International Civil Aviation Organization

Eleventh Meeting of the Air Traffic Management Sub-Group (ATM/SG/11) of APANPIRG

Singapore, 2 – 6 October 2023

Agenda Item 5: ATM Systems (Modernization, Seamless ATM, CNS, ATFM)

AIR TRAFFIC FLOW MANAGEMENT STEERING GROUP OUTCOMES

(Presented by the Secretariat)

SUMMARY

This paper presents the outcomes of the Thirteenth Meeting of the Air Traffic Flow Management Steering Group (ATFM/SG/13).

1. INTRODUCTION

1.1 The Thirteenth Meeting of the Air Traffic Flow Management Steering Group (ATFM/SG/13) was held in Bangkok, Thailand from 03 to 07 April 2023, at the ICAO Asia/Pacific Regional Office. The ATFM/SG/13 meeting was attended by 104 participants from 17 Administrations, and four International Organizations including Australia, Cambodia, China, Hong Kong China, India, Indonesia, Japan, Malaysia, Mongolia, Nepal, Pakistan, Philippines, Republic of Korea, Singapore, Thailand, United States, Viet Nam, CANSO, IATA, IFATCA, and ICAO.

1.2 A total of 20 working papers, eight information papers, and 12 presentations were considered by the meeting. The meeting papers, presentation and report are available on the ATFM/SG/13 meeting web-page:

https://www.icao.int/APAC/Meetings/Pages/2023-ATFM-SG-13.aspx

1.3 The meeting agreed to the following Decision:

Decision ATFM/SG/13-1: Update Terms of Reference of ATFM Information Requirements Small Working Group

2. DISCUSSION

Review Outcomes from MET/R WG

2.1 The Chair of the Meteorological Requirements Working Group (MET/R WG) presented updates related to the Group, including information on the MET/ATM survey, an updated MET/ATM regional guidance document, education on the ICAO space weather advisory service and user requirements for System-Wide Information Management (SWIM)-based MET information services supporting ATFM.

2.2 The meeting was informed that the updated *Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations*, Third Edition, August 2022 (adopted by MET SG/26; Decision MET SG/26/02 referred) was available on the

ICAO APAC Office website at: https://www.icao.int/APAC/Documents/edocs/2022-08_APAC-REG-GUIDANCE-FOR-TAILORED-MET-TO-SUPPORT-ATM_3rd-Ed.pdf. The details will be shared under Agenda Item 7 (IP/23) by MET SG.

2.3 The meeting agreed to include contributing to the MET/R-WG on further refining SWIM-based MET information service scenarios and developing other scenarios as an action item for the group. The details will be shared under Agenda Item 7 (WP/42) by MET SG.

2.4 The meeting also discussed the possibility of holding the ATFM/SG meeting in conjunction with MET/R-WG meetings in the future for better synergy. The ATFM/SG/13 and MET/R WG/12 (1-5 May 2023) agreed to conduct the next meeting from 22-26 April 2024 in conjunction with a combined plenary session and joint MET/ATM seminar.

The CANSO Air Traffic Flow Management (ATFM) Data Exchange Network for Cooperative Excellence (CADENCE)

2.5 The meeting was informed of the CANSO Air Traffic Flow Management (ATFM) Data Exchange Network for Cooperative Excellence Task Force (CADENCE TF), created to support regional ATFM and Collaborative Decision Making (CDM) among Caribbean and Latin American States.

2.6 CANSO also informed the meeting of the accomplishments of the CANSO ATFM Data Exchange Network for the Americas (CADENA), including the Operational Information System (OIS). The purpose of the OIS was to accelerate the implementation and enhancement of regional ATFM/CDM from a politically neutral standpoint, in an economical manner. The CADENCE Task Force's approach to advance regional ATFM/CDM supported ICAO's "No Country Left Behind" policy.

2.7 The meeting was informed how CADENA dealt with contingency situations such as natural disasters, including extreme weather, volcanic activities, earthquakes, etc., ATC service interruptions and airport capacity issues by using a prepared checklist for 15 identified contingency situations.

2.8 The meeting expressed interest for the idea of using OIS as a means of sharing information on ATM, including the information on space vehicle launch and recovery coordination. However, further discussion on possible use cases of CADENCE OIS beyond the scope of ATFM is required. CANSO was therefore asked to provide a similar briefing to the upcoming ATM/SG/11 for further discussion. Therefore, the details will be discussed further under Agenda Item 6 (WP/32).

