*International Civil Aviation Organization*

**Sixteenth Meeting of the Asia/Pacific Air Traffic Flow Management and Airport Collaborative Decision-Making Steering Group (ATFM & A-CDM/SG/16)**

Bangkok, Thailand, 06 – 10 April 2026

**Agenda Item 4a: Review of Current ATFM Operations and Problem Areas**

# PROGRESS UPDATE FROM THE ASIA-PACIFIC CROSS-BORDER MULTI-NODAL ATFM COLLABORATION (AMNAC)

(Presented by China, Hong Kong China, Singapore, Thailand, CANSO, and IATA)

**SUMMARY**

This paper presents the progress of the *Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC)*, a collaborative cross-border ATFM initiative among 12 Air Navigation Service Providers (ANSPs) from States/Administrations in the Asia/Pacific region. Topics covered include network post-operations analysis for the period March 2025 – February 2026, an agreed CTOT compliance performance target, updates to the Common Operating Procedure, adoption of harmonised REGUL and REGCAUSE nomenclatures, an update to the ATFM Daily Plan exchange procedure, and the progress of the trial of ATFM information exchange via SWIM.

## 1. INTRODUCTION

1.1 The **Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC)** is a collaborative cross-border ATFM initiative based on the *Distributed Multi-Nodal ATFM Network* concept stipulated in the Asia/Pacific Regional ATFM Concept of Operations. The collaboration has been ongoing since 2015 and now comprises ANSPs from 12 States/Administrations along with support from CANSO and IATA. The 12 ANSPs are grouped into three levels of participation as shown in **Table 1**.

*Table 1 - AMNAC Tiered Participation and Participating ANSPs*

| Tiered Level | Capabilities |
|---|---|
| **Level 3** | ▪ Able to generate, deliver, and receive CTOTs,<br>▪ Able to comply with CTOTs from all Level 3 ATFM Nodes.<br><br>*Participation by ANSPs of:*<br>▪ *Cambodia, China, Hong Kong China, Republic of Korea, Singapore, Thailand, Viet Nam* |
| **Level 2** | ▪ Able to comply with CTOTs from all Level 3 ATFM Nodes.<br><br>*Participation by ANSPs of:*<br>▪ *Indonesia, Malaysia, Myanmar, the Philippines* |
| **Level 1** | ▪ Observe and participate in the project's progress.<br><br>*Participation by ANSPs of:*<br>▪ *Lao PDR* |

1.2 The leadership of this collaboration rests with the AMNAC Core Team, comprising ANSPs of China, Hong Kong China, Singapore, and Thailand, along with CANSO and IATA. The ANSP of the Republic of Korea has also been regularly invited to participate in Core Team discussions owing to its contributions to the work on conflicting ATFM measures with China and Hong Kong China.

1.3 Under the leadership and coordination of the AMNAC Core Team, AMNAC has convened 25 times over the years. Key outcomes from the 22nd and 23rd AMNAC meetings were reported at ATFM/SG/15, and since then there were 2 more meetings:

- The 24th AMNAC meeting (AMNAC/24) in China on 10 – 13 November 2025
- The 25th AMNAC meeting (AMNAC/25) in Thailand on 9 – 13 March 2026

1.4 Key outcomes from AMNAC/24 and AMNAC/25 are summarised in this working paper, continuing the tradition of reporting AMNAC's progress to the ATFM & A-CDM/SG. Topics covered include updates to the network post-operations analysis, the agreed CTOT compliance performance target, updates to the common procedure documents, adoption of REGUL and REGCAUSE nomenclatures, an update to the ATFM Daily Plan (ADP) exchange procedure, and the progress of ATFM information exchange via System-Wide Information Management (SWIM).

## 2. DISCUSSION

Network Post-Operations Analysis: March 2025 – February 2026

2.1 As previously reported, the AMNAC Core Team developed a network post-operations analysis dashboard to track the impact of, and compliance with, Ground Delay Programs (GDPs) implemented under the AMNAC arrangement. The dashboard helps quantitatively identify problem areas and support collaborative resolutions among participating ANSPs. It is web-based, updated monthly based on data submitted by ATFM units of Level 3 ANSPs, and maintained by Thailand. The dashboard can be accessed at https://bit.ly/amnac-poa.

