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Agenda Item 8: Meteorological support to the new ATM system

METEOROLOGICAL SUPPORT TO THE NEW ATM SYSTEM

(Presented by the Secretariat)

Summary

This paper provides guidance on the meteorological service to aviation in the future of air traffic management (ATM) system

Ref. : Doc 9854 Operational Concept for Global ATM
Doc 9377 Manual on coordination between air traffic services, aeronautical information services and aeronautical meteorological services

1. Introduction

1.1 The global ATM operational concept presents the ICAO vision of an integrated, harmonized and globally interoperable ATM system. The purpose of the ATM operational concept is to achieve an interoperable global ATM system, for all users during all phases of flight, that meets agreed levels of safety, provides for optimum economic operations, is environmentally sustainable and meets national security requirements. The ATM operational concept describes the services that will be required to operate the global air traffic system up to and beyond 2025. The operational concept addresses what is needed to increase user flexibility and maximize operating efficiencies in order to increase system capacity and improve safety levels in the future ATM.

1.2 This paper provides guidelines on MET service for international air navigation in the new ATM system.

2. Discussion

2.1 The development of new technologies to be applied to both the ATS system and aircraft will facilitate a substantial improvement to, and extension of, the ATS currently provided to aircraft operators. This process will require additional meteorological support to ATS and affect the coordination between the ATS and meteorological authorities and their respective operational units.

2.2 Although the progress that has been made in planning for the new ATM system does not yet provide for a detailed analysis and guidance regarding the coordination between individual elements and units of the new ATM system and the meteorological offices and aeronautical meteorological stations, the following material is intended to describe trends in the provision of meteorological service to international air navigation, including ATS, and in the context of these trends, to outline the envisaged meteorological support to the new ATM system. The material related to the ATM Operational Concept is based on the *Global Air Traffic Management Operational Concept*

(Doc 9854) and that related to the global air navigation plan in the *Global Air Navigation Plan* (Doc 9750).

3. Conclusion

3.1 Participants are invited to note the meteorological information to be provided in the future air traffic management system and prepare their aeronautical MET services to meet these challenges.

APPENDIX

METEOROLOGICAL SUPPORT TO THE NEW ATM SYSTEM

1. Overview of the Met Information Required Under the ATM Operational Concept

1.1 The provision of meteorological information will be an integrated function of the ATM system. The information will be tailored to meet ATM requirements in terms of content, format and timeliness. The main benefits of meteorological information, for the ATM system, will be related to the following:

a) the improved accuracy and timeliness of meteorological information will be used to optimize flight trajectory planning and prediction, thus improving the safety and efficiency of the ATM system;

b) the increased availability of shared meteorological information on board the aircraft will allow the preferred trajectory to be refined in real time;

c) better identification, prediction and presentation of adverse weather will allow the management of its effects more efficiently, thereby improving safety and flexibility, for example, by providing accurate and timely information on the need for diversion or re-routing;

d) improved aerodrome reports and forecasts will facilitate the optimum use of available aerodrome capacity;

e) increased availability of meteorological information (air-reports) from on-board meteorological sensors will contribute to improving forecast meteorological information and the display of realtime information; and

f) meteorological information will contribute to minimizing the environmental impact of air traffic. Performance management will be an important part of the quality assurance of meteorological information.

2 Meteorological Support to International Air Navigation In Accordance With the Global Plan

2.1 While the ATM operational concept presents a long-term future vision, the Global Plan describes a strategy aimed at achieving near- and medium-term ATM benefits on the basis of available and foreseen aircraft capabilities and ATM infrastructure. It contains guidance on ATM improvements necessary to support a uniform transition to the ATM system envisioned in the *Global Air Traffic Management Operational Concept* (Doc 9854). The planning focuses on specific performance objectives, supported by a set of "Global Plan Initiatives" which are designed to support the planning and implementation of performance objectives in the regions. Planning and implementation of performance objectives should be started in the near term and progress in an evolutionary manner.

2.2 The objective of the Global Plan Initiative related to aeronautical meteorology is to improve the availability of meteorological information in support of a seamless global ATM system. It is related to the following operational concept components: AOM, DCB, AO, AUO (paragraph 7.2.2 refers). The strategy described in the Global Plan requires that the following developments be completed and implemented during the next few years:

a) Immediate access to real-time, global operational meteorological (OPMET) information is required to assist ATM in tactical decision-making for aircraft surveillance, air traffic flow

management and flexible/dynamic aircraft routing, which will contribute to the optimization of the use of airspace. Such stringent requirements will imply that most meteorological systems should be automated and that meteorological service for international air navigation be provided in an integrated and comprehensive manner through global systems such as the world area forecast system (WAFS), the international airways volcano watch (IAVW) and the ICAO tropical cyclone warning system;

b) Enhancements to WAFS, IAVW and the ICAO tropical cyclone warning system to improve the accuracy, timeliness and usefulness of the forecasts issued will be required to facilitate the optimization of the use of airspace; and

c) Increasing use of data-link to downlink and uplink meteorological information (through such systems as D-ATIS and D-VOLMET) will assist in the automatic sequencing of aircraft on approach and will contribute to the maximization of capacity. The development of automated ground-based meteorological systems in support of operations in the terminal area will provide OPMET information (such as automated low-level wind shear alerts) and automated runway wake vortex reports. OPMET information from the automated systems will also assist in the timely provision of forecasts and warnings of hazardous weather phenomena. These forecasts and warnings, together with automated OPMET information, will contribute to maximizing runway capacity