



International Civil Aviation Organization

The Third Meeting of ICAO Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG/3)

Singapore, 10 – 14 March 2014

Agenda Item 5: Development of Regional ATFM Framework

ATFM MESSAGES, TERMINOLOGY, AND NETWORK INTEROPERABILITY

(Presented by the Secretariat)

SUMMARY

This paper discusses the development and adoption of a standardized set of ATFM terminologies for use in the Asia/Pacific Region to promote harmonization and interoperability of CDM/ATFM systems and procedures.

1. INTRODUCTION

1.1 Global development of ATFM has largely been undertaken in isolation by individual Air Navigation Service Providers, EUROCONTROL, ICAO Sub-Regions or other informal groups of States, or by ATFM system vendors. This has resulted in differences in concept development, and in the technical terms used for operational and technical coordination of ATFM information.

2. DISCUSSION

2.1 The development of the Asia/Pacific Regional Framework for ATFM provides the opportunity to also develop a standardized set of terminologies, messages and message formats, and communications protocols for collaborative ATFM. The first step in this process is agreement on a set of ATFM terminologies. **Attachment A**, provided by CANSO, lists the terminologies in use in Australia, EUROCONTROL, Japan, North America and South Africa. Excerpts from ICAO Doc 9971 related to ATFM messages and communications are provided in **Attachment B**.

2.2 ATFM/SG should also give consideration to the future development of a Regional ATFM Interface Control Document (ICD). This document, as an appendix to the Regional Framework, would specify ATFM system communications requirements for performance, communications protocols, message formats and terminologies.

2.3 By agreeing to an appropriate set of ATFM terminologies and messages for the Asia/Pacific Region the ATFM/SG has the opportunity to also influence the global interoperability of CDM/ATFM.

2.4 The Interim Framework for Collaborative ATFM includes consideration of ATFM messages. Such messages should be limited to those required for the Tactical ATFM measures under consideration, and should be expected to be coordinated by voice in early implementation stages, pending the increased introduction of ATFM systems.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) discuss and agree to a set of ATFM terminologies
- c) discuss and agree to a set of ATFM and messages for use in Interim Framework for Collaborative ATFM; and
- d) discuss any relevant matters as appropriate.

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Acronym	North America	South Africa	Australia	Eurocontrol	Japan	Description
EAFT	EAFT	EAFT	EAFT			Estimated Arrival Fix Time
EET	EET	EET	EET	EET	EET	Estimated Elapsed Time
EIBT		EIBT	EIBT	EIBT		Estimated In Block Time
EOBT	EOBT	EOBT	EOBT	EOBT	EOBT	Estimated Off Block Time
EPS	EPS	EPS	EPS	EPS	EPS	Airport Engineering Performance Standards
ETA	ETA	ETA	ETA	ETA	ETA	Estimated Time of Arrival
ETD	ETD	ETD	ETD	ETD	ETD	Estimated Time of Departure
FEA	FEA					Flow Evaluation Area
FCA	FCA	FCA				Flow Constrained Area
GA	GA	GA	GA	GA	GA	General Aviation
GCD	GCD	GCD	GCD	GCD	GCD	Great Circle Distance
GDP	GDP	GDP	GDP			Ground Delay Program
GS	GS	GS				Ground Stop
IFR	IFR	IFR	IFR	IFR	IFR	Instrument Flight Rules
ILS	ILS	ILS	ILS	ILS	ILS	Instrument Landing System
IMC	IMC	IMC	IMC	IMC	IMC	Instrument Meteorological Conditions
IOBT	IOBT	IOBT	IOBT	IOBT	IOBT	Initial In Block Time
LAADR	LAADR					Low Altitude Arrival/Departure routing
MINIT	MINIT					Minutes in Trail
MIT	MIT					Miles in Trail
PEET	PETE	PEET	PEET			Planned Estimated Elapsed Time
PLDT	PLDT	PLDT	PLDT			Derived Landing Time from flight plan
POBT		POBT	POBT	POBT		Planned Off Block Time
PRM		PRM	PRM	PRM		Precision Runway Monitor
PTOT		PTOT	PTOT			Derived Take Off time from Flight Plan
RLSD	RLSD					Released
SEET		SEET	SEET			Derived elapsed en route time from schedule data
SIBT		SIBT	SIBT	SIBT		Scheduled In Block Time
SID	DP	SID	SID	SID	SID	Standard Instrument Departure

