



ICAO

*International Civil Aviation Organization***Sixth Meeting of the Asia/Pacific Aerodrome Design and Operations Task Force (AP-ADO/TF/6)***Langkawi, Malaysia, 18 - 21 February 2025***Agenda Item 4: Planning, Design and Construction of Aerodromes****POTENTIAL MISINTERPRETATION ON THE TERMS “DEFINED RUNWAY AND TAXIWAY PAVEMENT EDGES TO THE NEAR SIDE OF SIGN”**

(Presented by Malaysia)

SUMMARY

This paper presents the needs to further clarify the terms “from the defined runway and taxiway pavement edges to the near side of sign” as mentioned in Table 5-5 Annex 14 Volume I – which titled “Location distances for taxiing guidance signs including runway exit signs”. The purpose of requiring further clarification on this subject is to ensure that there will be no potential misinterpretation in the implementation of the requirements which may lead to non-compliance with the relevance requirement in Annex 14 Volume I.

1. INTRODUCTION

1.1 Signs are provided to convey mandatory instruction, information about specific location or destination on a movement area or to provide other information to meet the requirements of Surface Movement Guidance and Control Systems (SMGCS). These signs provide information useful to pilots during takeoff, landing, and taxiing. There are two types of signs available in the movement area:

- a) **Mandatory instruction sign:** These are provided to identify a location beyond which an aircraft taxiing or vehicle shall not proceed unless authorised by the aerodrome control tower. For example, runway designation sign and etc.; and
- b) **Information sign:** These are provided where there is an operational need to identify by a sign, a specific location, or routing (direction or destination) information. For example, runway exit sign and etc.

1.2 The location and distances of the mandatory and information signs within the movement area play a critical role to ensure pilot can easily detect the sign and thus, ensure the safe aircraft movement on ground. The correct placement of signs is crucial to ensure they are positioned in accordance with the requirements outlined in Annex 14 Vol I, where the specified requirements have been meticulously calculated by ICAO.

1.3 In reference to Table 5-5, Annex 14 Vol I, the misinterpretation on how defined taxiway or runway pavement edges are referenced across these requirements have led to confusion among airport designers, aerodrome operators and State regulatory. This paper aims to elaborate the effects on the misinterpretation on the terminology for defined taxiway or runway pavement edges, particularly how they impact design and operation safety. Hence, the goal is to improve understanding

of these references and ensure that the safety of the aircraft operations is not jeopardized.

2. DISCUSSION

Standards in Annex 14 Volume I

2.1 Annex 14 Volume I clause 5.4.3.14 states that “Except as specified in 5.4.3.16 and 5.4.3.24 information signs shall, wherever practicable, be located on the left-hand side of the taxiway in accordance with Table 5-5”.

2.2 Another clause of Annex 14 Volume I clause 5.4.3.16 states that “A runway exit sign shall be located on the same side of the runway as the exit is located (i.e. left or right) and positioned in accordance with Table 5-5”.

2.3 ICAO Annex 14 Volume I, Table 5-5 is as in the figure below:

Table 5-5. Location distances for taxiing guidance signs including runway exit signs

Sign height (mm)				Perpendicular distance from defined taxiway pavement edge to near side of sign	Perpendicular distance from defined runway pavement edge to near side of sign
Code number	Legend	Face (min.)	Installed (max.)		
1 or 2	200	300	700	5–11 m	3–10 m
1 or 2	300	450	900	5–11 m	3–10 m
3 or 4	300	450	900	11–21 m	8–15 m
3 or 4	400	600	1 100	11–21 m	8–15 m

2.4 The requirements mentioned in the blue box above refer to the perpendicular distance from the defined taxiway or runway pavement edge to the nearest side of the sign. This can be interpreted using either of the two interpretations as shown below:

Interpretation 1



Perpendicular distance taken from taxi side stripe marking to near side of mandatory sign



Perpendicular distance taken from runway side stripe marking to near side of runway exit sign

Interpretation 2



Perpendicular distance taken from pavement edge to near side of mandatory sign



Perpendicular distance taken from pavement edge to near side of runway exit sign

2.5 There are some airports in Malaysia that adopt the pavement edge as the reference point for sign placement. This is viewed as incorrect. Most airports start the calculation of distance from the taxi side stripe or runway side stripe markings as their reference, and this is considered to be in compliance with the requirement as mentioned in the Table above. However, these two different interpretations are not healthy and prove only by explaining through wording that it may contribute to the wrong misinterpretation of the said requirement.

