event collaboration authority

NAV Canada is an addressee for all event types created by others.

3.5.8 Contingency operation

If the application of A-CDM procedures is suspended for any reason, NAV Canada continues to provide CTOTs and runway capacity information, which will be processed manually.

3.5.9 Information promulgation

A-CDM-related information to be included in the ATIS broadcasts and promulgation of NOTAM concerning the status of the A-CDM operation are handled in accordance with the existing procedure via the IOCC and via the Director A-CDM Implementation, respectively.

3.5.10 Getting help on operational issues

To get help on urgent operational issues, call the Manager Operations, Airport Flow (MO-AF) for further instructions at 1-416-776-ACDM (2236).

To get help on issues not of immediate concern or to send suggestions and comments, send an email to the MO-AF at a-cdm@gtaa.com.

3.5.11 System error handling and support

If a system error is encountered or support is needed that is related to IT rather than A-CDM operations, contact the GTAA I.T. Service Desk at 1-416-776-HELP (4357) or it.servicedesk@gtaa.com.

3.5.12 System setup support

The A-CDM system is an extremely flexible environment that has many adaptable features. If any users wish to propose changes to the existing functions, user interface details or other aspects of the system, an email is to be sent to the MO-AF (a-cdm@gtaa.com) with the subject “SYSTEM SETUP”, providing a detailed description of the reason a change is being proposed and the change itself. The proposal will be submitted to the appropriate body for consideration and possibly implementation. The originator will be informed of the decision and the date of implementation of the change if the proposal is accepted.

3.6 GTAA Procedures

3.6.1 Apron Management Unit (AMU) procedures

3.6.2 AMU Responsibilities and tasks

The AMU is responsible to carry out the following tasks.

- Receive the ready calls from all aircraft (Apron Coordinator)
- Change the status of aircraft to ready when call received (Apron Coordinator on the NAV Canada hub)
- Call aircraft at Target Start-up Approval Time (TSAT) to issue pushback and start-up approval (South Apron, North Apron)
- Receive calls from aircraft in case of push-back and start-up irregularities
- Participate in the A-CDM Event Management (CEM) activities
- Arrange and execute resolution action to address irregularities

3.6.3 Practical use of the A-CDM generated pre-departure sequence

The TSAT calculated by the A-CDM system represents the best possible push-back and start-up sequence calculated within the capabilities of the pre-departure sequencing algorithm. The TSAT considers all applicable constraints and as such, is also the best guarantee that the flights concerned will not miss their CTOTs. Normally, the AMU is expected to follow the guidance of the pre-departure sequencer provided TSATs. Nevertheless, the TSATs are for guidance only. If the Apron Manager considers that a temporary deviation from one or several TSATs is necessary to further improve efficiency, avoid a potential ground movement conflict or any other safety or operational reason, the Apron Manager is free to act in accordance with his/her best operational decision.

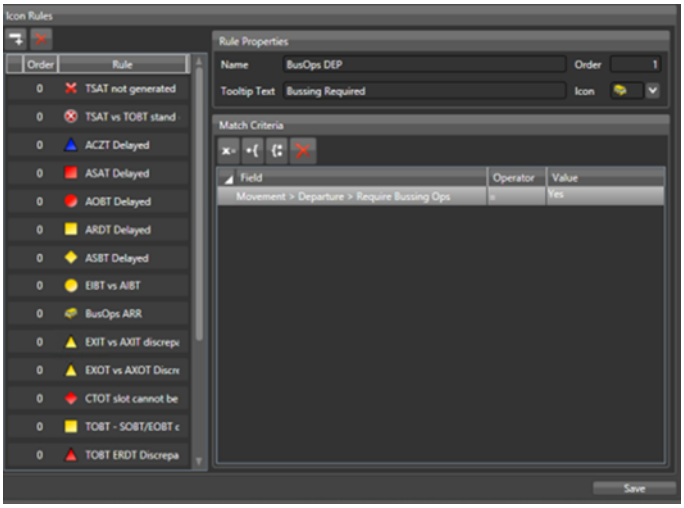
3.6.4 AMU departure checklist

CHECKLIST ITEM	ACTION Apron Coordinator	ACTION South Apron	ACTION North Apron	Notes
Flight crew calls on the frequency of the Apron Coordinator to announce they are ready	• Check that the call is within +/-5 minutes of TOBT • If **yes**, acknowledge and instruct flight crew to monitor South Apron, North Apron or North Ground (depending on aircraft stand); • Set the aircraft status to ready in EXCDS • If call is outside limit, advise flight crew of irregular situation and instruct them to obtain new TOBT			Aircraft may wait for their TSAT call at the original stand (basic airport policy) or relocate to a waiting area if needed or desired. Aircraft call North Ground for their push-back and start-up approval if they are proceeding via Taxiway K or to/from Vista Cargo.
Time is TSAT +/-5 minutes for flights monitoring South Apron frequency		Call the aircraft concerned and pass the pushback and start-up approval and details		
Time is TSAT +/-5 minutes for flights monitoring North Apron frequency			Call the aircraft concerned and pass the pushback and start-up approval and details	
Flight crew calls the South or North Apron to report that push-back cannot start		Provide guidance to the flight crew.	Provide guidance to the flight crew.	

CHECKLIST ITEM	ACTION Apron Coordinator	ACTION South Apron	ACTION North Apron	Notes
within 2 minutes of the approval issue time				
Flight crew calls the South or North Apron to report that the aircraft has cleared the stand but the pushback/start-up was interrupted for any reason		Provide guidance to the flight crew.	Provide guidance to the flight crew.	
Flight crew calls the South or North Apron to report that the aircraft has cleared the stand but the push-back/start-up will take longer than normal		Provide guidance to the flight crew.	Provide guidance to the flight crew.	
Flight crew calls the Apron Coordinator requesting deicing	• Check whether the flight has received its en-route clearance. • If yes, acknowledge request and take necessary steps to mark flight as requiring deicing • If not, advise flight crew to request deicing from Clearance Delivery • If time to TOBT is less than 30 minutes, acknowledge request and take necessary steps to mark flight as requiring deicing			

3.6.5 Cautions/warnings and their management

Cautions indicate a situation where the user's attention is draw to a status or development that may, at some later point in time, will require action from the user. Some cautions may escalate into warnings as time passes. Warnings indicate a situation where the user's immediate intervention is required.



3.6.6 Contribution to the Daily Briefing

The Daily Briefing is a daily news bulletin published twice a day by the Manager Operations, Airport Flow (MO-AF) and updated as required during the day. It contains A-CDM-related information that is helpful for the partners in planning their activities.

Any material considered useful for the Daily Briefing is to be communicated to the MO-AF via the A-CDM messaging facility.

3.6.7 Collaboration in A-CDM Event Management (CEM)

Note: Details of the use and associated procedures of the CEM are contained in Section 4.

3.6.7.1 Event creation authority

The AMU may not initiate the creation of any type of event. The MO-AF must be contacted to initiate the creation of events.

3.6.7.2 Event collaboration authority

The AMU is an addressee for all event types created by others.

