INTERNATIONAL CIVIL AVIATION ORGANIZATION

Second Meeting of the Africa - Indian Ocean Aviation System Planning and Implementation Group (AASPG/2)

Livingstone, Zambia, 2 - 6 November 2026

Agenda Item 4 : Implementation of safety and air navigation goals, targets, and indicators, including priorities set in the Regional Aviation Safety and Air Navigation Plans

4.9. Other aviation security and air navigation initiatives

Towards a Harmonized Method for Determining Air Traffic Controller (ATCO) Staffing Levels Incorporating Fatigue Management

(Presented by Senegal)

SUMMARY

This working paper draws the meeting's attention to the limitations of conventional methodologies to determine air traffic controller (ATCO) staffing levels, particularly those contained in the ICAO Air Traffic Services Planning Manual (Doc 9426), which do not incorporate fatigue management requirements.

After analyzing the challenges associated with the implementation of fatigue management systems (prescriptive-based regulations), this paper makes recommendations with a view to developing a harmonized staffing calculation methodology tailored to the AFI Region that integrates air traffic controller fatigue risk factors.

Action by the meeting is in paragraph 3.

References :

- Annex 11 to the Chicago Convention, para. 2.28;
- Doc 9426 (Part IV);
- Doc 9966;
- USOAP-CMA Protocol Questions (PQs 7.085 and 7.195)

Related ICAO Strategic Objectives :

A. Every Flight is Safe and Secure
C. Aviation Delivers Seamless, Accessible, and Reliable Mobility for All

1. INTRODUCTION

1.1 The safe and efficient provision of air traffic services relies directly on the availability of a sufficient number of qualified air traffic controllers (ATCOs).

1.2 The ICAO Air Traffic Services Planning Manual (Doc 9426, Part IV, Section 1, Chapter 2)

provides traditional guidance for the assessment of air traffic control personnel requirements.

1.3 Since November 2020, ICAO requires States to establish prescriptive fatigue management regulations for air traffic controllers. Furthermore, States may establish regulations concerning Fatigue Risk Management Systems (FRMS).

2. DISCUSSION

2.1 The provisions of Doc 9426 are transposed at the national level as guidance material, which air traffic services providers have relied upon to develop a methodology for the determination of air traffic controller (ATCO) staffing levels. However, the sole consideration of the guidance material in Doc 9426, Part IV, is insufficient to develop this methodology. The determination of ATCO staffing levels required for a given ATS unit must, in addition, take into account all available provisions and guidance material, namely:

a) para. 2.28.2 a) of Annex 11, which requires the provider to establish rosters for air traffic controllers that are commensurate with the services provided and comply with the State's prescriptive limitation regulations; and
b) Doc 9966, Chapter 4, which provides guidance on the development of prescriptive limitations and related requirements, as well as regulations for variations from prescriptive limitations, and Appendix D, which provides guidance on parameters associated with prescriptive limitations for air traffic controllers.

2.2 Senegal has mandated the implementation of prescriptive duty time limitation regulations. These regulatory provisions are contained in the Senegal Aeronautical Regulation No. 11 (RAS 11). The air traffic services provider must comply with the prescriptive limitation regulations set forth in RAS 11.

2.3 The staffing determination formula provided in Doc 9426 does not include steps to account for time on duty, breaks, or consecutive days, and therefore is insufficient, on its own, to ensure compliance with prescriptive duty time limitation regulations. The most restrictive rule to comply with is the minimum duration of breaks between periods of time on duty within a duty period. To comply with the latter, it will be necessary to substantially increase the number of air traffic controllers for a given duty period compared to what was projected prior to the implementation of fatigue management.

CONCLUSION

2.4 The air traffic controller staffing determination methodology proposed in Doc 9426 does not, on its own, allow for the incorporation of air traffic controller fatigue management standards mandated by State regulations, which are required to satisfy ICAO Protocol Question (PQ) 7.195. See the explanatory note in the Appendix regarding PQ 7.085 and PQ 7.19.

2.5 A harmonized methodology merging the provisions of Annex 11 and the guidance material from ICAO Docs 9426 and 9966, and incorporating the verification of the roster cycle, is necessary at the regional level and, subsequently, within ICAO guidance material.

3. ACTION BY THE MEETING

3.1. The Meeting is invited to:

a) note the information provided in this working paper;
b) endorse that the WACAF and ESAF Regional Offices, in coordination with States, ANSPs, and relevant organizations (CANSO, IFATCA), coordinate the development of regional guidance material for determining air traffic controller staffing levels that integrates the requirements of Annex 11, para. 2.28, Appendices 5 and 6, and the guidance material from Doc 9966 (Manual for the Oversight of Fatigue Management Approaches);

c) call upon States to rely on this new methodology to accurately determine their air traffic controller requirements; and
d) invite ICAO to consider updating the guidance material in Doc 9426 regarding personnel requirements.

APPENDIX

- Protocol Question (PQ) 7.085 focuses on procedures for determining ATS personnel requirements (Doc 9426).
- Priority Protocol Question (PPQ) 7.195, on the other hand, requires that the ATS provider comply with fatigue management regulations.
- These two PQs are linked: PQ 7.085 verifies staffing levels against the requirements determined by the provider, while PQ 7.195 ensures that the actual staff rosters comply with duty time and rest period limitations. If requirements are calculated solely using the Doc 9426 methodology—which does not incorporate these limitations—a provider may be compliant with PQ 7.085 while remaining unable to meet the requirements of PQ 7.195, due to a lack of sufficient staffing to establish rosters that conform to fatigue management rules.