Implications

2.6 **Confusions for pilot** - Correct placement of mandatory and information signs is vital to ensure accurate situational awareness for pilots. While incorrect placement of signs may contribute to unnecessary situation as the signs are not placed at the required location, particularly during low-visibility operations, where the provided instructions and information may not be effectively utilized, jeopardizing the safety of aircraft operations.

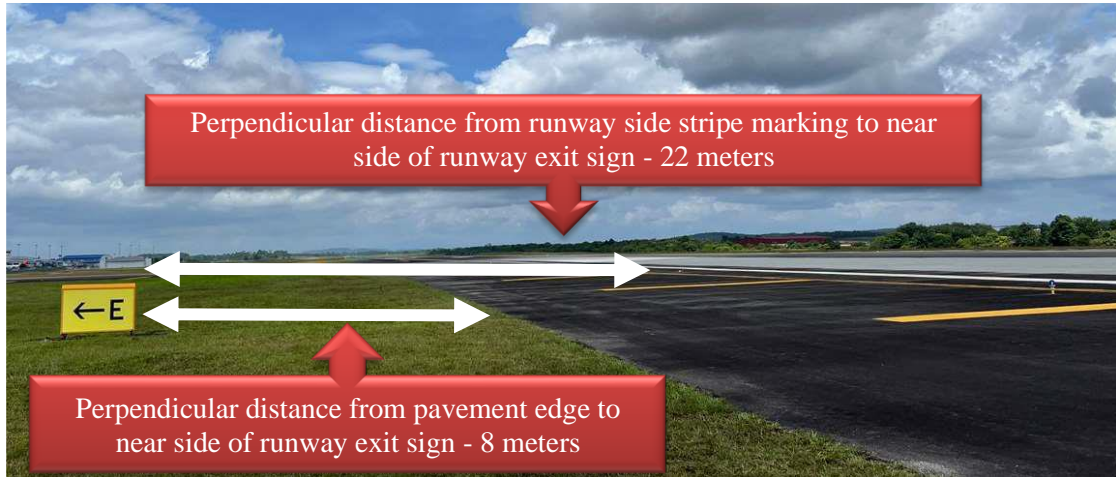
2.7 **Safety hazards** – Signs placed too far away from the correct location may reduce visibility for pilots and affect the efficiency of aircraft operations.

2.8 **Regulatory compliance** – The uncertainty in interpreting the requirements led to non-conformance with the requirements and the need to prepare corrective actions during the safety oversight audit.

2.9 **Challenges for airport designers** – Unclear guidance on reference points for placement of sign may jeopardize uniformity and standardization during the design stage. Hence, this may lead to project delays, and additional costs might be incurred for airports to relocate the signs that have been incorrectly placed due to misinterpretation of the requirements.

