



International Civil Aviation Organization

**The Fourth Meeting of ICAO Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG/4)**

Bangkok, Thailand, 1 – 5 December 2014

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**Agenda Item 5: Development of Regional ATFM Framework**

**MET TO SUPPORT ATM AND MET FOR THE TERMINAL AREA**

(Presented by the Secretariat)

**SUMMARY**

This paper presents an overview of the status of development of provisions relating to meteorological information to support ATM (including ATFM) and meteorological services for the terminal area.

**1. INTRODUCTION**

1.1 In step with the international air navigation system's shift from the past air-traffic-control (ATC) environment to the more integrated, collaborative and performance based air-traffic-management (ATM) systems, meteorological service provided for the aerodrome and the terminal area will need to evolve to fill the gap between the traditional meteorological products stipulated in the current ICAO Annex 3 – *Meteorological Service for International Air Navigation* and the evolving user requirements for meteorological information to support the global ATM system.

1.2 On an individual basis, some States are already addressing this challenge through the development of ATM-tailored meteorological information for use in sophisticated ATM decision support tools. For example, information such as meteorological forecast uncertainty is being integrated in new decision making tools to evaluate the likelihood of weather impacts on the ATM system. On a global basis, this paper examines progress towards the development of ICAO provisions to meet the evolving requirements for meteorological information to support ATM (including ATFM) and meteorological services for the terminal area.

**2. DISCUSSION**

Development of provisions related to tailored meteorological service

2.1 The meeting will recall from ATFM/SG/3 in Singapore, March 2014, in discussion related to the distributed sub-regional ATFM network operational trial, the Secretariat advised that anticipated amendments to Annex 3 would define meteorological products for ATM, including ATFM<sup>1</sup>. Furthermore, in its review of the terms of reference of the group, ATFM/SG/3 noted the development of Standards and Recommended Practices (SARPs) in Annex 3 relating to meteorological services for the terminal area was of particular interest to the ATFM/SG, and that the Meteorological Requirements Task Force (MET/R TF) was the most appropriate body to provide the

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<sup>1</sup> Report of the Third Meeting of the Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG/3); paragraph 5.96

ATFM/SG with meteorological specialist advice and guidance on the development of meteorological services for the terminal area and other products relevant to ATFM<sup>2</sup>.

2.2 The meeting is reminded that the abovementioned development of Annex 3 amendments and SARPs falls within the purview of the ICAO global groups specially designated to work in close coordination with the World Meteorological Organization (WMO) to promote, inter alia, the concept of tailored meteorological information to support ATM. Taking into account that progress is ongoing with respect to development of the relevant provisions (as discussed in the following paragraphs), it follows that it would remain premature for the time being for the region to develop implementation plans based on global provisions for ATM-tailored meteorological information and meteorological services for the terminal area.

2.3 The ICAO Meteorological Aeronautical Requirements and Information Exchange Project Team (MARIE-PT) was formed in 2011 to support the ICAO Secretariat in specific activities including the development of proposals to amend Annex 3 with respect to user requirements for meteorological information to support ATM and the development of related procedures, manuals or other guidance<sup>3</sup>. To this end the MARIE-PT, in coordination with the ICAO Air Traffic Management Requirements and Performance Panel (ATMRPP) and the WMO<sup>4</sup>, assisted the Secretariat in developing the draft concept of operations and roadmap for meteorological information to support trajectory-based operations (TBO). In July 2014, that document<sup>5</sup> was submitted to the ICAO Meteorology Divisional Meeting (MET/14) in Montréal for further consideration.

2.4 Noting that the concept of TBO was intended to be an all-encompassing operational improvement covering the ATM requirements through all phases of flight, MET/14 agreed that the aforementioned document, which relates to existing or to be developed provisions in ICAO Annexes, Procedures for Air Navigation Services (PANS) and guidance material relevant to TBO and meteorological service provision, and the implementation milestones for these provisions, once finalized, should be used to facilitate the development of the future ATM requirements for aeronautical meteorological information, and formulated the following recommendation<sup>6</sup>:

**MET/14 Recommendation 3/1 — Aeronautical meteorological information to support trajectory-based operations**

*That an appropriate ICAO expert group (or groups), in close coordination with WMO, be tasked to:*

- a) finalize a draft concept of operations and roadmap concerning aeronautical meteorological information integration for trajectory-based operations (TBO); and*
- b) using the result of a) above, establish further air traffic management requirements and aeronautical meteorological service capabilities to support TBO consistent with the Global Air Navigation Plan (Doc 9750).*