Acronym	North America	South Africa	Australia	Eurocontrol	Japan	Description
SLDT		SLDT	SLDT			Derived landing time from schedule data
SOBT		SOBT	SOBT	SOBT		Scheduled Off Block Time
STAR	STAR	STAR	STAR	STAR	STAR	Standard Terminal Arrival Route
STOT		STOT				Derived take off time from schedule data
STRSN	STRSN	STRSN				Standard Transition
SVRWX	SVRWX					Severe Weather
SUB	SUB	SUB	SUB	SUB	SUB	Substitution
SWAP	SWAP					Severe Weather Avoidance Plan
TMI	TMI	TMI	TMI	REGULATION		Traffic Management Initiative
TRACON	TRACON	APP				Terminal Radar Facility
VFR	VFR	VFR	VFR	VFR	VFR	Visual Flight Rules
VSBY	VSBY	VIS				Visibility
VMC	VMC	VMC	VMC	VMC	VMC	Visual Meteorological Conditions
TAF	TAF	TAF	TAF	TAF	TAF	Aerodrome Forecast

with more or less accuracy and both their scope and likely effects are predictable. Snowy conditions, industrial action allowing the maintenance of elementary services, etc. would fall in this category. A fire or aircraft incident/accident is more difficult to prepare for in terms of procedures. In fact, too detailed, pre-arranged procedures may even be more of a hindrance than a help. The adverse conditions element aims to enable the management of reduced capacity in the most optimal manner possible and to facilitate a swift return to normal capacity once adverse conditions no longer prevail, by using the improved information-sharing results from the previous elements. The CDM cell or coordinator who is fully familiar with the A-CDM principles may facilitate operations during adverse conditions.

1.9 Collaborative management of flight updates

The coordination between ATFCM and A-CDM during the turn-around process by constant exchange of flight messages is called A-CDM collaborative management of flight updates. The exchange includes flight update messages (FUM) for arriving flights sent by the network to the CDM airport, as well as departure planning information (DPI) messages for departing flights sent from the airport to the network. The slot allocation process is improved, CTOTs better match the target off-block times (TOBT), resulting in reduced delays, less wasted slots and better management of network resources.

1.10 Relevant documents

The following documents provide additional background on airport-CDM:

- a) *European Airport CDM* <http://www.euro-cdm.org/>
- b) *European Community Specification EN303212*
http://www.euro-cdm.org/library/airports/a-cdm_community_spec_doc_etsi.pdf
- c) *Airport CDM Implementation "The Manual"*
http://www.euro-cdm.org/library/cdm_implementation_manual.pdf
- d) *Example airports* http://www.euro-cdm.org/airports_cdg.php
- e) *Flight Crew Briefing and Brief Description Document Frankfurt*
[http://www.cdm.frankfurt-airport.com \(library\)](http://www.cdm.frankfurt-airport.com (library))

1.11 Gate/spot allocation meeting (Example: Republic of Korea)

1.11.1 To effectively manage the airport capacity, every airport has its own gate/spot allocation meeting which is hosted by the airport corporation and participating airlines, ground-handling agencies, etc. Before holding the meeting, each airline submits its seasonal schedule which contains aircraft disposition message (ADM) information and airport corporation input ADM information to the gate/spot allocation system which is called the integrated Flight Information System (iFIS). Upon completion of ADM information input, iFIS assigns gates/spots for all flights automatically. Based on this information, the meeting arranges gates/spots and finalizes the gate/spot allocation plan; the plan is then used as a basic ramp operation reference during the season.