Case Studies

2.10 ABC International Airport

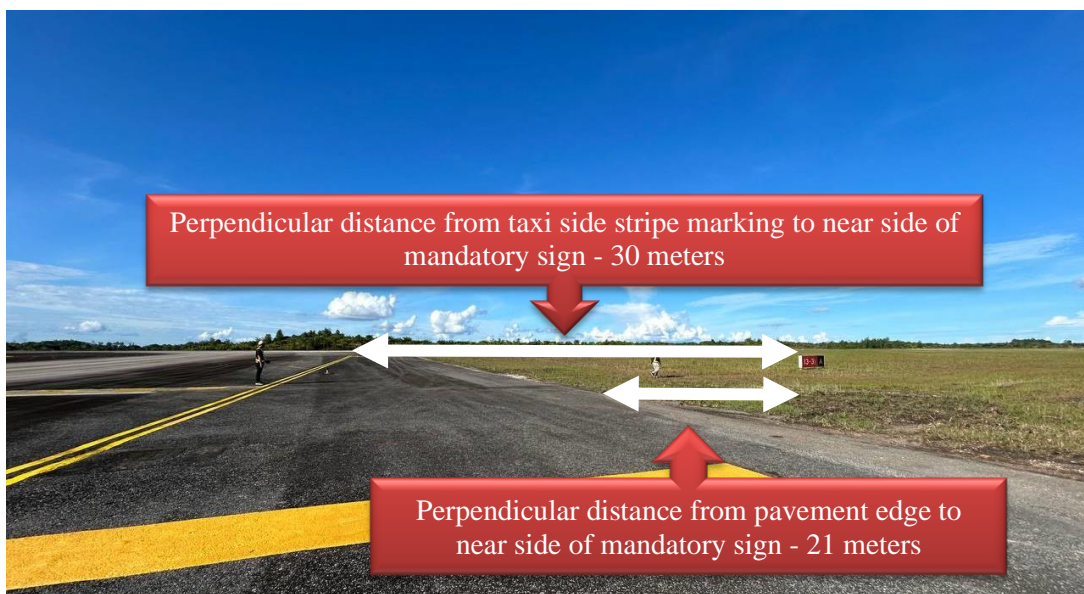


2.10.1 Based on the figure above, during the airport design process, the designer uses the term "defined pavement edge" as the reference for the sign's position with respect to the runway pavement, rather than the runway side stripe markings.

2.10.2 As a result, ABC International Airport will need to relocate the signs affected to ensure they are positioned correctly according to the requirements. This relocation will take time and incur considerable costs, as the signs will need to be placed very close to the runway pavement due to the 14-meter runway shoulder width.

2.10.3 The aerodrome operator has conducted a comprehensive safety assessment to identify any potential hazards and risks from this non-compliance while waiting for replacement process to be completed. All relevant stakeholders have been informed about the issue, and it has been officially recorded in the Aerodrome Manual as an authorized deviation.

2.11 DEF Airport



- 2.11.1 As shown in the figure above, the designer also used the term "defined pavement edge" from the pavement rather than from the markings. Due to this non-compliance, DEF Airport which was upgraded in 2012, made the decision to promptly relocate four signs. The relocation process cost RM18,800.00 and took approximately one month to complete.

2.12 GHI Airport



- 2.12.1 Additionally, the figure above shows that the airport designers have correctly applied the term "defined pavement edge" by considering the distance from the near side of the sign to the runway side stripe marking. According to the measurements, the airport meets the required standards.

2.13 In summary, if the distance from the near side of the sign to the pavement edge is used, there is a likelihood that the sign will be positioned too far out of the pilot's line of sight, making it difficult for the pilot to see. Therefore, the defined pavement edge should be applied starting from the runway side stripe marking, rather than from the pavement edge.

2.14 As an additional example, the FAA uses the term "offset distance from the usable pavement edge to the near side of the sign," which is further explained as the distance from the nearest edge of the sign to the edge of the usable pavement, including the fillet pavement. Reference: Table 1-1 and Para 1.14.5, Advisory Circular - 150/5340-18H.

3. SUGGESTION

3.1 This paper would like to propose ICAO to add further explanation to the above-mentioned requirements in terms of supplementing the requirement with graphical illustration to make the requirement easily understood and to avoid unnecessary misinterpretation of the said requirement.

4. CONCLUSIONS

4.1 Misinterpretation in calculating the starting point of defined taxiway or runway pavement edges has introduced safety hazards and challenges to comply with Annex 14 Volume I requirements by the designers as well as the aerodrome operator. This paper highlights the need for adopting a clearer approach to ensure the correct placement of mandatory and information signs at the aerodrome.

4.2 ICAO is recommended to provide additional guidance in term of graphical illustration for the placement of the signs in the movement areas for the purpose of ensuring consistency across the airports. Such additional guidance would enhance clarity and support more consistent application of the requirement across the region.

5. ACTION BY THE MEETING

5.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) provide additional guidance including practical examples and clear illustrations on how to comply with existing standards; and
- c) discuss any relevant matters as appropriate.

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