3.6.8 Contingency operation

AMU contingency check list

CHECKLIST ITEM	ACTION Apron Coordinator	ACTION South Apron	ACTION North Apron	Notes
Flight crew calls the Apron Coordinator to report that the AVDGS screen is blank or not readable	• If you are aware that A-CDM procedures have been suspended, advise flight crew to disregard the A-CDM procedures and call when they are ready • If you are not aware or not sure of the latest status, advise the flight crew to stand by and get actual status from the MO-AF • If A-CDM procedures have not been suspended, assume AVDGS failure at the subject gate • Ask flight crew whether they can access the A-CDM Portal; if yes, advise to get TOBT and TSAT from the portal;			The MO-AF is reachable on the following number: 1 416-776-ACDM

CHECKLIST ITEM	ACTION Apron Coordinator	ACTION South Apron	ACTION North Apron	Notes
	if not, support the flight by providing their TOBT and TSAT via the radio. • Report the problem to the Integrated Operations Control Centre (IOCC) at 416-776-3055.			
Flight crew of general or business aviation flight calls the Apron Coordinator to report that they are unable to obtain their TOBT and TSAT from the A-CDM Portal	• If you are aware that A-CDM procedures have been suspended, advise flight crew to disregard the A-CDM procedures and to call when they are ready • If you are not aware or not sure of the latest status, advise the flight crew to stand by and get actual status from the MO-AF • If A-CDM procedures have not been suspended, advise the flight crew of this fact and support the flight by providing their TOBT and TSAT via the radio. • Advise the flight crew that this support is exceptional and that they need to investigate why they were not able to access the A-CDM Portal. • Report the problem to the MO-AF via email to a-cdm@gtaa.com			The MO-AF is reachable on the following number: 1 416-776-ACDM

3.7 Resource Management Unit (RMU) procedures

3.7.1 RMU Responsibilities and tasks

The RMU has the following responsibilities and tasks:

- Utilize the A-CDM tool as the single point of truth for all aircraft movement information.
- Monitor the A-CDM Portal for any stand conflicts (via cautions/warnings) as a result of **calculated TSATs** for all trajectories.
- Determine an appropriate solution to resolve the issue**,** which may include adjusting resource allocations for all trajectories (if required), and then advise the MO-AF of this action (via verbal co-ordination or entry into the A-CDM system).
- Participate in the A-CDM Event Management (CEM) Activities

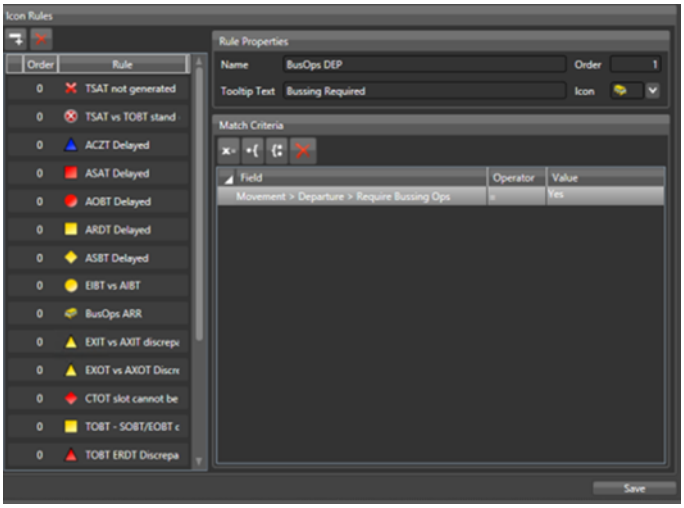
3.7.2 A-CDM Trajectory Views available

The A-CDM Trajectory View tracks the movement of aircraft. The TOBTs, TSATs, and all milestones are displayed here, providing a real-time awareness of each trajectory.

Users may define their preferred ordering of columns within the Trajectory View by sending a request to the GTAA I.T. Service Desk at 1-416-776-HELP (4357) or it.servicedesk@gtaa.com.

3.7.3 Cautions/warnings and their management

Cautions indicate a situation where the user's attention is draw to a status or development that may, at some later point in time, will require action from the user. Some cautions may escalate into warnings as time passes. Warnings indicate a situation where the user's immediate intervention is required.



3.7.4 Contribution to the Daily Briefing

This functionality is currently being reviewed by the GTAA and will be clarified in an Amendment.

3.7.5 Collaboration in the A-CDM Event Management (CEM)

Note: Details of the use and associated procedures of the CEM are contained in Section 4.

3.7.5.1 Event creation authority

The RMU does not create any events. The MO-AF must be contacted to initiate the creation of events.

3.7.5.2 Event collaboration authority

The RMU is an addressee of all events created by others.

3.8 Manager Operations, Airport Flow (MO-AF) procedures

3.8.1 MO-AF Responsibilities and tasks

The MO-AF has been established as the single point of contact between the A-CDM partners and the A-CDM operating environment. MO-AF has the following main tasks and responsibilities:

- Monitor TOBT and TSAT adherence
- Monitor and facilitate the efficient flow of aircraft, passengers and baggage
- Act upon and manage A-CDM cautions and warnings
- Take timely action to help partners avoid trajectory distortions
- Analyze the demand picture and predict periods of congestion and traffic peaks
- Co-ordinate as necessary with GTAA Manager of Operations groups (AVS, CTS, Baggage), government agencies, aircraft operators and ground handlers to resolve issues and agree timely corrective action
- Participate actively in the preparation for and management of events as defined in the A-CDM Event Management (CEM) function
- Create and maintain the Daily Briefing
- Monitor KPIs and produce reports for use by the A-CDM Governance Program and the Compliance Committees

- Enter runway rate
- Monitor achieved runway rate

3.8.1.1 Entering runway rates

This functionality is currently being reviewed by the GTAA and will be clarified in an Amendment.

3.8.1.2 Runway rates in special cases (e.g. flight check programs)

This functionality is currently being reviewed by the GTAA and will be clarified in an Amendment.

3.8.2 Accessing the A-CDM Desktop Application

To request valid credentials required to access the A-CDM Desktop Application, the designated central point of contact at Manager Operations, Airport Flow (MO-AF) shall send the list of employees requiring individual access to the GTAA I.T. Service Desk at 1-416-776-HELP (4357) or it.servicedesk@gtaa.com. Information on employees leaving the service, whose credentials need to be withdrawn shall be provided in the same way.

3.8.3 A-CDM views available

3.8.3.1 A-CDM Desktop Application

The A-CDM Desktop Application application, or Full Level Operations Worksheet (or F.L.O.W. Page) will be the primary work-page for the MO-AF user group. This page contains all trajectories associated with aircraft flow at Toronto Pearson, including all milestones and warnings and cautions associated with those milestones. The F.L.O.W. Page will also be the primary worksheet the MO-AFs will use when manually intervening in any trajectory distortions.

3.8.3.2 Pre-Departure sequence

The Pre-Departure Sequence is a visual representation of the TSAT sequence for the airport and as such, will be monitored by the MO-AF to ensure TSAT compliance. In exceptional circumstances the MO-AF many manually manipulate the sequence of TSAT to ensure operational efficiency and continuity.

3.8.3.3 Milestone status

Milestone status will be displayed on the main FLOW Page. MO-AF will monitor the status of the milestones and any associated cautions and warnings via the FLOW Page.

3.8.3.4 List of milestones

The A-CDM system has the capability of tracking a very high number of milestones to ensure that the evolution of the trajectory is visible with the required level of detail. At the same time, not all pre-defined milestones have been implemented in the initial system. The following table shows the milestones implemented.

Number	System Milestone Number	Name
Inbound		
1	020	Take-off from Outstation (ATOT)
2	030	Radar Update
3	040	Final Approach
4	050	Landing (ALDT)
5	060	In Block (AIBT)
Turnaround		
6	001	Flight Plan Activated
7	010	2 Hours (EOBT)
8	100	TOBT Update
9	110	TSAT Issue
Outbound		
10	120	Aircraft Ready (ARDT)
11	130	Start-up Request (ASRT)
12	140	Start-up Approval (ASAT)
13	150	Off Block (AOBT)
14	180	Deicing Starts (ACZT)
15	190	Deicing Ends (AEZT)
16	220	Take Off (ATOT)

3.8.3.5 A-CDM Portal

The A-CDM Portal is a light version of the FLOW Page. The MO-AF will monitor the A-CDM system through the FLOW page but will have access to the light version via the web. At times, it may be useful for the MO-AF to reference the Web Portal version of the FLOW page either when working remotely or when aiding a partner in resolving an A-CDM-related issue as it may be easier to reference the same view that the airline or ground handler has access to. Ultimately, all MO-AF manipulation will be done via the more robust FLOW page.

3.8.4 System functions accessed via the A-CDM Desktop Application and related procedures

3.8.4.1 Load seasonal schedule

The A-CDM System Administrator will load the Seasonal Schedule twice a year (Summer and Winter). Should the A-CDM Administrator be unavailable, a designate (The MO-AF) will carry out these duties.

