International Civil Aviation Organization

The Fifth Meeting of the Regional ATM Contingency Plan Task Force (RACP/TF/5)

Bangkok, Thailand, 1 – 4 December 2015

Agenda Item 2: Review Outcomes of Related Meetings

OUTCOMES OF RELATED MEETINGS

(Presented by the SECRETARIAT)

SUMMARY

This paper presents outcomes of meetings relevant to the RACP/TF, including outcomes from APANPIRG/26 and from the meetings of the Asia/Pacific Region Volcanic Ash Exercises Steering Group and the first Volcanic Ash Exercise conducted under the direction of that group.

1. INTRODUCTION

1.1 The Twenty-Sixth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/26) was held in Bangkok, Thailand, from 7 – 10 September 2015.

1.2 The First Meeting of the Asia/Pacific Volcanic Ash Exercises Steering Group (VOLCEX/SG/1) was held in Manila, Philippines, from 27 – 29 May 2015. The Second Meeting, VOLCEX/SG/2, was held in Bangkok, Thailand. A volcanic ash exercise, VOLPHIN 15/01, with exercise scenario in the Philippines, was conducted on 11 August 2015.

2. DISCUSSION

APANPIRG/26

2.1 APANPIRG/26 agreed to **Conclusion 26/19: Asia/Pacific Regional Framework for Collaborative ATFM,** adopting the Framework document.

2.2 The Framework document includes *inter alia* elements relevant to Regional ATM contingency planning, as follows:

PERFORMANCE IMPROVEMENT PLAN

REGIONAL ATFM CAPABILITY PHASE IA

Expected implementation by 12 November 2015

ATFM Regulations

7.1 All States where air traffic demand at times exceeds, or is expected to exceed declared capacity, should enact regulations for the implementation of ATFM.

Annex 11 to the Convention on Civil Aviation section 3.7.5 refers.

Pre-Tactical ATFM Execution

7.9 ATFM Daily Plan (ADP) for all ATFM Program Airports and associated terminal area airspace, including airport and airspace capacity declarations and related background information, should be prepared and distributed to all relevant stakeholders.

ADP should be distributed to stakeholders by either:

i. Web-based ATFM network; or

ii. Web-pages hosted by each participating ANSP; or

iii. Email distribution.

Relevant stakeholders include:

iv. Neighbouring ATFMUs or, where not provided, ATSUs

v. ATSUs supported by the originating ATFMU;

vi. Relevant airport operators; and

vii. Participating aircraft operators.

7.10 ADP should be coordinated by the responsible ATFMU or ATSU and agreed with all relevant stakeholders, through chairing and/or participation in scheduled and, where necessitated by changes in airport or airspace capacity or other events, ad-hoc ATFM conferences for pre-tactical ATFM planning.

Post-Operations Analysis

7.11 The accuracy and effectiveness of capacity and demand analyses and ADP preparation and distribution, including supporting information listed in paragraph 7.7, should be verified through comparison with operational outcomes observed, and rectification of discrepancies included in planning for system and process improvements.

REGIONAL ATFM CAPABILITY PHASE IB

Expected implementation by 25 May 2017

Tactical Capacity and Demand Monitoring and Analysis

7.23 Dynamic update of airport and airspace capacity constraints, capacity calculation, demand information using schedule, flight plan and ATS messaging, and ATM system information and modelling of tactical ATFM programs should be implemented.

7.24 Tactical ATFM at ATFM Program Airports should be implemented using:

i. Ground Delay Programs (CTOT) for aircraft inbound from:

a. domestic airports;

b. international airports sufficient to ensure participation of more than 70% of total inbound traffic;

ii. Minutes in trail (MINIT) or miles in trail (MIT) for aircraft inbound from airports where CTOT may not be applied.

7.24 CTOT for individual aircraft should, where necessary, be revised, cancelled, suspended or de-suspended.

7.25 Tactical ATFM should be implemented for operations through constrained airspace sectors, only during periods affected by the constraint.

7.26 As far as practicable, individual aircraft should not be subject to more than one tactical ATFM measure per flight.

Post-Operations Analysis

7.26 Procedures and agreements should be developed to ensure post-operational analysis of cross-border ATFM programs, including the canvassing and consideration of feedback from airspace users, airports operators, ATS and other ATFM units. Daily post-operations analysis conferences should be held, supplemented where necessary by ad-hoc conferences called to assess the outcomes of programs of ATFM measures responding to non-normal situations.