ICAO ATM Ops Panel ATFM WG progress

2.9 The Secretary of the ATM Ops Panel provided information on the progress of ATFM-related amendment of Annex 11 Air Traffic Services, Doc 4444 Procedures for Air Navigation Services – ATM (PANS-ATM), and Doc 9971 Manual on Collaborative Air Traffic Flow Management, which targeted 2026 publication.

2.10 The meeting was also informed that Doc 4444 and Doc 9971 would be amended, including a new chapter of Doc 9971, in connection with the Annex 11 amendment.

Regional ATFM Implementation Status

2.11 ICAO provided a summary of the ATFM implementation status of APAC Administrations, reported against the performance objectives of the Regional Framework for Collaborative ATFM. Annual implementation status reports for 2023 were received from 20 APAC Administrations.

2.12 Based on reports received States were assessed as having *Robust* (90-100%), *Marginal* (70-89%) or *Incomplete* (0-69%) implementation. **Table 1** and **Figure 2** summarizes the updated Asia/Pacific Region ATFM Implementation Status.

Administration (Tier)	**% Implementation**			**Implementation Status**
	2021	**2022**	**2023**	
Afghanistan (B	*never reported*	*no report*	*no report*	Never Reported
Australia (A)	87	*no report*	*no report*	Did Not Report
Bangladesh (B)	13	13	*no report*	Did Not Report
Bhutan (A)	*no report*	*no report*	21	Incomplete
Brunei Darussalam (B)	*never reported*	*no report*	*no report*	Never Reported
Cambodia (A)	*no report*	82	95	Robust
China (A)	*no report*	*no report*	97	Robust
Hong Kong, China (A)	89	89	95	Robust
Macao, China (B)	*no report*	*no report*	39	Incomplete
Cook Islands (B)	*never reported*	*no report*	*no report*	Never Reported
Fiji (B)	*no report*	*no report*	0	Incomplete
France (French Polynesia) (B)	*no report*	*no report*	40	Incomplete
DPR Korea (B)	*never reported*	*no report*	*no report*	Never Reported
India (A)	92	84	85	Marginal
Indonesia (A)	71	63	54	Incomplete
Japan (A)	89	94	91	Robust
Kiribati (B)	*never reported*	*no report*	*no report*	Never Reported
Lao PDR (A)	*never reported*	*no report*	*no report*	Never Reported
Malaysia (A)	*no report*	*no report*	36	Incomplete
Maldives (B)	*no report*	*no report*	*no report*	Did Not Report
Marshall Islands (B)	*never reported*	*no report*	*no report*	Never Reported
Micronesia (B)	*never reported*	*no report*	*no report*	Never Reported
Mongolia (A)	*no report*	40	28	Incomplete
Myanmar (B)	*no report*	*no report*	*no report*	Did Not Report

Nauru (B)	*never reported*	*no report*	*no report*	Never Reported
Nepal (B)	43	40	*no report*	Did Not Report
New Caledonia (B)	*no report*	*no report*	*no report*	Did Not Report
New Zealand (A)	*no report*	67	78	Marginal
Pakistan (B)	11	80	59	Incomplete
Palau (B)	*never reported*	*no report*	*no report*	Never Reported
Papua New Guinea (A)	*no report*	*no report*	*no report*	Did Not Report
Philippines (A)	61	77	59	Incomplete
Republic of Korea (A)	82	87	93	Robust
Samoa (B)	*never reported*	*no report*	*no report*	Never Reported
Singapore (A)	97	97	99	Robust
Solomon Islands (B)	*never reported*	*no report*	*no report*	Never Reported
Sri Lanka (B)	*never reported*	*no report*	*no report*	Never Reported
Timor Leste (B)	*never reported*	*no report*	*no report*	Never Reported
Tonga (B)	*never reported*	*no report*	*no report*	Never Reported
Thailand (A)	90	90	91	Robust
Tuvalu (B)	*never reported*	*no report*	*no report*	Never Reported
United States (A)	94	*no report*	96	Robust
Vanuatu (B)	*never reported*	*no report*	*no report*	Never Reported
Viet Nam (A)	34	34	71	Marginal