Ex) Example of ADM Message;

Message) HL7240 1002 1209 1210 1851 1852

Description) HL7240 (Registration Number) will be connected as KAL1002, KAL1209, KAL1210, KAL1851, KAL1852

5.2.4.3 **Step 3 — Notification of expected ATM measures in advance**

5.2.4.3.1 In the second phase of international ATFM implementation, if an ATFM centre plans to implement ATM measures, it must coordinate them with the other units and relevant stakeholders of its region or subregion before actually implementing them. This allows the envisaged set of measures to be further improved as all stakeholders are involved in the decision-making process, thus increasing the robustness of the chosen set of measures.

5.2.4.3.2 Once the appropriate coordination has been conducted at the international level, with the appropriate stakeholders, each ATFM centre then publishes its ADP. (See Part II, 2.3.3 for further guidance on ADP.)

5.2.4.3.3 This coordinated and cooperative approach ensures that the solutions that are chosen are understood and implemented in the most effective manner.

5.2.4.3.4 Automated information exchange is an important enabler of international ATFM. Automated exchange systems ensure constant updates and contribute to maintaining the situational awareness of all the relevant stakeholders. It should be pointed out that the existence of those systems, involving a wide range of stakeholders, further emphasizes the importance of standardizing the format of the messages exchanged in the ATFM processes.

5.2.4.3.5 Step 2 of international ATFM is a phase where all the ATFM units of a region or subregion pool their resources to collectively agree on and implement a common ATFM action plan, therefore providing a seamless ATFM service for their region or subregion.

5.2.4.4 **Key elements of international ATFM**

5.2.4.4.1 International ATFM ensures that all the relevant stakeholders gain the adequate awareness of ATFM planning during strategic, tactical and pre-tactical phases.

5.2.4.4.2 International ATFM contributes to ensuring transparency of all ATFM activity for all stakeholders.

5.2.4.4.3 Post-operational analysis is a key element to improving ATFM in general. It is even more important in international ATFM because the collected data and lessons learned can be rapidly shared throughout the entire region or subregion in order to further enhance ATFM provision and its related policies.

Chapter 8

ATFM COMMUNICATION

8.1 COMMUNICATION

The communication and exchange of operational information between stakeholders on a real-time basis forms the backbone of ATFM. This exchange may be accomplished by a variety of means including by telephone, web conferences, email, electronic data exchange and web page displays. The purpose of the information exchange is to increase stakeholder situational awareness, to improve operational decision-making, and to enhance the efficiency of the ATM system.

8.2 STAKEHOLDER ATFM COMMUNICATION

8.2.1 An ATFM unit requires several layers of communication. As a basis for the exchange of information, NOTAM and AIP supplements could be used to distribute instructions relating to the application of ATFM measures. For example, strategic ATFM routing information and certain ATFM operating procedures could be published as a NOTAM or in the AIP supplement.

8.2.2 As the functionality of an ATFM unit develops, consideration should be given to developing a more ATFM specific communication structure for the notification of ATFM measures. For example, to facilitate AU awareness, the ATFM unit could produce and distribute the ADP on the day prior to the operation in order to provide a summary of the planned operations and ATFM measures in their area of responsibility. It could also allow distribution of any specific instructions or communications requirements associated with those measures and could be updated by ADP amendments.

8.2.2.1 In order to ensure that AUs and other stakeholders can properly use and apply this information, a standard format should be employed.

8.2.3 In addition to the production and distribution of ADPs, the ATFM unit could produce ATFM messages to provide information and guidance. These messages could be used for the initial publication of changes in the availability of runways, ATS routes and airspace in the area, and could serve as the vehicle for the initial publication of new and amended ATFM operating procedures, which affect all users.

8.2.4 The ADPs and ATFM information messages could be transmitted via agreed-upon means to ATC units, AUs, and other stakeholders who wish to be included on the distribution list and could also be made available on associated ATFM unit websites.

8.2.5 Each national AIP could include ATFM information on specific arrangements for dealing with ATFM issues and coordination matters as well as the telephone numbers of relevant ATFM units to contact for ATFM advice and information.