3.8.4.2 Manage trajectories

Trajectories and operations integrity will be managed by the MO-AF using the FLOW page. Any trajectory distortions or milestone related cautions and warnings will be monitored and actioned using the FLOW Page on an as needed basis. Communication with internal and external agencies is essential for the proper management of trajectories. The MO-AF will only intervene and manually input an adjust a trajectory (by manipulating an appropriate value in the FLOW Page) under exceptional circumstances and only with respect to operational integrity.

3.8.4.3 Creating the Daily Briefing

The Daily Briefing is created twice a day, corresponding to the day and night periods. Each edition of the Daily Briefing is identified with the date and the time of publication.

The day edition is to be published not later than 0800 UTC (Summer) or 0900 UTC (Winter)

The night edition is to be published not later than 2000 UTC (Summer) or 2100 UTC (Winter)

The details of creating the Daily Briefing are contained in Section 4.

3.8.5 System functions accessed via the A-CDM Portal and related procedures

3.8.5.1 Unlock TOBT

The MO-AF unlocks TOBT when requested to do so by the airline and the reasons for unlocking the TOBT are deemed appropriate. Those reasons can include but are not limited to a TOBT lock being issued in error, more accurate TOBT available from airline and required by airport, a locked TOBT being put into ‘Standby’ until further updates are available. Unlocking a TOBT is at the discretion of the MO-AF and not all TOBT Unlock requests will be met.

3.8.5.2 Set TOBT to Standby

The MO-AF will monitor TOBTs including those placed on Standby (STOBT) by the airline or ground handler. The FLOW Page will show a caution when a trajectory is placed on Standby to aid the MO-AF in monitoring the trajectory and ensure operational integrity when the STOBT is taken out of Standby.

The MO-AF may place a TOBT or multiple TOBTs in Standby status in the A-CDM FLOW Page for various operational reasons, including, but not limited to, security events, infrastructure constraints, emergencies etc. Once a TOBT or a grouping of TOBTs has been suspended by the MO-AF, these will be communicated to the airlines and ground handlers using the already established channels.

3.8.5.3 Modify TSAT

The MO-AF will only modify a TSAT in exceptional circumstances. The MO-AF will re-sequence a TSAT in the PDS given certain exceptional circumstances that require a TSAT override to ensure operational integrity. The A-CDM system may from time to time produce an erroneous of unfair TSAT. If an airline or ground handler feels that a TSAT is unreasonable, they must call the MO-AF to re-sequence the flight. The MO-AF has the ultimate discretion in modifying a TSAT and not all requests will be granted. The MO-AF may also modify a TSAT based on operational integrity needs but will only do so in consultation with the airline or ground handler concerned.

3.8.5.4 Performance report requests

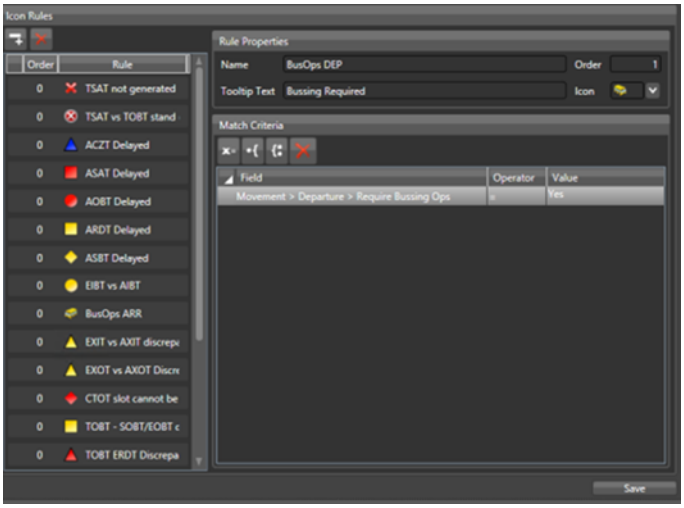
The MO-AF will regularly produce several reports regarding the airport performance under A-CDM. If an airline or a ground handler requests a report on information not contained within these reports, they can do so by contacting the A-CDM Administrator or by making a request during a Governance meeting.

3.8.5.5 Create and manage events

The creation and management of events to be used in adverse conditions is described in Chapter 4.

3.8.6 Cautions/warnings and their management

Cautions indicate a situation where the user's attention is draw to a status or development that may, at some later point in time, will require action from the user. Some cautions may escalate into warnings as time passes. Warnings indicate a situation where the user's immediate intervention is required.



3.8.7 Cooperation with the A-CDM partners

3.8.7.1 Using the direct telephone line 1-416-776-ACDM (2236).

The direct telephone line is provided so that A-CDM partners may contact the MO-AF without delay in case they require urgent assistance. In particular, the MO-AF should expect calls concerning the following issues.

Issue	Resolution	Notes
TOBT has been updated twice within 10 minutes of the TOBT and a third update is necessary	• Discuss reason for the additional update • If acceptable reason is provided, update TOBT manually	"acceptable" here means a reason acceptable in the judgement and experience of the MO-AF
TOBT has not been updated, TSAT was invalidated	• Explain the mandatory procedure and what the consequences are of not updating the TOBT • Update TOBT manually if this can be done without impact on other flights	
Concern about the correct operation of the A-CDM system	• Reassure partner that the issue will be check immediately • Consider suspending A-CDM operations if warranted • Provide comprehensive feed-back to partner having reported the concern	

Issue	Resolution	Notes
Any question from outside agencies (such as media) about specific items such as sequences, delays or any other issue that may have a commercial sensitivity aspect	• Decline providing any information politely but firmly • Direct the caller to the GTAA Media Relations on phone number 1-416-776-3709 or send an email to media.relations@gtaa.com.	MO-AF are expected to use their experience and judgement to identify calls from the press or competitors that are not A-CDM-related.
Any issue not directly related to A-CDM operation or not of an urgent nature	• Explain the purpose of the phone number in a polite but firm manner • Inform the caller of the availability of the e-mail address for issues such as his/hers	

3.8.7.2 Emailing the MO-AF

The email address a-cdm@gtaa.com is provided for partners to report a non-urgent problem and to request information on any A-CDM-related topic. In particular, requests for information on methods to provide ETD/EOBT must be expected to come in via email.

The email system is set up to generate an auto-response message to the sender informing them that the message has been received and will be processed without delay. It should contain the following information:

> "Thank you for your email regarding A-CDM @ YYZ.
>
> We are working on your request, and we will get back to you within 24 hours.
>
> Thank you
>
> A-CDM @YYZ
>
> Manager Operations, Airport Flow
>
> **Greater Toronto Airports Authority**
>
> P.O. Box 6031, 3111 Convair Drive, Toronto AMF, Ontario, L5P 1B2
>
> **Phone** (416) 776-ACDM (2236)
>
> a-cdm@gtaa.com"

The MO-AF is expected to handle emails based on experience and the availability of information relevant to the subject of the messages. In general, all emails should be answered within 24 hours.

Messages containing enquiries about the methods of providing ETD/EOBT should be forwarded to it.servicedesk@gtaa.com without delay.

3.8.8 Contingency operations

Only one type of contingency operation is available. The airport is either in normal operating state where TSAT sequencing is active and the provision of TOBT is mandatory or A-CDM operations are suspended for some reason (e.g. technical problem) and the traditional "first come first served" procedure is reverted to. A-CDM operations are suspended and restored by the MO-AF in accordance with the prescribed procedures, including the information exchange, under the authority and decisions of the Airport Duty Manager.

