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FOURTEENTH AIR NAVIGATION CONFERENCE

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Agenda Item 3: Air Navigation System Performance Improvement
3.1: Proposals to improve the efficiency of air navigation services contributing to LTAG

ENHANCING EFFICIENT USE OF A RUNWAY TYPE FINAL APPROACH AND TAKE-OFF AREA (FATO) TO PROMOTE ENVIRONMENTAL SUSTAINABILITY AND FUEL EFFICIENCY

(Presented by the United Arab Emirates)

EXECUTIVE SUMMARY

This working paper explores the ICAO standards and regulations pertaining to the use of a runway type final approach and take-off area (FATO) integrated in accordance with ICAO Annex 14 — *Aerodromes*, Volume II — *Heliports* to proximity of a runway. Bringing different modes of air transport together increases efficiency also limiting noise pollution, however, to ensure flight safety and to promote both environmental sustainability and fuel efficiency it would be paramount to develop standards and regulations concerning provision of wake turbulence separation between traffic operating from a runway and the adjacent runway type FATO.

Action: The Conference is invited to encourage collaboration between Member States to develop necessary standards and regulations for wake turbulence separation between traffic operating from a runway and the adjacent runway type FATO.

1. INTRODUCTION

1.1 The civil aviation industry has a significant environmental footprint, contributing to greenhouse gas emissions, noise pollution, and other environmental impacts. In response, ICAO has established a long-term aspirational goal (LTAG) aimed at reducing aviation carbon emissions to net-zero by 2050.

1.2 Improvements can be made by improving the efficiency of airport operations and limiting the environmental impact thereof by developing standards for wake turbulence separation, if required, between helicopters using a runway type FATO and fixed wing aircraft simultaneously using the adjacent runway. Currently ICAO documentation including *Procedures for Air Navigation Services — Air Traffic* Management (PANS-ATM, Doc 4444), Annex 14 — *Aerodromes*, Volume II — *Heliports* and *Heliport Manual* (Doc 9261), lack clear guidance on the necessity or parameters to be applied for wake turbulence separation in the afore mentioned scenario. The absence of guidance can lead to unnecessary fuel burn when ensuring safety.

2. DISCUSSION

2.1 The United Arab Emirates, through its air navigation services provider, is delivering air traffic services (ATS) to two busy international airports, featuring a runway type FATO adjacent to a runway. This setup enhances the safety and efficiency of both state and commercial helicopter operators utilizing the runway type final approach and take-off area (FATO), while also limiting noise pollution outside the airports.

2.2 Annex 14, Vol II describes how a FATO is to be located in relation to a runway. A table is presented describing minimum separation distance from a runway edge for simultaneous operations with regards to aircraft mass. A recommendation is provided that a FATO should not be located near areas where "aeroplane vortex wake generation is likely to exist", however no further guidance is provided.

2.3 Doc 9261, Part II — *Onshore Heliports,* discusses wake vortex mitigation, but leaves the operational measures to be decided by the provider of ATS.

2.4 PANS-ATM (Doc 4444) describes time based wake turbulence separation between aircraft using a) the same runway, b) parallel runways separated by less than 760m, c) crossing runways if the projected flight path of the second aircraft will cross the projected flight path of the first aircraft at the same altitude or less than 1000ft below, d) parallel runways separated by 760 m or more, if the projected flight path of the second aircraft will cross the projected flight path of the first aircraft at the same altitude or less than 1000ft or below. Runway type FATO or simultaneous operations described in Annex 14, Vol II is not discussed.

2.5 To improve efficiency and to reduce the environmental impact of aviation, the United Arab Emirates at Dubai International Airports applies the latest standards to wake turbulence separation utilising Enhanced Wake Turbulence Separation (eWTS). To mitigate the possible wake turbulence hazard as per Doc 9621, eWTS was applied between departing aircraft using the runway and the helicopters using the adjacent runway type FATO. A significant portion of Dubai International airports fixed wing traffic falls into eWTS Group A or B whereas helicopters are classified within Group G. Following an Airbus A380 (Group A) a three-minute separation is required to achieve the required eWTS for a helicopter (Group G), as indicated in the excerpt from Doc 4444 below. For an airport operating at full capacity this requirement creates a ripple effect leading to delays.

Preceding aircraft wake turbulence group	*Succeeding aircraft wake turbulence group*	*Time-based wake turbulence separation minima*
A	B	100 seconds
	C	120 seconds
	D	140 seconds
	E	160 seconds
	F	160 seconds
	G	180 seconds
B	D	100 seconds
	E	120 seconds
	F	120 seconds
	G	140 seconds
C	D	80 seconds
	E	100 seconds
	F	100 seconds
	G	120 seconds
D	G	120 seconds
E	G	100 seconds

2.6 Providing adequate separation is paramount for safety. However, lack of standardisation may lead to excessive separation which translates into unnecessary fuel burn and emissions.

2.7 To facilitate the seamless integration of a runway type FATO, as described in Annex 14, Vol II, into any airport, ICAO Member States should promote international cooperation among all stakeholders for standardisation of applied wake turbulence separation criteria ensuring harmonised global implementation.

3. CONCLUSION

3.1 Integrating runway type FATOs adjacent to traditional runways enhances efficiency and reduces noise in airport operations. However, the absence of standardized guidance on wake turbulence separation for these operations can lead to unnecessary fuel consumption and emissions.

3.2 This working paper underscores the need for developing comprehensive standards and regulations for wake turbulence separation in this context. Promoting international cooperation and leveraging experiences from ICAO Member States, including the United Arab Emirates, will ensure a harmonised approach.

3.3 Collaborative efforts among ICAO, Member States, and industry stakeholders are crucial for the safe, efficient, and sustainable integration of runway type FATOs globally. The recommendations aim to foster unified and effective air traffic management practices, reducing aviation's environmental impact while maintaining safety.

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