8.3 ATFM COMMUNICATION OVERSIGHT

8.3.1 For consistency, the appropriate authority should ensure that a single office provides oversight of the dissemination of ATFM information and measures, and is responsible for monitoring, collecting and disseminating that information. This oversight will ensure that applicable information is shared by all ANSPs and operational stakeholders in a timely and efficient manner.

8.3.2 Examples of applicable ATFM information include but are not limited to:

- a) current airport runway configurations;
- b) AARs;
- c) airport departure demands;
- d) en-route sector demand and capacity imbalances;
- e) runway closure or airport conditions;
- f) NAVAID outages;
- g) ATM infrastructure; and
- h) activities on airspace under restrictions or reservations.

8.3.2.1 Specific categories of information will be determined by the ATFM unit in collaboration with stakeholders.

8.3.3 ATFM units should develop an internal operations manual for their respective facilities to address the ATFM measures process. For example, the operations manual could include provisions to:

- a) coordinate and disseminate information related to the implementation of ATFM measures through specified means such as telephone calls, aeronautical messages, web pages, or any other suitable method;
- b) disseminate information on the constant monitoring and adjusting of ATFM measures; and
- c) disseminate information on the timely cancellation of ATFM measures.

8.4 COMMUNICATING ATFM INFORMATION

8.4.1 There is a requirement for AUs and ATFM units to communicate and exchange information for the purposes of CDM and information dissemination.

8.4.2 Since the involvement of ATFM units and AUs may vary significantly, the tools for exchange of information must be geared to meet the stakeholder's capabilities and requirements.

8.4.3 When selecting communication methods, consideration should be given to maximizing the value and content of the information and minimizing the time and workload required.

8.4.4 The following communication methods are offered as examples:

- a) scheduled telephone (or web) conferences: these consist of defining times at which the ATFM units will hold daily operational conferences to exchange ATFM information and to meet their operational needs;
- b) tactical telephone conferences: these consist of establishing a procedure to convene non-scheduled ATFM teleconferences, held in real time and at a tactical level, in order to make the necessary operational adjustments; and
- c) automated web page or ATFM operational information system: ATFM units may create a web page or an information system containing relevant ATFM information (e.g. ADP) provided to share information about the ATM system in order to develop a common situational awareness and minimize the workload.

8.5 ATFM WEB PAGES

For ATFM units that elect to create web pages with relevant ATFM information, examples could include:

- a) airport operational status information:
 - 1) current and planned active runway configuration;
 - 2) AAR/departure rate;
 - 3) information concerning delays — duration and outlook;
 - 4) meteorological information;
 - 5) scheduled flight inspections/calibrations;
 - 6) ATFM measures;
 - 7) low visibility procedures;
 - 8) de-icing operations; and
 - 9) airport or runway closures;
- b) airspace operational status information:
 - 1) actual and planned capacity by sector;
 - 2) anticipated demand by sector;
 - 3) meteorological conditions likely to affect capacity or demand;
 - 4) special use airspace status; and
 - 5) ATFM measures;

- c) ATFM stakeholder planning teleconferences:
 - 1) schedules; and
 - 2) joining instructions;
- d) ATFM strategic, pre-tactical and tactical plans; and
- e) links to ATFM-related information:
 - 1) weather websites;
 - 2) ACC and APP contact information;
 - 3) letters of agreement;
 - 4) route information;
 - 5) GNSS operational status;
 - 6) ATFM-related NOTAMs; and
 - 7) contingency plans.

8.6 ATFM TERMINOLOGY

8.6.1 What terminology/phraseology is used in ATFM?

8.6.1.1 One goal of this manual is to develop and promote standard terminology and phraseology for the exchange of ATFM telephone and automated messages. The information contained herein is intended to reflect the current use of plain language and provide a basis for harmonization.

8.6.1.2 ATFM operations should be conducted in a common language in a simple and concise manner. The use of local or regional colloquial terms should be avoided as they could induce confusion.

8.6.1.3 Coordination with international stakeholders may impose the use of English language, unless there is consensus to use another common language.

