The Second Meeting of the ATFM Information Requirement Small Working Group (ATFM/IR/SWG/2)

Singapore, 29 – 30 November 2018

Agenda Item 5: Harmonization /Standardization Update/Discussion

TERMINOLOGY AND ACRONYM STANDARDIZATION

(Presented by the Secretariat)

SUMMARY

This paper proposes an action to standardize the terminology and acronym in ATFM harmonization, taking the CTO as an example to indicate that the attentions should be paid to the operational concept and the already existed standards when the new terminology and acronym need to be generated.

1. INTRODUCTION

1.1 The harmonization and standardization of the ATFM terminology and acronym are critical to ensure the interoperability. As stated in ICAO *Air Traffic Flow Management Manual* 3rd Edition (Doc. 9971), ATFM operations should be conducted in a simple and concise manner, using common language. The use of standardized terminology and acronym guarantees the uniform delivery of ATFM messages among various ATFM units on a global scale;

1.2 The APAC ATFM/SG also recognized the fact that the lack of standardized ATFM terminology and acronym has resulted in differences in concept development and in the technical terms used for operational and technical coordination of ATFM information. In the *Asia and Pacific Regional Framework for Collaborative ATFM Network*, an Asia/Pacific Region ATFM terminology for use in ATFM communication is developed and provided;

1.3 Based on the *Asia/Pacific Regional ATFM Concept of Operation* approved by APANPIRG/26, the regional ATFM concept adopts the Ground Delay Program (GDP) as the foundation of operations. GDP, by its definition, is a pre-tactical or tactical ATFM measure in an ATM process where aircraft are held on the ground in order to manage capacity and demand in a specific volume of airspace or at a specific aerodrome;

1.4 Two ATFM Projects concurrently in development in the Region, the Distributed Multi-Nodal ATFM Operation Trial (DMN-ATFM Ops Trial), and the North Asia Regional ATFM Harmonization Group (NARAHG), adopted the GDP as the primary ATFM measure with different operational procedures.

1.5 In NARAHG Project, an operation procedure between Node Leaders is as follows:

1.5.1 The Node Leader, where the flights are departing, allocates time slots over fixes along FIR boundary to each outbound flight, and send these time slots to other Node Leaders where the flights are to destine;

1.5.2 These Node Leaders, where the flights are arriving, could then either confirm or

change these time slots based on the constraints in capacity, and send these confirmed/revised time slots back to the Node Leader where the flights are to origin;

1.5.3 Then the Node Leader on flight departing side could generate CTOTs for outbound flights, based on these confirmed/revised time slots over the fixes of the FIR boundary.

1.6 In order to describe this process, two acronyms were used in the NARAHG project, i.e. CTO, Calculated Time Over, and ACTO, Assigned Coordination Time Over. The CTO serves as the time slot allocated by the Node Leader in flight outbound side and the ACTO serves as the revised time slot by the Node Leaders in flight inbound side;

1.7 The abovementioned procedure was discussed at the ATFM/IR/SWG/1 as part of the interface between NARAHG Project and DMN-ATFM Ops Trial Project, when the node in NARAHG Project acts as the Node Leader for outbound flight, and the nodes in DMN-ATFM Ops Trial Project react as the Node Leaders for inbound flights.

1.8 However it was identified that there were no discussions on the reversed scenario, where the Node Leaders in DMN-ATFM Ops Trial Project act as the ones for outbound flights, while the Node Leader in NARAHG, for inbound flights. At NARAHG/7 it was agreed that the NARAHG team should also consider this reversed scenario and develop the relevant procedures accordingly;

1.9 Based on the above-mentioned discussions, it was envisaged that probably there would be some new terminologies and acronyms being used in the cross-border ATFM network harmonization along with the evolving of the operational concept and procedures, consequently the standardization and harmonization of the terminologies and acronyms would be a critical consideration for IR/SWG;

2. DISCUSSIONS

2.1 To define and to standardize the terminology and acronym, attentions should be paid to the operational concept to which the terminology and acronym are representing, and to the relevant standards which have already been approved in use in the communities;

2.2 Taking CTO as an example, it was already defined in various documents (ref. **Attachment A** to this paper) to represent an operational concept that a time slot is set by ATFM unit for aircraft to comply with, for instance, as defined in ICAO Doc. 9971, that