Checklist Item	Action	Notes
Contact GTAA IT support and report concern about A-CDM operational integrity	Phone call to GTAA IT support	Provide as much information as possible

Checklist Item	Action	Notes
Reach agreement with GTAA IT support whether or not suspension of A-CDM operations is warranted	Phone discussion	Next steps to be carried out only if suspension is deemed warranted
If suspension is warranted from the IT perspective, inform the ADM and obtain decision to suspend	Phone discussion	
Inform ATC of suspension and time requesting inclusion in ATIS broadcast	Phone call to ATC Tower Supervisor (SUP)	ATIS to contain agreed text, e.g. “A-CDM PROCEDURES SUSPENDED” with timing added if available
Inform AIS of suspension and time and request publication of NOTAM Class 1	Message to AIS	NOTAM to contain agreed text, being the equivalent of e.g. “A-CDM PROCEDURES SUSPENDED” with timing added if available
Inform A-CDM partners of suspension and time	Message via A-CDM messaging application	It is assumed that all concerned, including GTAA IT support will receive and act upon this message
Defined steps to suspend the A-CDM system	Carry out the steps prescribed for suspending the A-CDM system	TSAT sequencing is terminated, no warnings/cautions issued
Ensure AVDGS text is set to “NO CDM” + frequency instructions	Use the S.A.M tool to change the text on the AVDGS	
Ensure that the A-CDM portal becomes unreachable and instead the text “NO CDM” is shown	Take the prescribed action	

3.8.8.1 Resuming A-CDM operations

Checklist Item	Action	Notes
Contact GTAA IT support and agree exact time of resuming A-CDM operations	Phone call to GTAA IT support	
Coordinate the resumption with the ADM		
Inform ATC of resumption and time requesting inclusion in ATIS broadcast	Phone call to SUP	ATIS to contain agreed text, e.g. “A-CDM PROCEDURES IN OPERATION” with timing added if available
Inform AIS of suspension and time and request publication of NOTAM Class 1	Message to AIS	NOTAM to contain agreed text, being the equivalent of e.g. “A-CDM PROCEDURES IN OPERATION” with timing added if available
Inform A-CDM partners of the resumption and time	Message via A-CDM messaging application	It is assumed that all concerned, including GTAA IT support will receive and act upon this message.
Defined steps to restart the A-CDM system	Carry out the steps prescribed for restarting the A-CDM system	TSAT sequencing is resumed in a structured manner to ensure smooth transition back to normal operating state
Ensure AVDGS is returned to normal	Use the S.A.M tool to change the text on the AVDGS	
Ensure that the A-CDM Portal is once again available	Take the prescribed action	

3.9 GTAA administrative procedures

3.9.1 Accessing the A-CDM Portal

3.9.1.1 Obtaining the user credentials

To request valid credentials required to access the A-CDM Portal, your designated central point of contact at GTAA must contact the I.T. Service Desk at 1-416-776-HELP (4357) or it.servicedesk@gtaa.com.

GTAA shall also inform the I.T. Service Desk when personnel leaving the service no longer require A-CDM access. An email must be sent to the Service Desk indicating names and date of revocation of the access. The Administrator shall respond to all such requests within 24 hours.

3.9.1.2 Login procedure

1. In Google Chrome, open https://acdm.gtaa.com/.
    a. **NOTE: You must use Google Chrome to access this webpage. Other web browsers are not supported.**
2. In the dialog box, type your **Username** and **Password**, and then click **Login.**
3. On the top left of the screen, click the three horizontal bars appearing next to the Toronto Pearson logo ( ).
4. Click **Trajectory Views**.
5. At the login page, type your Username and Password for Trajectory View access, and click **Login**.

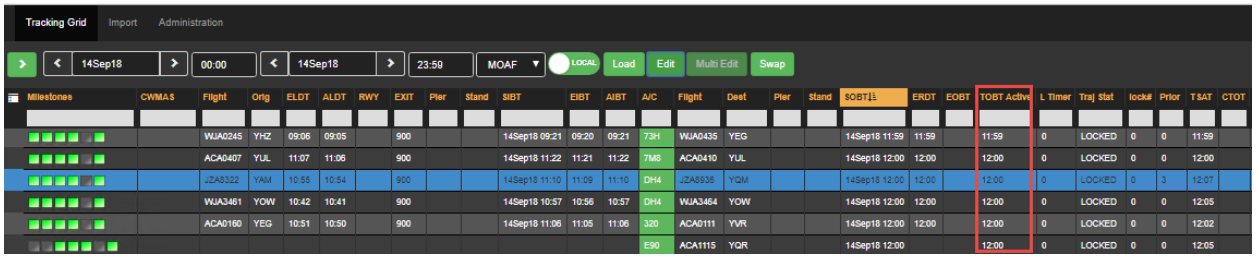
3.9.2 GTAA System functions in the A-CDM Portal

3.9.2.1 Update the TOBT in the A-CDM portal

1. In the A-CDM Portal's Trajectory View,
2. Click on the row of the trajectory to update
3. Click **Edit.**

4. In the **ETD Update (TOBT)** dialog box, update the **Time** field.
5. Click **Save/Exit.**

The new TOBT will be visible on all trajectory views where the updated trajectory is visible.

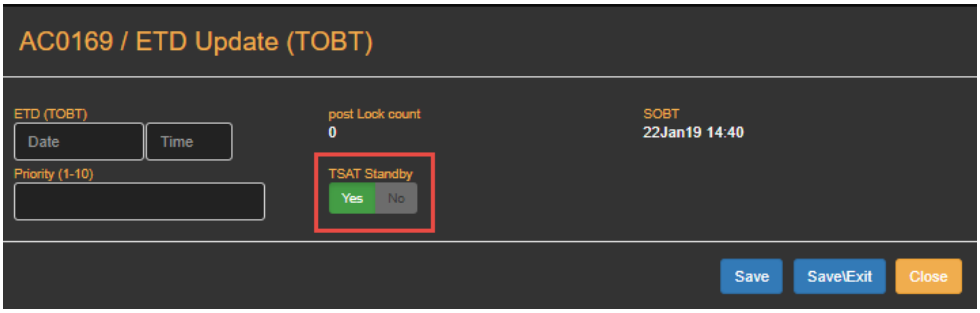


3.9.2.2 Set Trajectory to Standby.

Prerequisite: The TSAT for the trajectory must already be visible in the Trajectory View.

1. In the View, click on the row for the trajectory to be modified.
2. Click **Edit**.

3. In the **ETD Update (TOBT)** dialog box, set the **TSAT Standby** option to **Yes**.



4. Click **Save/Exit.**

The TOBT is deleted for the selected trajectory, and the trajectory is placed into standby.

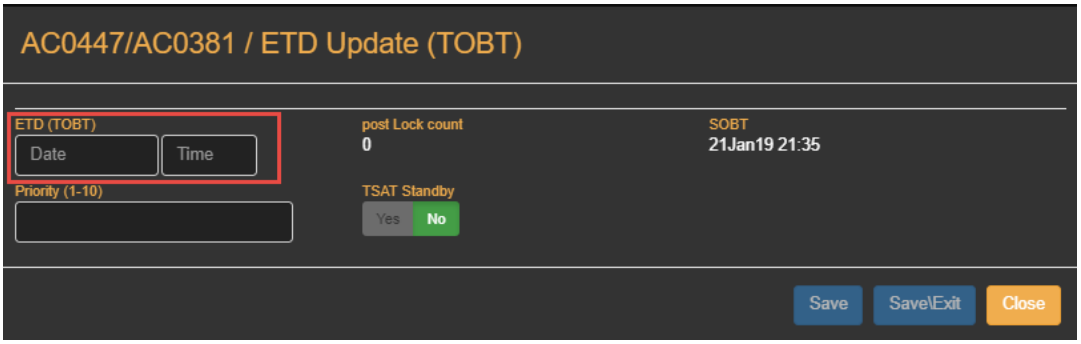
Note: Once a new TOBT is assigned/updated, a new TSAT will be calculated and will appear in the TSAT column.

3.9.2.3 Set trajectory to Active

A trajectory that has been set to Standby can be reactivated by entering a new TOBT. This will result in a new TSAT being calculated and displayed.

1. In the Trajectory View, click on the row of the trajectory to be set to Active.
2. Click **Edit**.

3. In the **ETD Update (TOBT)** dialog box, provide an updated **Date** and **Time** as needed.



4. Click **Save\Exit**.

The trajectory has been changed from Standby to Active.