8.6.1.4 The use of standardized terminology as contained in this manual should be employed to guarantee global consistency on how ATFM messages are communicated among ATFM units. This includes the concept of modular and structured ATFM messages and defines the components of the message as who, what, when, where and why.

8.6.1.5 As with any communication model, it is the responsibility of both parties (sender and receiver) to ensure that the message is clear, concise, correctly understood and applied as requested.

8.6.1.6 Each ATFM coordination message should have five components (who, what, when, where, why) that contain plain language elements and that, when combined, provide a complete ATFM message as follows:

- a) *Who*: this identifies the parties involved — who is transmitting and receiving the message?

examples: CGNA THIS IS COLOMBIA FMU
CENAMER ACC THIS IS PANAMA ACC
CCFMEX THIS IS ATCSCC
JCAB THIS IS CFMU

- b) *What*: this identifies the objective to be achieved;

examples: REQUEST 30 MILES IN TRAIL
REQUEST 3 MINUTES IN TRAIL
REQUEST GROUND STOP

- c) *When*: this identifies the time and/or duration of the ATFM objective to be achieved;

examples: FROM NOW UNTIL 1700 UTC
FROM 2000 UTC TO 2130 UTC

- d) *Where*: this identifies the location of the ATFM objective to be achieved. It is often preceded by a modifying clause, indicating which aircraft or traffic the restriction will apply to. The modifying clause and the location combination are used to construct the “where” component;

examples: FOR ALL AIRCRAFT LANDING EL DORADO INTERNATIONAL AIRPORT
FOR ALL TRAFFIC LANDING CAIRO INTERNATIONAL AIRPORT
FOR ALL TRAFFIC FILED VIA B881

- e) *Why*: this identifies the reason for the ATFM objective:

examples: DUE TO SEVERE WEATHER OVER
EL DORADO INTERNATIONAL AIRPORT
DUE TO A LONG-RANGE RADAR OUTAGE
DUE TO EXCESS SECTOR DEMAND
DUE TO AN AIRCRAFT INCIDENT

8.6.2 Complete message

The following is an example of a complete message:

CGNA THIS IS COLOMBIA FMU. REQUEST 30 MILES IN TRAIL FOR ALL AIRCRAFT LANDING EL DORADO INTERNATIONAL AIRPORT FROM NOW UNTIL 1700 UTC DUE TO SEVERE WEATHER OVER EL DORADO INTERNATIONAL AIRPORT

8.6.3 Message amendment

8.6.3.1 The amendment of an ATFM message should include similar elements but with additional modifiers, including:

- a) change;
b) amend;

- c) reduce;
- d) increase; and
- e) decrease.

8.6.3.2 The following is an example of a message amendment:

GUAYAQUIL FMP THIS IS LIMA FMP, REDUCE YOUR MILES-IN-TRAIL TO JORGE CHAVEZ INTERNATIONAL AIRPORT FROM 30 MILES-IN-TRAIL TO 20 MILES-IN-TRAIL FROM 1400 UTC TO 1700 UTC DUE TO IMPROVING METEOROLOGICAL CONDITIONS AT JORGE CHAVEZ INTERNATIONAL AIRPORT

8.6.4 Message cancellation

8.6.4.1 The cancellation of an ATFM message should contain a cancelling word or phrase. Cancellation messages should also identify which message is being cancelled because several ATFM measures could be in place at one time. Normally, it is not necessary to state the reason for the cancellation, but it may be included. A cancelling word or phrase may include:

- a) cancel;
- b) resume;
- c) resume normal; and
- d) release.

8.6.4.2 The following is an example of a message cancellation:

CARACAS FMU THIS IS GEORGETOWN FMU, CANCEL THE GROUND STOP FOR CHEDDI JAGAN INTERNATIONAL AIRPORT DUE TO THE RUNWAY NOW OPEN

8.6.5 What resources are available to States regarding the various aspects of ATFM?

The information in Appendices A to G pertains to the implementation of ATFM between 2006 and 2013. It relates to the experiences of some States/international organizations in the planning, implementation and application of ATFM. These appendices provide information that can be used with regard to implementing an ATFM service.