> *CTO, Calculated Time Over. Time calculated and issued by an ATFM unit, as a result of tactical slot allocation, at which a flight is expected to be over a fix, waypoint or particular location. The implementation of this constraint may be carried out through tactical ATC intervention, such as speed control or route extension, or by having the aircraft meet the constrained time through the use of its Flight Management System RTA function.*

2.3 However in NARAHG Project (and extending to the interface between two Projects), the CTO was used as a time reference for further calculation of CTOT, not a decisive time slot for the aircraft to fly over within, as described in paragraph 1.5 – 1.7. In this example, a new suitable acronym should be carefully generated to reflect relative operational concept behind;

2.4 Another attention being paid is the relevant Standards, in our case, the FIXM. The new acronym, if necessary, should have no conflicts in its meaning and its form with the ones already defined in the data dictionary of FIXM, to ensure the uniqueness and to avoid ambiguity. When referring to the FIXM, it should also be noted that the changes in data dictionaries between different FIXM versions were made, for instance, the term "*Airspace Entry Time – Controlled*" in FIXM v2.0 and FIXM v3.0 has been removed in FIXM v4.0.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information presented in this paper; and

b) discuss any relevant matters as appropriate, and

c) to propose new terminologies and acronyms if needed

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Attachment A

THE CTO DEFINITION IN THE DOCUMENTS

1. ICAO Doc. 9971,

   CTO, Calculated Time Over. Time calculated and issued by an ATFM unit, as a result of tactical slot allocation, at which a flight is expected to be over a fix, waypoint or particular location. The implementation of this constraint may be carried out through tactical ATC intervention, such as speed control or route extension, or by having the aircraft meet the constrained time through the use of its Flight Management System RTA function.

2. Appendix D of the *Asia and Pacific Regional Framework for Collaborative ATFM Network,*

   CTO, Calculated Time Over, Time calculated and issued by ATFM Unit, as a result of tactical slot allocation, at which flight is expected to be over a fix, waypoint or particular location typically where air traffic congestion is expected (referred to in FIXM 2.0 as "Airspace Entry Time – Controlled");

3. AIP Supplement of CAAS (AIP SUP 091/2016 effective from 02 FEB 2017),

   CTO, time calculated and issued by ATFMU, as a result of tactical slot allocation, at which flight is expected to be over a fix, waypoint or particular location typically where air traffic congestion is expected (refer to in Flight Information Exchange Model (FIXM) 2.0 as "Airspace Entry Time – Controlled")

4. The Information Paper at APANPIRG/27 provided by Thailand,

   CTO, time at which a flight should expect to arrive at Kabul FIR entry waypoint. CTO=CTOT + EET to Kabul FIR.

5. SESAR CONOPS 2020,

   Controlled Times (CTO/CTA) are ATM-imposed time constraints which can be imposed during the flight in order to manage airspace access, to sequence for positioning over intersecting points over approach metering fixes in TMAs. As these constraints can be achieved by the flight with high accuracy (i.e. few seconds) they enable performant metering and precise sequencing. The Trajectory Management of merging traffic flows at metering points supports new terminal airspace designs and optimizes multiple airport arrival and departure services.

6. FIXM Data Dictionary Version 3.0.1

   3.26 Airspace Entry Time – Controlled

   The time at which a flight is required to arrive at a constrained airspace element as a result of a tactical slot allocation or a traffic management initiative (TMI)

7. ICAO Doc. 9971 summarizes the utilization of CTO,

Calculated Time Over (CTO) and Required Time of Arrival (RTA). Traditional ground delay measures use CTOT (calculated take-off time) calculated back from the required time at the constrained ATM resource (CTO or RTA). Most modern aircraft and AU flight planning systems are fully capable of integrating the required time at the constrained resource directly into their FMS and trajectory plan. This can enable the flight to manage its speed in order to meet the ATFM constraint with a high degree of accuracy. The use of CTO and RTA delegates the compliance responsibility for ATFM measures more to the AU while the ATS unit takes on an oversight role. Any effect on ATC (e.g., reduction of true air speed (TAS) en-route) must be notified and coordinated with the affected ATC units, preferably via online data interface (OLDI) or other appropriate means. The transition from traditional ground delay measures to time-over/arrival time ATFM measures is a gradual process that requires education and collaboration to ensure that requirements are understood and met. Such techniques should be considered as advanced and require substantial experience for their implementation.

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