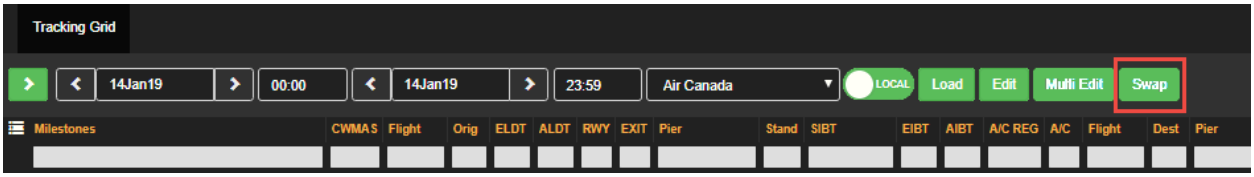
3.9.2.4 Swap TSAT

Airlines may swap the TSATs between eligible trajectories of its own operator family. The following conditions must be met for a trajectory to be eligible for a TSAT swap:

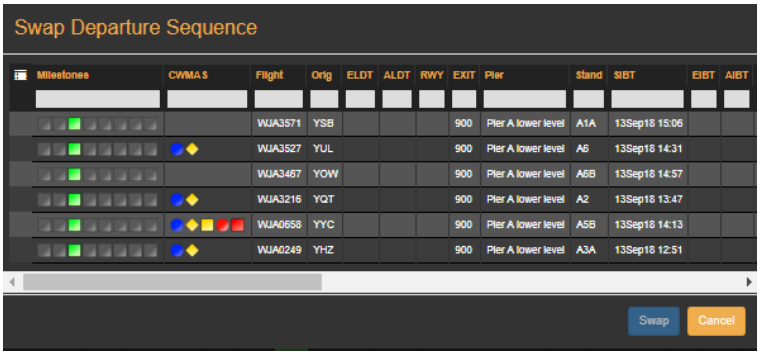
- A TSAT must be already allocated to the trajectory concerned.
- The trajectory concerned has not yet “called Ready”.
- The flight is not designated as a special flight by the inclusion of an appropriate designator in Item 18 of the flight plan.
- Trajectory is not subject to a Calculated Take Off Time (CTOT).
- All eligible trajectories must have the same runway.
- The trajectories have not been previously swapped.

To swap TSATs:

1. In the Trajectory View, click on the row of the trajectory with the TSAT to be swapped.
2. Click **Swap**.



The Swap Departure Sequence dialog box opens, displaying trajectories eligible for a TSAT swap. If there are no eligible trajectories to swap, the dialog box will be empty.



3. In the Swap Departure Sequence dialog box, click on the trajectory to swap with and then click **Swap**.

   The dialog box closes and the swapped TSATs flash for a short time in the Trajectory View to indicate a change.

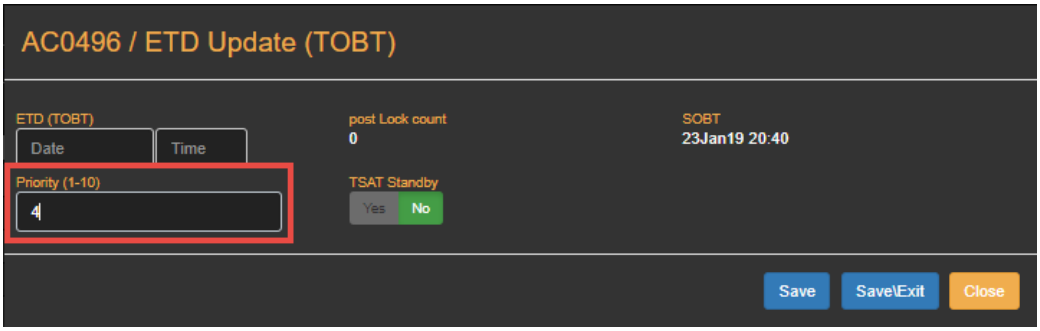
3.9.2.5 Set the priority of the trajectories

To set the priority of the trajectories on the day of operation, do the following:

1. In the Trajectory View, click on the row of the trajectory to be set or changed.
2. Click **Edit**.

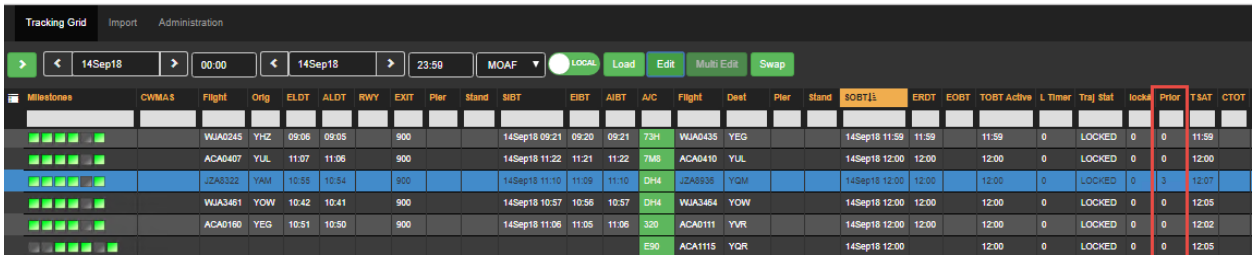
3. In the **ETD Update (TOBT)** dialog box, update the **Priority (1-10)** field with a value between 1 and 10.

   NOTE: A value of 1 represents the lowest priority, and 10 represents the highest. Trajectories with identical values are treated as being equal in priority.



4. Click **Save/Exit**.

The **Prior** (Priority) field for the trajectory concerned shows the assigned priority which will be considered in calculating the TSATs.



3.10 List of milestones

The A-CDM system has the capability of tracking a very high number of milestones to ensure that the evolution of the trajectory is visible with the required level of detail. At the same time, not all pre-defined milestones have been implemented in the initial system. The following table shows the milestones implemented.

Number	System Milestone Number	Name
Inbound		
1	020	Take-off from Outstation (ATOT)
2	030	Radar Update
3	040	Final Approach
4	050	Landing (ALDT)
5	060	In Block (AIBT)
Turnaround		
6	001	Flight Plan Activated
7	010	2 Hours (EOBT)
8	100	TOBT Update
9	110	TSAT Issue
Outbound		
10	120	Aircraft Ready (ARDT)
11	130	Start-up Request (ASRT)
12	140	Start-up Approval (ASAT)
13	150	Off Block (AOBT)
14	180	Deicing Starts (ACZT)
15	190	Deicing Ends (AEZT)
16	220	Take Off (ATOT)

3.11 Actual time input

The A-CDM system records and works with many actual times, such as for instance AIBT – Actual In-block Time. These times are entered into the system either automatically or manually as standard. Manual input is also the fallback mode of entry in case the automatic function is not available. The following table lists the actual times concerned and their standard and fall back mode of entry, together with an indication of what system element or which role is responsible for making the entry concerned.

Field	Description	Data Sources	Primary Data Source	Secondary Data Sources
ALDT	Actual Landing Date and Time	- AODB (via Airline Feed, Manual RMU user Entry, SITATEX) - EXCDS (NAV Canada HUB)	AMAN/EXCDS	AODB
AIBT	Actual In-Block Time	- AODB (via Airline Feed, Manual RMU user Entry, SITATEX) - AVDGS	AVDGS (if present at the stand)	AODB

Field	Description	Data Sources	Primary Data Source	Secondary Data Sources
ASAT	Actual Start-up Approval Time	- Not available until future release		
AOBT	Actual Off-Block Time	- AVDGS - AODB (Airline Feed, Manual Entry)	AVDGS (if present at the stand)	AODB
ATOT	Actual Take Off Time	- EXCDS (NAV Canada HUB)	EXCDS	
ARDT	Aircraft Ready time	- EXCDS (NAV Canada HUB)	EXCDS	

3.12 System error handling and support

If a system error is encountered or support is needed that is related to I.T. rather than A-CDM operations, contact the GTAA I.T. Service Desk at 1-416-776-HELP (4357) or it.servicedesk@gtaa.com.