Table 1: Updated Asia/Pacific Region ATFM Implementation Status

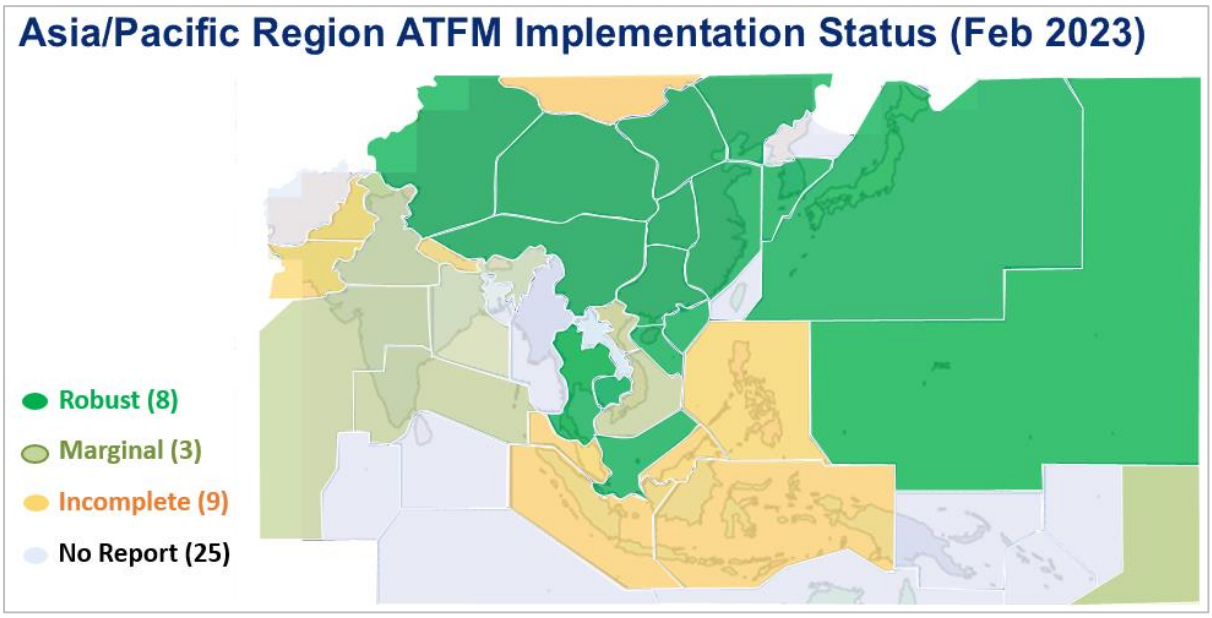

Figure 1: Regional ATFM Implementation Status 2023

DISCLAIMER: The presentation of material in this paper does not imply the expression of any opinion whatsoever on the part of ICAO, APANPIRG or the ATM Sub-Group of APANPIRG concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.

2.13 A proposal was made to include ATFM measure effectiveness into the Regional ATFM Monitoring and Reporting Form. However, the meeting recognized that the Form was intended to monitor ATFM implementation status rather than the performance of ATFM measures and operations. The measurement of ATFM measure effectiveness should therefore be carried out by States as part of the ATFM post-operations analysis process. Also, the Form already included a requirement for States to conduct ATFM post-operations analysis as part of the ATFM implementation.

Progress Update from Asia/Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC)

2.14 The meeting was provided with the progress update of the Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC), a collaborative effort by Air Navigation Service Providers (ANSPs) from States/Administrations in the Asia/Pacific region to implement cross-border ATFM.

2.15 The AMNAC Core Team had developed a network post-operations analysis portal to track the impact of and compliance with Ground Delay Programmes (GDPs) activated over time as part of the AMNAC initiative. The aim of the portal was to identify problem areas to be addressed quantitatively. Based on the data up to December 2022, the following key observations were captured:

- From 2019 onward, a majority (> 90%) of flights with assigned Calculated Take Off Times (CTOTs) departed from aerodromes under the jurisdiction of Level-2 and Level-3 ATFM nodes, signifying that CTOT compliance facilitation should be provided for most flights.

- The COVID-19 pandemic resulted in a significant traffic downturn and a sharp reduction in the need for GDPs between 2020 and early 2022. However, an increasing number of GDPs have been activated in recent months in response to traffic congestion.

This corresponds well with the rise of traffic demand as the pandemic wanes and travel restrictions are lifted. Additionally, "zero-delay" GDPs continued to be initiated by Hong Kong China with participation from both AMNAC and East Asia ATM Coordination Group (EATMCG) members (Japan and Republic of Korea).

- While flights' compliance to CTOTs – especially those issued by Thailand and Hong Kong China – were generally good (70% - 90%), there were still instances of low compliance such as during the Singapore-initiated GDP for Singapore Air Show 2022 (the average compliance rate was 47.6%).