7.27 The results of post-operations analyses should be used for planning ATFM, airspace and ATS route improvements.

ICAO Doc 9971 – Manual on Collaborative ATFM Part II-4-8 provides guidance on post-operations analysis

REGIONAL ATFM CAPABILITY PHASE II

Expected implementation by 08 November 2018

ATFM Systems

7.28 Distributed multi-nodal ATFM information distribution capability utilizing FIXM version 3.0 (or later) should be implemented, including:

i. Sharing of ADP and dynamically updated demand and capacity data for all ATFM program airports, and for en-route airspace supporting the busiest city pairs and high density major traffic flows;

ii. Slot allocation information for all flights subject to ATFM programs, including as a minimum CTOT, CTO and CLDT information;

iii. Authorized user functions for slot amendment, cancellation or suspension (ATFMU), and slot-swapping (aircraft operator and ATFMU); and

iv. Automated slot compliance monitoring and reporting, supplemented where necessary by authorized inputs by ATFMU, ATSU or airspace operator.

7.29 Full interoperability of cross border ATFM, A-CDM, AMAN, DMAN, ATM automation and airspace user systems should be implemented, utilizing FIXM 3.0 (or later) , to provide seamless gate-to-gate collaborative ATFM operations.

Pre-Tactical Capacity and Demand Monitoring and Analysis

7.30 Automated modelling of expected airport and airspace configuration and traffic demand, and the effect of ATFM measures, should be implemented for all ATFM Program Airports and associated terminal area airspace and, where possible, en-route airspace supporting the busiest Asia/Pacific Region city pairs and high density major traffic flows.

Tactical ATFM Measures

7.32 ATFM measures including MIT, MINIT and, where necessary, CTO at AFIX or RFIX, should be applied to flights through constrained airspace.

7.33 Ground Delay Programs utilizing CTOT should be applied to:

i. aircraft destined for constrained ATFM Program Airports, that have not yet departed; and

ii. aircraft planned to operate through constrained airspace where tactical ATFM measure CTO at RFIX or AFIX is in place, that have not yet departed.

7.34 ATFM systems should have the capability to take into account long haul flights.

7.35 Systems should be in place to ensure the timely update of estimate information for airborne aircraft.

RESEARCH AND FUTURE DEVELOPMENT POSSIBILITIES

8.9 **Collaborative Trajectory Options** – provide for flexible routing options that permit aircraft operators to elect to re-route flights via longer trajectories to avoid constrained airspace and take advantage of the reduction or removal of ground delay (or en-route delay, where implemented) that would be imposed if the flight continued through the constrained airspace. A collaborative trajectory options program would significantly improve the safety and efficiency of ATM in cases of large scale weather deviations (LSWD) such as those experienced in the cyclonic weather season in the Bay of Bengal and South China Sea areas, and contingency operations including the avoidance of airspace that is either unsafe (e.g. volcanic ash cloud) or unavailable. A collaborative trajectory options program would first require a full understanding of airspace capacity, which should be supported by a comprehensive study.

8.10 The development of a collaborative trajectory options program in the Asia/Pacific Region, particularly in South East Asia, will require a coordinated multi-partite effort to improve the regional ATS route network and ATS surveillance/communications infrastructure, and to provide sufficient ATS route options for the program. ATS route specification and implementation of surveillance and communications infrastructure are included in the performance objectives of the Seamless ATM Plan.

2.3 APANPIRG/26 also discussed the issue of timely and ongoing information sharing during a volcanic eruption and/or ash cloud event. The issue had been raised by IATA at the 3rd Meeting of the ATM Sub-Group of APANPIRG (ATM/SG/3, Bangkok, Thailand, 3 – 7 August 2015).

2.4 It was noted that the first information received by operators following a volcanic eruption was usually a NOTAM issued by the State. That NOTAM typically indicated that an eruption was in progress and sometimes included actions (such as aerodrome closures) taken by the State to ensure safety of operations. Frequently, that was the only communication operators would receive from the State until the NOTAM was cancelled.

2.5 ICAO Doc 9974 - *Information for Regulators and operators on operations in airspace potentially contaminate by volcanic ash* included a provision that an operator should not be prevented from operating through, under or over airspace forecast to be affected by a VAA, VAG or SIGMET provided it has demonstrated in its SMS the capability to do so safely.

2.6 From an airspace perspective, the Doc 9974 reference left the decision on whether to operate or not in the hands of the operator. However, Doc 9691- *Hazards of operating in airspace and aerodromes contaminated by VA* contained the following, somewhat contradictory, statement: *A decision has to be taken by the airport authority regarding the feasibility or necessity to continue aircraft operations at the airport.* Given the significant disruptive and economic potential of an aerodrome closure, the State concerned should take a proactive approach to collaboratively work with stakeholders (including other States) in ensuring information is shared regularly.