3.13 System set-up support

The A-CDM system is an extremely flexible environment that has many adaptable features. If any users wish to propose changes to the existing functions, user interface details or other aspects of the system, an email is to be sent to the MO-AF acdm@gtaa.com with the subject “SYSTEM SETUP”, providing a detailed description of the reason a change is being proposed and the change itself. The proposal will be submitted to the appropriate body for consideration and possibly implementation. The originator will be informed of the decision and the date of implementation of the change if the proposal is accepted.

4 A-CDM Event Management (CEM)

4.1 Events in CEM

4.1.1 Events

Prior to the introduction of A-CDM at YYZ Airport, events and adverse conditions resulted in a number of telephone calls to key departments to inform, update and validate information across the airport. In order to **reduce** the calls and **raise efficiency** as well as providing traceability, the A-CDM Event Management (CEM) application was developed as a communication tool, tailored for A-CDM needs.

Within CEM, the use of event templates, a single role that create events, and only 2 additional roles for collaborating and providing feedback for events creates consistency and transparency across all internal and external partners. At YYZ, an event will primarily be considered as a condition that impacts airport operations (flow). Within any CEM Event, all users fall within the role of either creator (Manager Operations, Airport Flow), Reviewer (internal GTAA and Core Planning Group) or Recipient (comprised of internal and external partners).

Most events will go through a planning period ensuring that prior to being published for all recipients there is opportunity to provide pertinent information that will support all partners as they prepare for and coordinate activities to minimize the effects of the event.

One benefit of A-CDM is common situational awareness for all partners. One event that ensures this benefit is the Daily Briefing, an event that will be sent out on a recurring basis, twice daily at set times.

4.1.2 Event Roles

Creator

The Creator, which is the Manager Operations, Airport Flow (MO-AF), creates events in the Events Manager and publishes them for a responses from specific Reviewers. Once responses and proposals (requests for changes) are received, the Creator accepts or rejects proposals and then publishes the events to be viewable by the Recipients.

Reviewers

There are two sets of Reviewers: Internal GTAA, and Core Planning Group.

The first Reviewers (Internal GTAA) receive each event. Based on the permissions designated by the Creator, each Reviewer may propose changes for specific event attributes, as well as upload documents and provide comments. These changes are submitted to the Creator for acceptance/rejection.

Once the first set of Reviewers have completed the reivew, the Creator adds the second set of Reviewers (Core Planning Group) to the review group. These second Reviewers receive the event, and may propose changes, upload documents, and provide feedback. These changes are submitted to the Creator for acceptance/rejection prior to publishing the event to the broader group of Recipients.

Recipients

Recipients are a broad group of stakeholders comprising members of NAV Canada, WestJet, Air Canada, and GTAA. Each Recipient receives notifications of the event, and can view details within the Event Manager. The Recipient can provide comments beginning 24 hours prior to planned events, and at 4am and 4pm for recurring Daily Briefings.

4.1.3 Types of Events

Events fall into 3 different categories:

- Planned Events
- Unplanned Events
- Repeated Events

Planned Events

A planned event undergoes a planning stage that commences 72 hours prior to the event. The 72 to 24 hour timeframe is considered the “pre-planning phase” for the event. During this time, the Creator creates the event and sends it to the designated Reviewers with a request for feedback. The first review is performed by the Internal GTAA group. Once completed, the Creator sends the event for the second review, performed by the Core Planning Group. At 24 hours prior to the event, the event’s details are distributed to the Recipients for review and feedback.

Unplanned Events

Unplanned events do not have a pre-planning phase. An example of this kind of event might be a Security Event, where no extended time is available to plan the approach to the event. In this situation, existing protocols are followed.

Recurring Events

Recurring/repeated events are events which recur in a specific timeframe. An example of this is the Daily Briefing, which occurs at 4am and 4pm local time, every day.

NOTE: For further information about CEM Creation, please refer to the guide on this subject titled “A-CDM CEM Creation”.

Attachment 1 - Glossary

1 Abbreviations

Abbreviation	Meaning	Explanatory notes
2D	Two Dimensional	
a/d	Aerodrome	
ACARS	Aircraft Communications Addressing and Reporting System	
ACC	Area Control Centre	
A-CDM	Airport Collaborative Decision-Making	
A-CDM@YYZ	A-CDM Project at Toronto Pearson International Airport	Project name
ACGT	Actual Commencement of Ground Handling Time	
ACID	Aircraft Identification	As specified by ICAO
ACISP	Airport CDM Information Sharing Platform	
ACZT	Actual Commencement of Deicing Time	
ADEP	Aerodrome of Departure	
ADES	Aerodrome of Destination	
ADIT	Actual Deicing Time	
AEGT	Actual End of Ground Handling Time	
AEZT	Actual End of Deicing Time	
AGHT	Actual Ground Handling Time	
AIBT	Actual In-Block Time	
AIC	Aeronautical Information Circular	
AIP	Aeronautical Information Publication	
AISIS	Airport Status Information Service	
ALDT	Actual Landing Time	
AMAN	Arrival Manager	
AMF	Airside Maintenance Facility	
AMMSE	Airport Map Management Service	
AMU	Apron Management Unit	
ANSP	Air Navigation Service Provider	
A/O	Aircraft Operator	
AOBT	Actual Off-Block Time	
AODB	Airport Operational Data Base	
APP	Approach Control Unit	
ARDT	Actual Ready Time	
ARR	Arrival	
ARZT	Actual Ready for Deicing Time	
ASAT	Actual Start-up Approval Time	
ASBT	Actual Start Boarding Time	
ASDE	Aerodrome Surface Detection Equipment	
ASRT	Actual Start-up Request Time	
At	Airborne Trajectory	

Abbreviation	Meaning	Explanatory notes
ATC	Air Traffic Control	
ATCO	Air Traffic Controller	
ATIS	Automatic Terminal Information Service	
ATOIS	Airport Tow Information Service	
ATOT	Actual Take Off Time	
ATS	Air Traffic Services	
ATTT	Actual Turnaround Time	
ATYP	Aircraft Type	
AXIT	Actual Taxi-In Time	
AXOT	Actual Taxi-Out Time	
BAFIS	Baggage Flow Information Service	
CAATS	Canadian Automated Air Traffic System	
CAC	CDM in Adverse Conditions	Process
CAFIS	Cargo Flow Information Service	
CBA	Cost-Benefit Analysis	
CCTV	Closed Circuit Television	
CDF	Central Deicing Facility	
CDM	Collaborative Decision-making	
CDMIS	CDM Information Sharing Service	
CLSGN	Aircraft Call-sign	
COMFU	Collaborative Management of Flight Updates Service	
CONOPS	Concept of Operations	
CTOT	Calculated Take-Off Time	
CWMAS	Caution and Warning Management Service	
CWP	Controller Working Position	
D	Deliverable	
DEMAS	Deicing Management Service	
DEP	Departure	
DLA	Delay	Sometimes replaced with DLY
DIM5	Trajectory 5th Dimension	Economic value/priority indicator
DMAN	Departure Management	
DOF	Date of Flight	
DPI	Departure Planning Information	Message
EC	European Commission	
ECZT	Estimated Commencement of Deicing Time	
EDCT	Expect Departure Clearance Time	
EDIT	Estimated Deicing Time	
EET	Estimated Elapsed Time	
EEZT	Estimated End of Deicing Time	
EFPS	Electronic Flight Progress Strip	
EIBT	Estimated In-Block Time	
ELDT	Estimated Landing Time	
EOBT	Estimated Off-Block Time	
ERDT	Estimated Ready Time	
ERZT	Estimated Ready for Deicing Time	
ETA	Estimated Time of Arrival	
ETD	Estimated Time of Departure	
ETOT	Expected Take-Off Time	