2.16 The meeting was informed of key outcomes from the AMNAC/19 meeting, including the resolution of conflicting ATFM measures, and the need for further quantitative exploration of fuel savings and emission reduction benefits from ATFM operations

2.17 The meeting was also informed of the progress from the Technical Sub-Group of the AMNAC Core Team in developing and testing information exchange models, in collaboration with the Asia/Pacific SWIM Task Force (SWIM TF), to enable "ATFM-on-SWIM" operations in the region. It was expected that the ATFM information exchange trial on SWIM technical infrastructure over the region's Common aeRonautical VPN (CRV), using the FIXM v4.1 with APAC Extension, would be carried out in Q2/2023. Moreover, the meeting was informed of the need to identify the specific FIXM version to support the harmonized implementation across the Asia/Pacific region in the future, and that currently v4.2 with extension was identified. It was also shared that the FIXM version to be selected should be able to support not only the ATFM information exchange but also the transition to the FF-ICE/R1 operation.

2.18 The meeting was invited to participate in the routine APAC Bi-Weekly ATFM Web Conference on Thursday every two weeks at 0800 UTC to share and discuss ATM capacity limitations and possible ATFM measures. States and/or ANSPs may contact AMNAC Core Team members to request to be included in the invitation list.

NARAHG Update

2.19 The meeting was provided with an update on the progress of the Northeast Asia Regional ATFM Harmonization Group (NARAHG), formed by China, Japan, and Republic of Korea (ROK).

2.20 The meeting was informed of the trial operational procedure for typhoon detour flights conducted during September 2022. The paper noted that from 04 – 06 September, during typhoon Hinnamnor, the procedure for typhoon detour flights was applied to 172 flights bound for Southeast Asia departing from ROK. China, Japan, and ROK regularly shared FPLs for each detour route. It was observed that the overall delay was 50% shorter than before.

2.21 The meeting was informed that test/trial data exchange by ATFM systems between China and ROK via CRV would start in May 2023. Monthly trials would be conducted after the data connection was established to confirm the common operation procedure.

2.22 The meeting reiterated the basic concept of the Regional Framework for ATFM; that issuance of CTOT is preferable to using MINIT/MIT.

Progress Updates on ATFM Collaboration among EATMCG Members using Multi-Nodal ATFM Concept of Operations

2.23 The meeting was provided with the progress updates of ATFM Collaboration among the East Asia Air Traffic Management Coordination Group (EATMCG) members using the multi-nodal ATFM concept of operations.

2.24 The meeting was informed that Hong Kong China and ROK had initiated a series of Ground Delay Programme (GDP) operational trials with other EATMCG members on a monthly basis to validate the Concept of Operations (CONOPS) continuously, and to develop internal handling procedures, in collaboration with the AMNAC initiative since ATFM/SG/12 (September 2022).

2.25 The meeting was further informed that the group utilized email as the primary means of CTOT distribution/revision, and Hong Kong China had promoted the idea of using Slot Allocation Messages (SAMs) via AFTN with the group members for consideration. The meeting noted that the Regional Framework for Collaborative ATFM specified the use of the Flight Information Exchange Model (FIXM) (where capability existed) or AFTN for the distribution of ATFM measures..

BOBCAT Operational Updates

2.26 The meeting was provided with an operational update on the Bay of Bengal Cooperative ATFM (BOBCAT) system, normally used for night-time westbound flights through the Kabul FIR.

2.27 The BOBCAT ATFM service was suspended and the Bangkok ATFM Unit operating hours were reduced; however, the system continued to be maintained by Thailand, and the service could be resumed when traffic demand crossing the Kabul FIR once again exceeded the airspace's capacity. Since early July 2023, the Bangkok ATFMU ops hour were increased by to H24, more so to support Sanya ATFM program at night.

2.28 An internal analysis by Thailand confirmed the capability to deliver BOBCAT CTOTs via AFTN/AMHS using SAMs, Slot Revision Messages (SRMs) and Slot Cancellation Messages (/SLCs) could be developed for the BOBCAT ATFM system. The capability could be delivered within 2023 after the required system tests. Therefore, Thailand would like to engage with some States able to process SAM/SRM/SLC for ATFM purpose to conduct system tests during the development in the second half of 2023.

2.29 The meeting discussed the impact of Afghanistan airspace closure on traffic flow in Pakistan and India. IATA informed the meeting that airlines were incurring high costs due to the airspace closure.