2.7 IATA proposed that States with either potential or regularly occurring volcanic activity urgently implement a communications mechanism that would provide regular and timely information sharing before, during and after an event, which would facilitate consultation with the airspace users.

2.8 APANPIRG/26 agreed to the following Conclusion:

Conclusion 26/19: Volcanic Ash Information Coordination and Collaboration

That, States are urged to:

a) *establish a mechanism to provide regular and timely updates of information during a volcanic eruption and/or ash cloud event to ensure all stakeholders are up to date with current information, situation reports and contingency planning;*

b) *participate in volcanic ash exercises; and*

c) *consider establishing an internal crisis management centre where applicable to support the collaborative and timely sharing of information such as volcanic eruptions, or other crises that will have a significant impact on airport and/or airspace management.*

Note: This is supplemental to the provisions of Annex 3 and Annex 15.

VOLCEX/SG/2

2.9 The second meeting of VOLCEX/SG reviewed the outcomes of the VOLPHIN 15/01 volcanic ash exercise. This exercise scenario involved an eruption of the Taal Volcano in the Philippines, with the resultant volcanic ash cloud being wholly contained within the Manila Flight Information Region (FIR).

2.10 As a result of the review of VOLPHIN 15/01 VOLCEX/SG formulated a number of recommendations. The consolidated list of recommendations is appended at **Attachment A**.

2.11 While a significant number of the recommendations related to procedural matters for conducting future volcanic ash exercises, there were a number related to ATM contingency operations. These included the following recommendations:

> **Recommendation 4**: Regulatory provisions for response to volcanic ash contingency events;
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> **Recommendation 5**: Airspace and airport management in response to volcanic eruption and volcanic ash cloud; and
>
> **Recommendation 6:** Regular updates of volcanic ash information
>
> *Note: Recommendation 6 responds to APANPIRG Conclusion 26/19: Volcanic Ash Information Coordination and Collaboration, mentioned in paragraph 2.8 (above).*

2.12 These recommendations and the consequential proposed inclusions in the Regional ATM Contingency Plan are further discussed in WP04.

2.13 The next volcanic ash exercise is planned for a scenario involving the eruption of a volcano near Denpasar, Indonesia, with the resultant volcanic ash cloud affecting multiple FIRs. Lessons learned from this and subsequent exercises will be considered for future incorporation in the Regional ATM Contingency Plan.

3 ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) discuss any relevant matters as appropriate.

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Recommendation 1: Preparation for volcanic ash exercises

Preparation for ICAO APAC volcanic ash exercises should be conducted in a manner to ensure that:

a) All required units/organizations confirm availability and preparedness to participate in the exercise and organize the necessary resources (e.g., Internet and connection, computer facilities) to conduct the exercise (Ref: WP08; meeting report, 4.9)

b) The exercise directive is provided to participants allowing sufficient time before the exercise to complete the necessary planning, tasks, etc. (Ref: WP04; WP06; SP08)

c) The status of preparation of each participating unit/organization is monitored and reviewed to address any problems prior to the exercise (Ref: SP01)

d) All participating units review, test and verify, as necessary, their policies/procedures for the preparation, issuance and dissemination of volcanic ash related messages, in accordance with the applicable global, regional and local requirements, prior to the exercise (Ref: WP01, par. 2.16, 2.19, 2.24, 2.28, 2.33, 2.35 and 2.37; SP01; WP02, par. 2.3; WP08; meeting discussions)

e) Adequate notification is provided to enable all airspace users operating in the affected area are informed of and understand the purpose of the planned exercise (Ref: WP01; par. 2.43)

f) The roles of exercise leader and co-leader are sufficiently clarified and documented (Ref: WP06)

