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WORKING PAPER

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ASSEMBLY — 38TH SESSION

TECHNICAL COMMISSION

Agenda Item 38: Other issues to be considered by the Technical Commission

REASSESSMENT OF SAFETY STANDARDS FOR RUNWAY END SAFETY AREA

(Presented by the Republic of Korea)

EXECUTIVE SUMMARY

Annex 14 — *Aerodromes*, Volume I — *Aerodrome Design and Operations* and Doc 9157, *Aerodrome Design Manua*l suggests international standards for aerodrome facilities designed to increase overall levels of aircraft safety. These aerodrome standards are a significant element in flight safety. Some aerodromes set the distance of their Runway End Safety Area (RESA) to 90 m, and this length of RESA being a risk factor for large-sized aircraft during takeoff and landing. This paper proposes the reassessment of safety standards for RESA and the necessity of safety assurance process.

Action: The Assembly is invited to:
a) review the proposals in this paper with regard to the length of RESA; and
b) consider the necessity of analysis of RESA standards and recommendations in order to improve safety.

Strategic Objectives:	This working paper relates to the Safety Strategic Objective
Financial implications:	Not applicable
References:	Annex 14 — *Aerodromes*, Volume I — *Aerodrome Design and Operations* Doc 9157, *Aerodrome Design Manual*

(3 pages)

1. INTRODUCTION

1.1 Annex 14 — *Aerodromes*, Volume I — *Aerodrome Design and Operations* and Doc 9157, *Aerodrome Design Manual* suggest international standards and recommendations for the installation of aerodrome facilities.

1.2 This paper discusses the Runway End Safety Area (RESA), defined in Annex 14 as an area symmetrical with the extended runway centre line and adjacent to the end of the strip primarily intended to reduce the risk of damage to an aeroplane undershooting or overrunning the runway.

2. ICAO STANDARD

2.1 Annex 14 assigns a code number amongst the aerodrome reference codes in accordance with the aeroplane reference field length as follows:

a) minimum take-off distance less than 800 m: Code number 1;

b) minimum take-off distance 800 m up to but not including 1,200 m: Code number 2;

c) minimum take-off distance 1,200 m up to but not including 1,800 m: Code number 3;

d) minimum take-off distance 1,800 m and over: Code number 4.

2.2 "3.5 Runway End Safety Areas" requires that a RESA should be provided at each end of a runway strip where the code number is 3 or 4, and where the code number is 1 or 2 and the runway is an instrument one.

2.3 However, and regardless of the code number, a RESA shall be at least 90 m, with recommended lengths as in a) and b):

a) at least 240 m where the code number is 3 or 4;

b) at least 120 m where the code number is 1 or 2.

2.4 ICAO Aircraft Accident/Incident Data Reports (ADREP) states that the number of accidents occurring on runway during landing and preparation is increasing. Doc 9157 Aerodrome Design Manual explains that aeroplanes may suffer a considerable impact from undershooting or overrunning during landing, and that in order to prevent such circumstances, an additional RESA distance of 90 m should be applied for code number 3 or 4, and 1 or 2 and the runway is an instrument one.

2.5 ADREP further recommends that a RESA should extend at least 240 m for code number 3 or 4, and 120 m for code number 1 or 2, as stipulated in Annex 14.

3. DISCUSSION

3.1 Annex 14 and Doc 9157 propose 90 m of RESA as a minimum standard distance, this length of RESA being a risk factor for large-sized aircraft during takeoff and landing.

3.2 In the case of runways which have not followed the recommendation of 90 m RESA, pilots may lack sufficient time to respond to any emergency situation, compared to those runways which have followed the recommendation. As a result, the psychological burdens on pilots increased, as is the risk of accident.

3.3 Airport operators should strive to keep their RESA distance to 120 m or 240 m as recommended in Annex 14, in order to reduce the risk of accident; however, such a significant investment on expanding airport facilities or runways makes it difficult to follow the recommendation.

3.4 It is, however, necessary to follow the recommendation in order to reduce the psychological burdens on pilots as well as the risk of accident.

4. CONCLUSION

4.1 ICAO is invited to request that the aerodromes keep their RESA to 90 m to improve safety by using complementary measures for air traffic control and supporting equipment.

4.2 ICAO is invited to analyze the followings with regard to the length of RESA and to share the result with Member States:

a) types and the number of accidents occurring in aerodromes that follow the standard and in those that follow the recommendation;

b) the effect of accident prevention and safety improvement experienced in aerodromes that follow the recommendation, compared with aerodromes that follow the standard.

4.3 ICAO is also required to review whether the current 90 m minimum distance of RESA is appropriate by conducting a cost-benefit analysis, and further studies on investment and the effect of accident prevention and safety improvement related to an expansion of RESA.

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