National Traffic Flow Management System

2.30 The meeting was provided information on the concept and functions of the National Traffic Flow Management system (NTFM) built in China.

2.31 The NTFM was a unified ATFM system deployed in the Operation Management Center (OMC), eight regional ATFM units and 36 ATM sub-bureaus and stations, which covered the entire ATM system in China. The meeting was informed that NTFM would also effectively connect with cross-border ATFM in the Asia-Pacific region. With the NTFM, ATFM measures in China had transitioned from separation-based to capacity-based ATFM measures and provided One CTOT Solution to generate a CTOT that met multiple constraints.

2.32 Regarding Cross-Border ATFM, the meeting was informed that the ATFM system interconnection test via AFTN was successfully conducted between the NTFM and Hong Kong China in November 2022, and with AEROTHAI in March 2023. Singapore, having tested with Hong Kong China and Thailand previously in December 2021, expressed interest to conduct similar system interconnection test via AFTN with China's NTFM system and would coordinate with China subsequently. The meeting also noted that Macau China planned to join a unified coordination platform.

2.33 Coordination procedures with other NARAHG members and the AMNAC group were discussed, and the meeting was informed that the NTFM Centre would eventually be the single entity

for all cross-border coordination with China. The meeting supported continuing interconnection trials through AFTN with the NTFM Centre.

Diurnal Wind Variation Study for Runway Capacity Optimization at Hong Kong International Airport

2.34 The meeting was informed of the runway capacity optimization efforts and its tangible benefits achieved through collaboration between the Air Navigation Service Provider (Hong Kong Civil Aviation Department) and the Meteorological Agency (Hong Kong Observatory) in Hong Kong China.

2.35 Historical daily wind data from anemometers located at various locations along the runways at HKIA was collected and analysed. Occasions of a tailwind of five knots or more with reference to runway-in-use were identified as a basis for the need for a runway change.

2.36 Inserting firebreaks at appropriate intervals of the summer 2023 schedule, which tied in with the wind change patterns and corresponded with higher runway change probability, could reduce airborne/ground delays induced by the change, thus minimizing the need to initiate ATFM measures.

2.37 The tangible operational benefits highlighted the importance of ANSP and MET agency collaboration.

Resuming CTO Trials within Fukuoka FIR

2.38 Japan provided information on the resumption of CTO trials within Fukuoka FIR. The meeting was informed of the previous trial operations between 2011 and 2014. Preliminary verification had been conducted in 2020 and 2021 on the accuracy of estimated time of arrival (ETA) calculated by the ATC system.

2.39 Post operations analysis would examine the extent of reduction of delays to domestic flights, controller workload, and the ETA accuracy in the ATC systems.

2.40 The meeting discussed technical matters such as maximum delay that could be absorbed in CTO operations, the relationship between CTO delay and AMAN advisory, the accuracy of CTO, and the display of CTO advisory to ATCOs. The meeting encouraged Japan to continue sharing information on this issue in future meetings.

Cross-Border ATFM-CDM Collaboration related to Korean SAT

2.41 The meeting was informed of the cross-border ATFM/CDM collaboration between the ROK and China, Hong Kong China and Japan for the noise abatement requirements of the Korean College Scholastic Ability Test (SAT) event by engaging in collaborative decision-making to apply CTO/CTOT/Minutes-in-Trail (MINIT) measures.

2.42 The ROK informed the meeting that Korean SAT took place every November. During the listening comprehension test, all aircraft in Incheon FIR were prohibited from taking off and landing so as to not disturb students for about 50 minutes, which could cause airborne holding.

2.43 The meeting noted that noise abatement procedures have become increasingly important at all major airports, and the application of ATFM measures may become the norm to reduce the impact of noise.

Internal Collaborative Operation Mode of Cross-Border ATFM

2.44 China presented a Concept of operations (CONOPS) of the internal collaborative process

of coordination of cross-border ATFM in China.

2.45 The National Traffic Management (NTFM) centre acted as node leader for China. The meeting was informed of the operational procedure of segregating domestic and international flights, and the transfer of responsibility for traffic flow management of international flights to cross-border ATFM units. The meeting was also informed of the two levels of operational coordination of cross-border ATFM between the originating ATFMU, cross-border ATFMU and international ATFMU. The meeting was also informed about the various mechanisms for reception of CTOT messages.