Recommendation 2: Review and update volcanic ash exercise directive

The volcanic ash exercise directive for future ICAO APAC volcanic ash exercises should be reviewed and updated, as necessary, to ensure that:

a) Location and communication strategies for the coordination and monitoring of the volcanic ash exercise are selected to facilitate discussion with all participants as necessary and to provide the most reliable and effective means of conducting the CDM discussions (Ref: WP01, par. 2.12 and 2.14; SP01; WP04, par. 2.9; WP08)

b) The 'trigger' mechanism (e.g., a specified time, action, signal, etc.) for issuance of volcanic ash exercise messages is clearly stipulated in the schedule of volcanic ash exercise actions (Ref: WP01, par. 2.15 and 2.25)

c) All volcanic ash exercise messages are issued based precisely on the templates published in the exercise directive, as agreed by the providers and users of the information concerned (Ref: WP01, par. 2.19, 2.27, 2.33 and 2.35; SP01; meeting discussions)

d) All volcanic ash exercise messages reflect the required information provided in the triggering messages, including reports of volcanic eruptions, volcanic activity and volcanic ash (Ref: WP01; par. 2.21, 2.23 and 2.32)

e) Transmission and reception of all exercise messages (including VAAs) is confirmed by all relevant exercise participants (Ref: WP02)

f) The list of actions is agreed by the relevant suppliers and users of information concerned sufficiently in advance of the exercise to enable participants to confirm their participation and actions prior to the exercise (Ref: WP01; par. 2.36, 2.37 and 2.39; SP01; WP04, par. 2.7, 2.8, 2.11 and 2.12; WP02, par. 2.3; WP06; meeting discussions)

g) The aims, objectives, strategies and instructions for the exercise teleconference activity are clarified to facilitate improved collaborative decision making (Ref: WP01, par. 2.39; SP01 and WP04, par. 2.10)

h) The selected distribution method for exercise messages avoids possible detrimental effects of exercises on the aviation system performance (Ref: SP01)

i) Appropriate message numbers are used for the exercise VAA/VAG (Ref: SP01)

j) Airspace and airport management principles to be demonstrated in the volcanic ash exercises are clearly established (Ref: SP01; SP03, par.2.9)

Recommendation 3: Review and update guidance material for the provision of volcanic ash information

Relevant guidance material for the provision of volcanic ash information should be reviewed and updated, as necessary, to ensure that:

a) Guidance on the distribution of volcanic ash advisory information to MWO and ACC locations accurately reflects current, up-to-date requirements, e.g., in APAC FASID Table MET 3B and ICAO Doc 9766, Part 2 (Ref: WP02; par. 2.3)

b) AFTN addresses and WMO headings used for special air-reports for volcanic ash (in States concerned) are up to date (Ref: WP02; par. 2.6)

Recommendation 4: Regulatory provisions for response to volcanic ash contingency events

States' regulatory provisions and arrangements should be reviewed to ensure that (in accordance with the guidance provided in ICAO Doc 9974 – *Flight Safety and Volcanic Ash*):

a) Aircraft operators are required to include in their safety management system (SMS) an identifiable safety risk assessment for operations into airspace forecast to be, or at aerodromes known to be, contaminated with volcanic ash

b) Safety oversight procedures are used for the evaluation of operators' capability to conduct flight operations safely into airspace forecast to be, or aerodromes known to be, contaminated with volcanic ash

Recommendation 5: Airspace and airport management in response to volcanic eruption and volcanic ash cloud

States' airspace and airport management policies and procedures should be reviewed to ensure that (in accordance with the guidance provided in ICAO Doc 9974 – *Flight Safety and Volcanic Ash* and the provisions of ICAO Doc 4444 – *PANS-ATM*, 15.8.1c and Note 2):

a) Airspace affected by volcanic ash cloud should not be 'closed'

b) Specification in NOTAM of alternate routing or other air traffic flow management (ATFM) measures to manage airspace constraints arising from volcanic ash cloud should be solely for the purpose of ensuring the predictability and regularity of air traffic, and should be based on an assessment of capacity and demand in airspace affected by volcanic ash and/or or by aircraft avoiding the volcanic ash cloud

c) NOTAM specifying alternate routing or other ATFM measures related to a volcanic eruption or volcanic ash cloud should be issued separately from the ASHTAM/NOTAM issued in accordance with Annex 15, 5.1.1.1, r and u

d) Aerodromes should only be closed by NOTAM for periods of observed volcanic ash contamination of the surface of the aerodrome movement area

e) Airport capacity limitations of alternate aerodromes, including apron capacity, should be considered, and recommendations for the use of other alternates considered for inclusion in NOTAM (in c, above)

f) If required by State regulations, any declaration of a Danger Area or Restricted Area should be confined to the pre-eruptive or erupting volcano and the area containing its forecast or observed ejecta

Recommendation 6: Regular updates of volcanic ash information

The Regional ATM Contingency Plan should be reviewed and, where necessary, amended to promote the principles adopted by APANPIRG/26 in *Conclusion 26/19 — Volcanic Ash Information Coordination and Collaboration*

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