Abbreviation	Meaning	Explanatory notes
ETTT	Estimated Turnaround Time	
EUROCONTROL	European Organization for the Safety of Air Navigation	
EXIT	Estimated Taxi-In Time	
EXOT	Estimated Taxi-Out Time	
FAA	Federal Aviation Administration	
FCFS	First Come First Served	
FDPS	Flight Data Processing system	
FIR	Flight Information Region	
FLTNR	Flight Number	
FMP	Flow Management Position	
FMU	Flow Management Unit	
FPL	Filed Flight Plan	
FRD	Functional Requirements Document	
FUM	Flight Update Message	
GH	Ground Handler	
GHA	Ground Handling Agent	
Gt	Ground Trajectory	
GTAA	Greater Toronto Airports Authority	
IATA	International Air Transport Association	
ICAO	International Civil Aviation Organisation	
ICD	Interface Control Document	
IDANS	Identity and Authorization Service	
IOCC	Integrated Operations Control Centre	
It	Idle trajectory	
IT	Information Technology	
KPI	Key Performance Indicator	
KPIMS	KPI Management Service	
LWS	Lightning Warning System	
MAMAS	Milestone Management Service	
MLAT	Multilateration	
MO-AF	Manager Operations, Airport Flow	
MTTT	Minimum Turnaround Time	
MVT	Movement	IATA message category
NAV Canada	Canadian Air Navigation Service Provider	
NOTAM	Notice to Airmen	
OCC	Operations Control Centre	
ODLIS	Operational Document Library Service	
OIS	Operational Information System	
ONTIME	NAV Canada CDM Project	
OOOI	Gate out, wheels off, wheels on, gate in	
OPMSG	Operational Messaging Service	
PAFIS	Passenger Flow Information Service	
PAT	Process Analysis Table	
PAX	Passengers	

Abbreviation	Meaning	Explanatory notes
PDT	Process Description Table	
PSMES	Parking Sequence Management Service	
R/T	Radiotelephony	
REG	Aircraft registration	
REPLY	Recording and Playback Service	
RMS	Resource Management System	
RMU	Resource Management Unit	
ROI	Return on Investment	
RTC	Real Time Control	
RWY	Runway	
SDIT	Scheduled Deicing Interval Time	
SDT	Sub-process Description Table	
SET	Service Description Table	
SIBT	Scheduled In-Block Time	
SID	Standard Instrument Departure	
SITA	Société Internationale de Télécommunications Aéronautiques	
SLOT	Airport Slot	Different from ATFM Slot
SOBT	Scheduled Off-Block Time	
SOC	System Operations Control	
SOP	Standard Operating Procedure	
SPEA	Scheduled, Planned, Estimated, Actual	Operational Time Categories
SPOT	Single Point of Truth	
STAR	Standard Arrival Route	
STOC	Station Operations Control	
STTT	Scheduled Turnaround Time	
SWIM	System Wide Information Management	
SYSTS	System Setup Service	
TBD	To be defined	
TCU	Terminal Control Unit	APP
TFMS	Traffic Flow Management System	
THR	Threshold	
TITAN	Trajectory Integration in Turnaround and Network	EC project
TLDT	Target Landing Time	
TMI	Traffic Management Initiative	
TMU	Traffic Management Unit	FMP
TOBT	Target Off-Block Time	
TOT	Take Off Time	
TRACS	Trajectory Creation Service	
TRAMS	Trajectory Management Service	
TSAT	Target Start-up Approval Time	
TSATS	Target Start-up Approval Time Service	Not to be confused with the plural of TSAT (more than one TSAT). TSAT Service is denoted as TSATS (capital S), while more than one TSAT is denoted as TSATs (lowercase s).
TTOT	Target Take-Off Time	
TWR	Aerodrome Control Tower	
TWY	Taxiway	
TYP	Aircraft type	
VCS	Voice Communications System	

Abbreviation	Meaning	Explanatory notes
VDGS	Visual Docking Guidance System	
VTT	Variable Taxi Time	
VTTC	Variable Taxi Time Calculation	
VTTCS	Variable Taxi Time Calculation Service	
YYZ	Toronto Pearson International Airport	IATA Airport designator

2 Standard time parameters and metrics

Acronym	Meaning	Explanation
ACGT	Actual Commencing of Ground Handling Time	The time when ground handling on an aircraft starts, usually equal to AIBT (to be determined locally). It will be different from AIBT in cases when LWS event is in effect, where passengers leave the aircraft but ground handling as such starts only when the LWS event is cancelled.
ACZT	Actual Commencement of Deicing Time	The time when deicing operations on an aircraft starts
ADIT	Actual Deicing Time	Metric AEZT – ACZT
AEGT	Actual End of Ground handling Time	The time when ground handling on an aircraft ends, can be equal to ARDT (to be defined locally)
AEZT	Actual End of Deicing Time	The time when deicing operations on an aircraft end
AGHT	Actual Ground Handling Time	The total duration of the ground handling of the aircraft. Metric AEGT - ACGT
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)
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)
ARDT	Actual Ready Time (for Movement)	When the aircraft is ready for pushback/start-up or taxi immediately after clearance delivery, meeting the requirements set by the TOBT definition
ARZT	Actual Ready for Deicing Time	The time when the aircraft is ready to be de-iced
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
ASRT	Actual Start-up Request Time	Time the pilot requests start-up clearance.
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
CTOT	Calculated Take Off Time	A time calculated and issued by the appropriate Central Management unit, as a result of tactical slot allocation, at which a flight is expected to become airborne. (ICAO Doc 7030/4 – EUR, Table 7). In the YYZ context, this will be issued by NAV Canada.
ECZT	Estimated Commencement of Deicing Time	The estimated time when deicing operations on an aircraft are expected to start
EDIT	Estimated Deicing Time	Metric EEZT – ECZT
EEZT	Estimated End of Deicing Time	The estimated time when deicing operations on an aircraft are expected to end
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)
ERDT	Estimated Ready Time	ERDT = ELDT + EXIT + MTTT or ERDT = AIBT + MTTT
ERZT	Estimated Ready for Deicing Time	The estimated time when the aircraft is expected to be ready for deicing operations
ETOT	Estimated Take Off Time	The estimated take off time considering 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 or remote deicing prior to take off
MTTT	Minimum Turn-round Time	The minimum turn-round time agreed with an aircraft operator/ground handler for a specified flight or aircraft type
SIBT	Scheduled In-Block Time	The time that an aircraft is scheduled to arrive at its parking position
SOBT	Scheduled Off-Block Time	The time that an aircraft is scheduled to depart from its parking position
STTT	Scheduled Turn-round Time	Metric SOBT - SIBT
TOBT	Target Off-Block 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 pushback/start-up immediately upon reception of clearance from the TWR. (Equivalent to Airline/Handler ETD –Estimated Time of Departure)
TSAT	Target Start-up Approval Time	The time provided by ATC considering TOBT, CTOT and/or the traffic situation that an aircraft can expect start-up /push back approval Note: The actual start-up approval (ASAT) can be given in advance of TSAT
TLDT	Target Landing Time	Targeted Time from the Arrival management process at the threshold, taking runway sequence and constraints into account. It is not a constraint, but a progressively refined planning time used to coordinate between arrival and departure management processes. Each TLDT on one runway is separated from other TLDT or TTOT to represent vortex and/ or SID separation between aircraft
TTOT	Target Take Off Time	The Target Take Off Time considering 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

