



International Civil Aviation Organization

CAR/SAM REGIONAL PLANNING IMPLEMENTATION GROUP (GREPECAS)

**Fifth Meeting of the GREPECAS Aerodromes and Ground Aids /  
Aerodrome Operational Planning Subgroup (AGA/AOP/SG/5)**

Montevideo, Uruguay, 20 to 24 November 2006

AGA/AOP/SG/5-WP/05

20/10/06

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**Agenda Item 3:           Review of AGA deficiencies**  
**3.2     AGA deficiencies and action plans**

**SOLUTION FOR THE DECLARATION OF RUNWAY STRIPS AND RUNWAY END SAFETY  
AREAS (RESAs) IN AIRPORTS WITH TERRAIN RESTRICTIONS**

(Presented by Cuba)

**SUMMARY**

This working paper offers to the meeting a solution for the declaration of runway end safety areas (RESAs) in airports with terrain restrictions.

**References:**

- Aerodrome Regulations of the Republic of Cuba
- Annex 14, Volume I, Aerodrome design and operations

**1.           Introduction**

1.1           On 4 November 1999, amendment 3 to ICAO Annex 14, Volume I, Aerodrome design and operations, established new standards and recommended practices (SARPs) for the planning, design and operation of international civil aviation aerodromes. Said amendment focuses on safety enhancements to minimise the consequences of overrunning and undershooting the runway. It mainly produced new SARPs dealing with the issue of runway strips and RESAs, and introduced changes to the existing recommendations so that they could become standards.

1.2           One of the aerodrome issues most extensively discussed by experts relates to terrain restrictions for the declaration of runway end safety areas.

**2.           Discussion**

2.1           The airport under study is “Antonio Maceo” in Santiago de Cuba, which has very specific geographical characteristics.

2.2           The aerodrome is located in the south coast of the eastern part of Cuba, in a very mountainous area, on a plateau surrounded by hills; both thresholds end up in large depressions. The length of the main runway (09-27) is 4002 x 45 metres and both thresholds are displaced 300 metres. Perpendicular to the main runway is a secondary runway with threshold designation (18-36) of 1400 x 45 metre long.

2.3 Runway 27 has a SWY that measures 120 x 45, which is used as RESA, but runway 09 has no space available to declare the RESA through this threshold (see figure 1).

2.4 The declaration of runway end safety areas does not affect the location of the ILS, which is displaced 300 metres, nor the position of the existing thresholds, nor the layout of runway edge lights, nor approach lights.

2.5 Figure 2 shows the conditions proposed for declaring the new distances of the “Antonio Maceo” International Airport.

2.6 **Useable pavement after the reductions**

Runway portions with a new runway strip or a RESA are still used for start of take-off and landing calculations.

**3. Conclusions**

3.1 Runway end safety areas are a Standard applicable by States since 4 November 1999. They are intended to reduce the risk of damage to an aircraft undershooting or overrunning the runway, thus reducing the resulting human and material losses. We believe it is an important element that will enhance safety at the aerodromes. Under special circumstances, as in the case under study, there must be a balance between the physical parameters of the runways and their adjacent ends in such a way that they include their location.

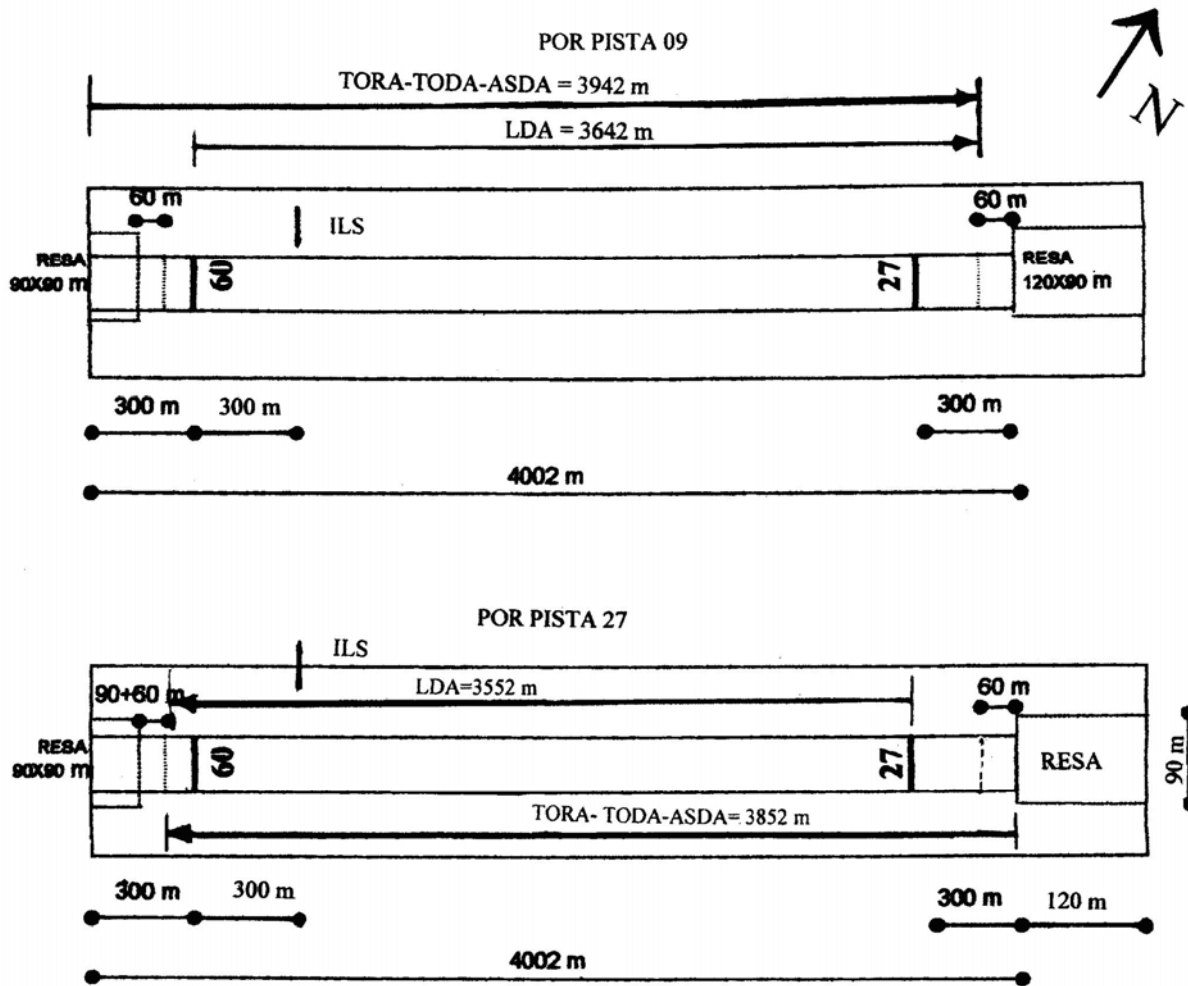
**4. Suggested action**

4.1 The meeting is invited to review and comment on the working paper.





Figure 2. Solution of declared distances at the “Antonio Maceo” International Airport.



DISTANCIAS DECLARADAS

	TORA	TODA	ASDA	LDA
09	3942	3942	3942	3642
27	3852	3852	3852	3552