2.2 Key observations from the network post-operations analysis for the period March 2025 – February 2026 are as follows:

- GDPs were used consistently among Level 3 ANSPs to balance demand and capacity, with varying impacts on flight operations and ATFM delays. Of the flights subjected to Calculated Take-Off Times (CTOTs) under the GDPs, 77% departed from aerodromes of Level 2 or Level 3 ANSPs and were therefore expected to depart in compliance with their assigned CTOTs.

- Based on reports by the ATFM units initiating the GDPs, 71% of flights departing from aerodromes of Level 3 ANSPs and 60% of those departing from aerodromes of Level 2 ANSPs departed within the CTOT compliance window.

- Post operations analysis by each ANSP continues to vary. Most Level 3 ANSPs facilitated between 70% and 80% compliant departures, whereas Level 2 ANSPs facilitated less than 50% compliant departures. CAAP (the Philippines) achieved notably high performance at 86%.

2.3 Recognising the importance of CTOT compliance performance to the effectiveness of GDPs, and acknowledging the room for improvement, **AMNAC ANSPs – at AMNAC/25 – agreed to begin monitoring the CTOT compliance of participating ANSPs against an initial target of 80%. Performance against this target will form the monitoring baseline for AMNAC in the coming year and may serve as the foundation for recommending region-wide CTOT compliance performance expectations in the future.**

2.4 The 80% target was derived from a review of past performance, which ranges between 70% and 80% among Level 3 ANSPs and less than 50% among Level 2 ANSPs (except CAAP), along with reference to established benchmarks the European Union[1] and the United States[2].

2.5 In addition to impact analysis and compliance assessment, the AMNAC Core Team recognised the need for more comprehensive post-operations analysis encompassing (1) the locations and causes of ATFM constraints in the network and (2) the effectiveness of ATFM measures in balancing traffic demand against available capacity.

2.6 Regarding the locations and causes of ATFM constraints, the AMNAC Core Team recognised the potential of using harmonised nomenclatures for *REGUL* (regulation location) and *REGCAUSE* (delay code) fields in AFTN/AMHS-based ATFM messages. A later section of this paper discusses the ongoing effort to adopt the agreed nomenclatures across the Asia/Pacific region.

2.7 Regarding the effectiveness of ATFM measures, the AMNAC Core Team agreed at AMNAC/25 to begin exploring an expanded set of performance indicators to support this analysis in the coming year. This effort is presented to the meeting in *IP-4a-02 – Improving Post-Operations Analysis for Cross-Border ATFM Operations within AMNAC*.

[1] The European Union sets target CTOT compliance performance for States at 80% annually per the Commission Regulation (EU) No. 255/2010, Article 11(1), accessible here.
[2] The Federal Aviation Administration sets target EDCT compliance performance at 70% against compliance window of [-5,+5 minutes] per the FAA Order JO 7110.65BB accessible here and 2022 Focus Five Efficiency Initiative accessible here.

Update of the Common Operating Procedure

2.8 Cross-border ATFM operations within the AMNAC network are governed by the *Common Operating Procedure (COP)* developed by the AMNAC Core Team and agreed by the participating ANSPs. Through discussions during AMNAC/24 and AMNAC/25, the COP has been updated to:

- update contextual information about AMNAC;
- improve the management of contact information and standard taxi-out time (STT) parameters; and
- Include harmonised nomenclatures for REGUL and REGCAUSE fields in AFTN/AMHS-based ATFM messages.

2.9 To enable more dynamic management of contact information and STT parameters, this information has been moved from the AMNAC COP to a separate *AMNAC Supplementary Information Document (SID)*, allowing frequent updates without the need to revise the COP.

2.10 The current AMNAC COP is *version 7.0* and the current AMNAC SID is *version 2.0*; both have been distributed to all the ANSPs in AMNAC.

Adoption of REGUL and REGCAUSE Nomenclatures

2.11 The meeting would recall that, at ATFM/SG/15, a proposal to amend the *Asia/Pacific AFTN/AMHS-Based Interface Control Document for ATFM v2.0* ("the ICD") was tabled to include harmonised nomenclatures for the REGUL and REGCAUSE fields of AFTN/AMHS-based ATFM messages. Discussion of that WP[1] at ATFM/SG/15 resulted in **Draft Conclusion ATFM/SG/15-2** adopting the proposed nomenclatures.