2.5 In its deliberations on meteorological service in the terminal area, MET/14 also noted work done in States to develop ATM-tailored meteorological information and agreed that specific mention be made of the meteorological requirements to support ATM in the terminal area in the

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<sup>2</sup> Report of the Third Meeting of the Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG/3); paragraph 6.40

<sup>3</sup> Ninth Meeting of the Aerodrome Meteorological Observation and Forecast Study Group (AMOFSG/9), Montréal, 26-30 September 2011; Action Agreed 9/36

<sup>4</sup> Initially through the WMO Expert Team on Meteorological Services in the Terminal Area (ET-MSTA) and subsequently the merged WMO Expert Team on Meteorological Services for ATM and Meteorological Information Exchange (ET/M&M)

<sup>5</sup> Meteorology Divisional Meeting (MET/14); Working Paper MET/14-WP/9, Appendix A

<sup>6</sup> Meteorology Divisional Meeting (MET/14); Report on Agenda Item 3, paragraphs 3.1.1 to 3.1.2

aviation system block upgrade (ASBU) methodology Block 1 modules and formulated the following recommendation<sup>7</sup>:

**MET/14 Recommendation 2/10 – Development of meteorological service for the terminal area**

*That ICAO, in close coordination with WMO, be tasked to:*

- a) include meteorological service for the terminal area and other relevant operational requirements in Block 1 and subsequent blocks of the aviation system block upgrade methodology to highlight potential related impacts on air traffic flow in consideration of air traffic control and air traffic management (ATM);*
- b) develop ATM-tailored meteorological service for the terminal area to meet future ATM requirements identified by the Global Air Navigation Plan (Doc 9750) and reflect the appropriate functional and performance requirements in the relevant provisions, noting outcomes from the ICAO expert groups on meteorology, ATM and flight operations;*
- c) develop guidance on verification methodology toward the continuous improvement of meteorological information to ATM; and*
- d) integrate the information concerning meteorological service for the terminal area into the future-wide information management environment underpinning the future globally interoperable ATM system.*

2.6 On 25 September 2014, the Air Navigation Commission (ANC) reviewed and subsequently approved the recommendations arising from MET/14, including those copied above. The ANC noted that the follow-up to the recommendations of the MET/14 meeting will involve ICAO in considerable work, which can be completed by ANC panels and by the Secretariat. Furthermore, the work will require an update of the Work Programme of the Organization<sup>8</sup>.

2.7 On 30 September 2014, the ANC also considered and approved a proposal, developed by the Secretariat in close cooperation with the ANC Ad hoc Working Group on Panel Modernization (AHWG-PM), for the establishment of the Meteorology Panel (METP), noting that the proposed METP work programme would stem largely from the MET/14 recommendations on which the ANC had previously taken action<sup>9</sup>.

2.8 On 3 November 2014, the Council considered the ANC's review of MET/14 and supported the recommended Secretariat follow-up actions<sup>10</sup>.

2.9 In view of the developments discussed above, it is envisaged that, once convened, the METP would be in the best position to determine what (expert) groups would be needed to continue to assist the Secretariat in follow-up actions on the recommendations from MET/14, including the development of global provisions (such as SARPs and amendments in Annex 3) relating to meteorological information to support ATM and meteorological services in the terminal area.

2.10 At the regional level, the meeting is reminded that the MET/R TF was tasked to evaluate requirements for meteorological information in support of ATM/ATFM and to assist States to develop meteorological services to meet the requirements. It is envisaged that as the global provisions are developed, regional implementation of meteorological services to support ATM in the terminal area would be facilitated through the appropriate regional group/s. In the meantime, the MET/R TF will continue to promote coordination between the MET and ATM communities to enhance the level of understanding of the requirements and the capabilities for meteorological information in support of ATM.

<sup>7</sup> Meteorology Divisional Meeting (MET/14); Report on Agenda Item 2, paragraphs 2.2.17 to 2.2.19

<sup>8</sup> ANC 197<sup>th</sup> Session, Minutes of the Fourth Meeting; and Working Paper AN-WP/8871

<sup>9</sup> ANC 197<sup>th</sup> Session, Minutes of the Fifth Meeting; and Working Paper AN-WP/8891

<sup>10</sup> Council – 203<sup>rd</sup> Session, 4th Meeting, Summary of Decisions; and Working Paper C-WP/14200

**3. ACTION BY THE MEETING**

The meeting is invited to note the information contained in this paper.

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