2.46 It was also noted that the internal collaboration among various nodes in China would take place without affecting any cross-border coordination mechanisms. China also confirmed that existing points of contact with international stakeholders would remain the same until the NTFM Center became fully operational. Specifically, Sanya ATFMU would remain the main ATFM coordination point with neighbours in Southeast Asia and that the neighbours could contact Sanya ATFMU upon receiving any flow restrictions from China to coordinate appropriate responses, e.g., complying with CTOTs assigned by Sanya ATFMU instead.

2.47 China also presented the CONOPS of the Collaborative Multi-constraint Conversion Program (CMCP+) based on the concept of One CTOT Solution.

Analysis of Lead Time of Filing Flight Plan

2.48 India provided an analysis of Flight Plan Submission Lead Time for all the Flight Plans (FPLs) received at ATFM from 1st October to 31st Dec 2022. The purpose of the analysis was to monitor compliance with provisions of Aeronautical Information Publication (AIP) India ENR 1.9 regarding flight planning requirements in the context of ATFM.

2.49 AIP India ENR 1.9 section 4 recommended Flight Planning requirements stated, for all airline operators, ‘Flight plans shall be submitted at least 3 hours before the EOBT’. According to the analysis, 16.56% of flights did not submit FPL at least 3 hours before.

2.50 Filing a flight plan with sufficient lead time would optimize the delay distribution among affected flights. Early filing of FPL also helped provide longer lead time and improved predictability for the application of ATFM measures, which in turn allowed the use of GDP with more advance notice to stakeholders and reduced short notice or unplanned repetitive use of tactical ATFM measures.

Addressing of Flight Plans and Missing (DEP) Messages

2.51 ICAO provided an update on the issue of missing Departure (DEP) messages, as discussed at multiple meetings of the Air Traffic Flow Management Steering Group (ATFM/SG) and ATM Sub-Group

2.52 The meeting was reminded of ICAO Doc 4444 Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM) procedures for the addressing of ATS messages, noting that there were multiple examples of APAC Administrations specifying noncompliant Flight Plan (FPL) addressing requirements in Aeronautical Information Publication (AIP) Section ENR 1.11, together with the use in AFTN addresses of three-letter designators that were not registered for their use in Doc 8585 Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services. It was noted that the specification of non-compliant addresses was a key factor in missing FPL and associated ATS messages (including DEP messages).

2.53 Analysis of incorrect FPL addressing requirements in AIP would continue, with a view to raising APANPIRG ATM and Airspace Safety Deficiencies against non-compliance with ICAO Annexes and PANS where necessary.

2.54 Regional analysis of missing DEP messages will be discussed further under Agenda Item 5 (WP/14).

A-CDM Implementation – Regional Monitoring Scheme

2.55 ICAO presented a brief on A-CDM implementation in APAC and a proposal to develop an annual regional monitoring and reporting scheme for the elements of the Asia/Pacific A-CDM Implementation Plan, noting that there was currently no mechanism for States to report implementation progress.

2.56 The meeting was reminded of the ASBU (Aviation System Block Upgrades) elements of the GANP (Global Air Navigation Plan) related to A-CDM and Network Operations (NOPS), elements A-CDM- B0/1, B0/2, B1/1, and NOPS-B0/4, B1/3.

2.57 The meeting agreed to the proposal. The Chair reminded the ATFM/IR/SWG members to include A-CDM experts in the ATFM/IR/SWG for this task. IATA suggested that Airport Council International (ACI) might also be included in this matter, which was agreed by the meeting.

Capacity Assessment and a proposal for a workshop

2.58 ICAO presented a brief overview of requirements in ICAO provisions and regional guidance documents for capacity assessment by States for long-term planning and establishing of ATFM, along with available guidance material on the process.

2.59 It was noted that various methodologies for capacity assessment were described in guidance materials.

2.60 Noting that ICAO APAC Office had previously conducted a workshop in 2019 on the subject ,and the need for States to further review, update and discuss the subject on a regular basis, it was proposed to conduct a capacity assessment workshop wherein States would be invited to share their experiences in conducting capacity assessment of airports and airspace sectors.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) note the progress of:

i) AMNAC;

ii) NARAHG;

iii) EATMCG; and

iv) BOBCAT.

c) continue to improve DEP message origination, and ensure that FPL addressing requirements comply with ICAO Doc 4444 - PANS-ATM;

d) note the continued slow regional progress in implementation of the performance expectations of the Regional Framework for Collaborative ATFM; and

e) discuss any relevant matters as appropriate.

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