2.12 Since ATFM/SG/15, Draft Conclusion ATFM/SG/15-2 was presented to the ATM Sub-Group at its 13th meeting (ATM/SG/13), with a note that the ICAO Secretariat would submit the draft conclusion to the Aeronautical Communication Services Implementation Coordination Group (ACSICG) for consideration and subsequent approval by the CNS Sub-Group in 2026.

2.13 As there was a delay in the adoption of the revised ICD, AMNAC ANSPs – at AMNAC/24 – agreed to adopt the nomenclatures ahead of the revised ICD and to include them in the AMNAC COP in the interim. The harmonised nomenclatures are now included as Annex D of COP v7.0 and are also attached to this paper for reference (see **Attachment A**).

2.14 This adoption provided the basis for ATFM system upgrades by Level 3 ANSPs to ensure their AFTN/AMHS-based ATFM messages are distributed with harmonised REGUL and REGCAUSE formats, thereby paving the way for improved identification of locations and causes of ATFM delays in the network. **ANSPs of other regional States/Administrations are also invited to consider adopting the nomenclatures attached to this paper if their ATFM messages are distributed via AFTN/AMHS in accordance with the regional ICD.**

Update of the ATFM Daily Plan (ADP) Exchange Procedure

2.15 The meeting would also recall AMNAC's work in standardising the data formats of ADPs exchanged among ANSPs to support a future transition to SWIM-based digital ADP exchange using a common information exchange model, as presented to ATFM/SG/15[2]. The AMNAC Core Team was

[1] Ref: ATFM/SG/15 WP/06 accessible here
[2] Ref: paragraphs 2.2 – 2.3 of WP/05 of the ATFM/SG/15 accessible here

tasked at that meeting to coordinate with ICAO and the ATFM & A-CDM/SG Chair to update the existing *Asia/Pacific ADP Exchange Procedure (Working Draft)*.

2.16 The AMNAC Core Team had revised the procedure to include a new ADP template and an updated contact information list for ADP exchange. The updated procedure is proposed for the meeting's adoption in *WP-6a-04 – Proposal to Amend Asia/Pacific ATFM Daily Plan Exchange Procedure.*

Progress Update on the Trial of ATFM Information Exchange via SWIM

2.17 As previously reported, the AMNAC Core Team established a Technical Subgroup (TSG) to drive the development of SWIM-based infrastructure to support digital ATFM information exchange, underpinning effective cross-border distributed ATFM operations in the region. Notable achievement of the TSG is the adoption of Flight Information Exchange Model (FIXM) version 4.3 as the standard format for cross-border SWIM-based ATFM information exchange in the Asia/Pacific region at APANPIRG/35 (*Conclusion APANPIRG/35/4*).

2.18 The AMNAC TSG has proposed that the exchange of cross-border ATFM FIXM messages via SWIM shall focus on three primary data types, i.e. Calculated Take-Off Time (CTOT), Calculated Time Over (CTO), and Target Take-Off Time (TTOT). During the TSG meeting at AMNAC/25, all outstanding technical comments on the ATFM FIXM v4.3 message template schema were resolved, and agreement was reached on the mapping of ATFM-related data attributes to the FIXM v4.3 Core and Extension. Consequently, the ATFM FIXM v4.3 message templates to support cross-border ATFM information exchange have been developed, as outlined in *WP-6b-02 – ATFM FIXM Message Data Attributes and Associated Message Templates Based on FIXM Version 4.3 as Asia/Pacific Regional Standard.* The identification and mapping of ATFM FIXM message data attributes, together with the associated message templates, establish the foundation for a harmonized implementation of ATFM information exchange to support cross-border ATFM operations, A-CDM, ATFM/A-CDM integration and traffic synchronization in the APAC region.

2.19 Additionally, the TSG established a phased approach for the ATFM Information Exchange Trial with clearly defined milestones. Following the completion of offline verification and validation of ATFM FIXM messages in March 2026, the next milestone is the exchange of ATFM FIXM messages among SWIM systems, targeted for May 2026, for further validation. The final phase of the trial is a non-operational ATFM-to-ATFM system message exchange via SWIM, scheduled for September 2026. These trials represent critical validation points for the ATFM information exchange technical framework developed by the TSG.