3 Definitions

Term	Definition
A-CDM Management Desk (AMANDE)	Designated working position equipped, operated and manned by the GTAA responsible for providing supervision, support and troubleshooting to the A-CDM processes in daily operations. Feedback is also generated by AMANDE with the aim of improving operations overall.
Actual Time	Time expressing the actual position of an event on the time axis.
Airborne trajectory	The Airborne Trajectory (At) is a trajectory that is fully in the air, with no ground part.
Airport Slot	An airport slot is defined as the scheduled time of arrival or departure available for allocation by, or as allocated by, a coordinator for an aircraft movement on a specific date at a specific time at a coordinated airport. It is different from the Air Traffic Management (ATFM) slot (see below).
ATFM Slot	ATFM slots are given to aircraft when air traffic demand and capacity needs to be balanced. An ATFM slot determines when an aircraft may take off thereby bringing actual demand in line with the available capacity (en-route and/or airport). The ATFM slot is called CTOT (Calculated Take Off Time) and it is a window of given width (in Europe it is 15 minutes, ranging from 5 minutes before to 10 minutes after the target take off time) with aircraft expected to take off within this window. Note the difference between and Airport Slot and an ATFM slot. An airport slot gives a right to operate on a given day at a given time (ensuring that the airport operates within its overall capacity limits). An ATFM slot determines when aircraft may operate to ensure that traffic demand remains within the capacity of the air traffic control system. See also EDCT.
Business Service	Business services are the entities that perform defined tasks that a process/sub-process needs to complete successfully. As an example, the Passenger Flow Information Service monitors the flow of passengers and if a disturbance is noted, it generates warnings and other outputs to other services, systems or human operators.
Calculated Time	Time expressing a requirement (e.g. to take-off at).
Data	Facts about something that can be used in calculating, reasoning, or planning.
Data oriented solution	Solution where the exact format and meaning of the data generated and exchanged is strictly defined but the way this data is displayed at partner locations is fully free and depends on their specific needs and HMI preferences. This ensures that while partners are looking at the same reality, the actual presentation may vary by partner and can be made to fit their individual requirements.
eBrochure	Electronic brochure containing abbreviated information about a well-defined subject or collection of subjects in the form of text, pictures, links to other media and so on. eBrochures are normally available only on electronic media but in many cases the content may be printed with some of the content being lost in the process.
EDCT	Expect Departure Clearance Time is issued by air traffic control in North America when traffic is subject to a Traffic Management Program and it indicates the time the aircraft should expect to receive its departure clearance. It is a “wheels-up” or “take-off” time. EDCT is a time slot of defined width and has the same function as the CTOT in Europe.
eLearning	Electronic learning aid suitable for self-study about a given subject.
Estimated Time	Time expressing an expectation.
EVENT	An EVENT is a set of useful, contextually related information related to an occurrence put together by the human operator and the system, with a view to informing other partners and to coordinate with them as necessary. For example, a security breach in a terminal is an occurrence that gives rise to a Security Event.
Ground trajectory	The Ground Trajectory (Gt) is a trajectory that is fully on the ground, with no airborne part.
Idling trajectory	A trajectory is considered to be idling when only its time dimension is evolving. This the case when the aircraft allocated to the trajectory concerned is at the gate or stand during turnaround, is at the parking/staging area or is waiting for a LWS event to be terminated. The trajectory of an aircraft that stops on a taxiway as part of its progress towards line-up in a queue of aircraft is not considered as being idle.
Inbound control point	Any of the defined points on the YYZ taxiway system where control of taxiing aircraft is transferred from aerodrome control to ramp control.

Information	Data put into context.
Invalid (data)	Referring to a sequence or a numerical value, the term invalid means that the subject it is referring to does not meet the applicable requirements or would result in a breach of the applicable constraints.
Key Performance Indicator (KPI)	KPIs are measurable values that show how effectively an organization is achieving selected key business objectives.
Locked trajectory	10 minutes prior to TOBT the trajectory is locked in order to achieve a stable sequence.
Milestone	Milestones represent checkmarks along the evolution of a process or sub-processes, providing control points using which the actual completion status of the sub-process can be established and also forecasts can be made as to the future evolution of the sub-process. There are two types of milestones, minor and major. Minor milestones are used to track evolution on a sub-process level. For instance, the start and end time of each sub-process is a minor milestone. Major milestones are designated milestones used to track the evolution of the turnaround process itself. Some minor and major milestones may be identical.
Occurrence	An identifiable happening that impacts any aspect of the operation of the airport and which may result in the triggering of an EVENT. For example, a failure of the baggage sorting system is an occurrence that may give rise to a Passenger Handling Event.
ONTIME	CDM project to be implemented by NAV Canada.
Outbound control point	Any of the defined points on the YYZ taxiway system where control of taxiing aircraft is transferred from ramp control to aerodrome control; or from aerodrome control to the CDF; or from the CDF to aerodrome control.
Passenger lounge	Defined area in the terminal building designated for the congregation of departing passengers assigned to a given boarding gate.
Planned Time	Time expressing the updated scheduled time which may be equal to it.
Process	A process is defined as the sum-total of activities that must be completed to achieve a given business aim on a timely basis with the required quality. As an example, the aircraft turnaround is such a process.
Scheduled Time	Time determined in the strategic phase of operations, expressing a plan.
Sub-process	A sub-process is defined as a given activity that must be completed for a process to be able to complete. For example, aircraft cleaning or fuelling are sub-processes of the aircraft turnaround process.
Target position	The position used in Variable Taxi Time Calculation constituting the point to which the elapsed time from the actual position is calculated.
The 5th dimension of the aircraft trajectory	The 5th dimension, the economic value expresses the value of the trajectory to the aircraft operator in terms of the profits or loss it can incur if it is distorted compared to the originally agreed form. It can be used for prioritizing the trajectory if the operator so wishes.
Trajectory	Trajectory is defined as the series of points expressed in 5 dimensions (3 spatial, 1 time and 1 economic value) that an aircraft has occupied or will occupy.
Trajectory based operations	Air traffic management concept which focuses on the management of trajectories as opposed to individual aircraft.
Valid (data)	Referring to a sequence or a numerical value, the term valid means that the subject it is referring to meets the applicable requirements or would result in meeting of the applicable constraints.

Attachment 2 – List of External Links

Name	URL	Description
The CDM Stakeholders Group (CSG)	http://cdm.fly.faa.gov/?page_id=673	
The Flow Evaluation Team (FET)	http://cdm.fly.faa.gov/?page_id=47	
The Future Concepts Team (FCT)	http://cdm.fly.faa.gov/?page_id=206	
The CDM Training Team (CTT)	http://cdm.fly.faa.gov/?page_id=210	
The Weather Evaluation Team (WET)	http://cdm.fly.faa.gov/?page_id=219	
The Surface CDM Team (SCT)	http://cdm.fly.faa.gov/?page_id=221	
The CDM Automation Team (CAT)	http://cdm.fly.faa.gov/?page_id=225	
PERTI Evaluation Team (PET)	http://cdm.fly.faa.gov/?page_id=2712	
AIS Publications	http://www.NAV Canada.ca/EN/products-and-services/pages/aeronautical-information-products-publications.aspx	NAV Canada Aeronautical Publications
Changi Airport, Singapore	http://changiairport-cdm.sg/acdm.html	A-CDM Overview at Changi
Hong Kong International Airport A-CDM Operations Guidelines	http://extranetapps.hongkongairport.com/iwov_extra/OpenFile/Hong+Kong+International+Airport+A-CDM+Operations+Guidelines_v01.10.pdf?path=%2Fetra%2FExtranet%2FABU%2FProcedures%2FA-CDM+Operations+Guidelines%2FHong+Kong+International+Airport+A-CDM+Operations+Guidelines_v01.10.pdf	Procedures for A-CDM Guidelines at Hong Kong International Airport
Toronto Pearson International Airport	https://torontopearson.com/	Pearson Airport's website
Société Internationale de Télécommunications Aéronautiques (SITA)	https://www.sita.aero/	SITA Website
The Performance Based Approach to Navigation (PBN)	https://www.icao.int/SAM/Documents/2009/SAMIG3/PBN%20Manual%20-%20Doc%209613%20Final%205%2010%2008%20with%20bookmarks1.pdf	ICAO PBN Manual (PDF)
Total Airport Management (TAM)	https://www.eurocontrol.int/eec/public/standard_page/EEC_News_2006_3_TAM.html	EUROCONTROL information on Total Airport Management
YYZ ACDM Website	https://www.torontopearson.com/en/operators-at-pearson/getting-started/a-cdm	Pearson Airport's A-CDM Page
Online Coordination (OCS)	https://www.online-coordination.com	Permission for General and Business Aviation to operate at Pearson Airport