Conclusion

2.20 The ANSPs in AMNAC have collaborated throughout the past year to achieve the progress reported in this paper and will continue to do so in the coming year. Outstanding issues such as varying levels of CTOT compliance and coordination challenges among ATFM units will continue to be monitored, discussed, and addressed. Operational and technical enhancements, including improved ATFM post-operations analysis and infrastructure development to realize SWIM-based ATFM information exchange in live operations, will continue to be pursued. AMNAC remain committed to advancing cross-border ATFM collaboration in the region, and progress will continue to be reported to this and other relevant regional forums.

## 3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) discuss the CTOT compliance performance target and its potential as a region-wide target;

c) consider the adoption of harmonised REGUL and REGCAUSE nomenclatures for AFTN/AMHS-based ATFM messages, pending the adoption of the revised ICD;

d) note the progress of the trial of ATFM information exchange via SWIM; and

e) discuss any relevant matters as appropriate.

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*Attachment A*

# REGUL and REGCAUSE Nomenclature for AFTN/AMHS-Based ATFM Messages

*(Extract from Annex D of AMNAC COP v7.0)*

## ***Context***

This is an excerpt from the proposed amendment to the **Asia/Pacific Regional AFTN/AMHS-Based Interface Control Document (ICD) for ATFM version 2.0** which was presented to the 15th Meeting of the ICAO Asia/Pacific ATFM Steering Group (ATFM/SG/15) in April/May 2025. The proposal was to add the nomenclatures on the use of REGUL and REGCAUSE fields in the AFTN/AMHS-Based ATFM Messages to harmonize the indication of designation and reason for ATFM measures in support of enhanced post-operations analysis. The ATFM/SG/15 meeting agreed with the proposal and the proposed amendment is currently being processed for endorsement by the ICAO Asia/Pacific CNS Subgroup (CNS/SG). The nomenclatures are included here for use by the AMNAC members in the interim until the revised ICD is published.

## ***REGUL Field***

The —REGUL field indicates the designation of the ATFM measure, including the specific location of the constraint, affecting the flight. Several —REGUL fields may be present, with the first one being the ATFM measure that controls the flight. The syntax required is:

'-' "REGUL" regulid
*where* regulid = AAAACCCCCDDMMMVV

AAAA : 4 characters to represent constrained area, i.e. airport or FIR
Example
- Airport, e.g. VTBS
- FIR, e.g. VTBB

CCCCC : Maximum 5 characters to represent specific constrained location
Example
- Sector, e.g. 3N
- Waypoint, e.g. BENSA

*Note: This CCCCC field can be omitted if it is not applicable.*

DDMMM : 5 characters to represent date and month when the ATFM measure is effective
Example
- 27MAR

VV : 2 digits to represent version of the designation of the ATFM measure
Example
- 03

***REGCAUSE Field***

The —REGCAUSE field indicates the reason for the ATFM measure to assist in post-operations analysis. —REGCAUSE comprises the following.

a) Regulation cause code – One letter code corresponding to the cause of the ATFM measure assigned by the flow management personnel
   - C – ATC capacity
   - I – ATC industrial action
   - R – ATC routings
   - S – ATC staffing
   - T – ATC equipment
   - A – Accident/incident
   - G – Aerodrome capacity
   - E – Aerodrome services
   - N – Industrial action NON-ATC
   - M – Airspace management
   - P – Special event
   - W – Weather
   - V – Environment issue
   - O – Other

b) Regulation location code – One letter code, i.e. D, E, or A, describing the phase of the flight (Departure, Enroute, and Arrival) where the constrain triggers the ATFM measure

c) A space

d) The IATA delay code in numeric (e.g. 81, 82, 83, 89) or 00 where no IATA code is available

   - 81 – ATFM due to ATC EN-ROUTE DEMAND/CAPACITY
   - 82 – ATFM due to ATC STAFF/EQUIPMENT EN-ROUTE
   - 83 – ATFM due to RESTRICTION AT DESTINATION AIRPORT
   - 84 – ATFM due to WEATHER AT DESTINATION
   - 85 – MANDATORY SECURITY
   - 86 – IMMIGRATION, CUSTOMS, HEALTH
   - 87 – AIRPORT FACILITIES
   - 88 – RESTRICTIONS AT AIRPORT OF DESTINATION
   - 89 – RESTRICTIONS AT AIRPORT OF DEPARTURE
   - 98 – INDUSTRIAL ACTION OUTSIDE OWN AIRLINE
   - 99 – OTHER REASON

The syntax required is:

'-' "REGCAUSE" regulationcausecode regulationlocationcode “ ” IATAdelaycode