



Qualidade &
Segurança
Azul

Runway Markings

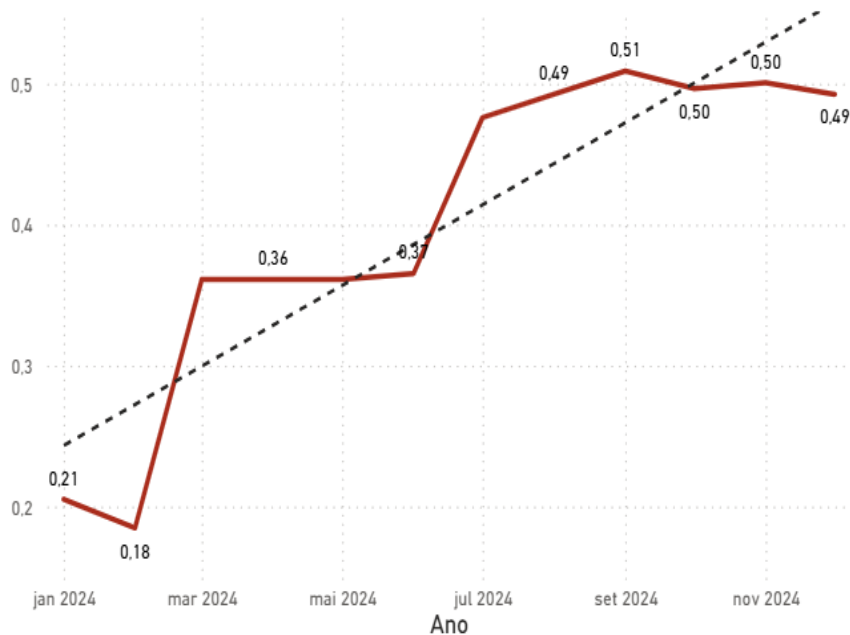
25



Runway Markings

Operational Safety

Captain Samir Ferreira



The Start Point

Deep Landing events started to raise concerns due to the increase of its occurrence, the year is 2024.

A Closer Look

After analyzing the bases where it happened the most, we got the following results.

Base	RWY	Deep Landing	% Ciclos
CWB	15	125	20,33%
CGB	35	86	22,81%
SLZ	06	75	56,82%
CGB	17	71	18,83%
UDI	04	44	20,85%
GYN	14	37	13,50%
BEL	02	36	9,89%
CWB	33	34	5,53%
MAB	07	34	31,78%

A Closer Look

After analyzing the bases where it happened the most, we got the following results.

The initial focus was given to CWB, CGB and SLZ.

Base	RWY	Deep Landing	% Ciclos
CWB	15	125	20,33%
CGB	35	86	22,81%
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MAB	07	34	31,78%



CGB is shown twice, divided by threshold. Total events: **157 at CGB**.



Find the Error!



**CGB
RWY 35
2026**



**CWB
RWY 33
2026**



**SLZ
RWY 09
2026**



Aiming Point Location

Understanding the Aiming Point

(i) A sinalização horizontal de ponto de visada não deve começar mais perto da cabeceira do que a distância indicada na coluna apropriada da Tabela D-2, ressalvando-se que, em pistas equipadas com sistemas visuais de indicação de rampa de aproximação, o início da sinalização horizontal deve coincidir com a origem da rampa de aproximação visual.

Tabela D-2. Localização e dimensões da sinalização horizontal de ponto de visada

Localização e dimensões (1)	Distância de pouso disponível			
	Menor que 800 m (2)	800 m até 1200 m exclusive (3)	1200 m até 2400 m exclusive (4)	2400 m ou maior (5)
Distância da cabeceira ao início das sinalizações	150 m	250 m	300 m	400 m
Extensão da faixa ^a	30-45 m	30-45 m	45-60 m	45-60 m
Largura da faixa	4 m	6 m	6-10 m ^b	6-10 m ^b
Espaçamento lateral entre as laterais internas das faixas	6 m ^c	9m ^c	18-22,5 m	18-22,5 m

^a As maiores dimensões das variações especificadas estão destinadas ao uso em situações onde um maior contraste for necessário.

^b O espaçamento lateral pode ser variado dentro desses limites, de modo a minimizar a contaminação da sinalização horizontal por depósitos de borracha.

^c Esses cálculos foram deduzidos com base na distância entre as rodas externas do trem de pouso principal. (Redação dada pela Resolução nº 802, de 18.05.2026)



Incorrect aiming point placement is a key contributing factor to Deep Landing occurrences.

Rwy Marks and Aiming Point

- Runways exceeding 2,400 m require specific marking configurations per RBAC standards.

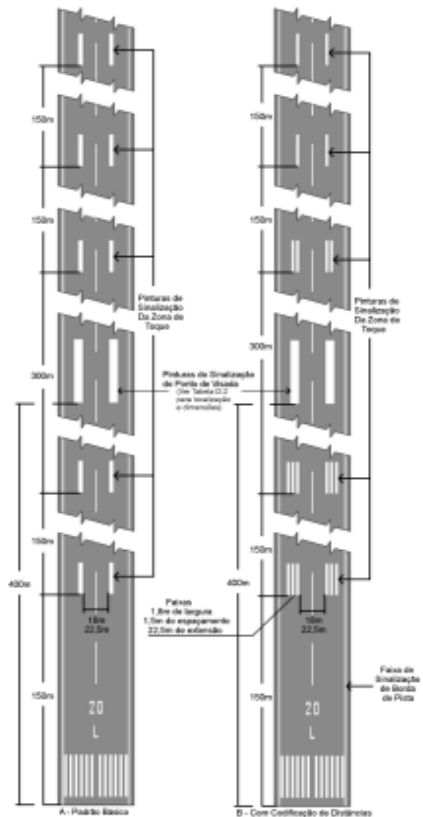


Figura D-5. Sinalização horizontal de ponto de visada e de zona de toque (Alterado pela Resolução nº 465, de 13.03.2018)



Relevant Consideration

International documentation:

A review of international standards shows that FAA AC 150/5340-1M, Section 2.2.3, addresses the consequences of changing the *aiming point* location, as excerpted below:

- *“2.2.3 Consequences When Shifting the Aiming Point Markings. ... possible conflict that could occur when the aiming point markings are relocated.*
- *2.2.3.2 Runways with an approach landing aid, such as Precision Approach Path Indicators (PAPIs) or Visual Approach Slope Indicators (VASIs), which are co-located with the aiming point markings, can be negatively affected when an excessive shifting of the aiming point marking occurs...*
 - *...The consequence could be a non-compatible threshold crossing height for landing airplanes...*
 - *...When the aiming point markings are shifted more than 60 feet (18.3 m), the co-located PAPI or VASI should be evaluated for relocation to provide a correct vertical guidance to pilots...*
- *2.2.3.3 For landing safety, the FAA requires that whenever the distance between the threshold and aiming point markings is 1,220 feet (372 m) or more:*
 - *The airport operators place a note in the Chart Supplement to inform pilots about the increased distance existing between the threshold and the aiming point markings.”*

PAPI Location and Consequences

The location of a PAPI may be changed for various reasons. Any relocation of the *Aiming Point* should presume:

- Complete relocation of the Touchdown Zone, with repositioning of all associated markings to maintain consistency; and/or;
 - Implementation of a displaced threshold; and/or;
 - Revisions to declared distances, particularly the LDA, for the affected runway threshold.
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- **Aiming Point Relocation and Available Runway Distance:** While moving the *aiming point* farther down the runway may mitigate obstacle-related issues, it does not reflect the actual runway distance available, potentially penalizing aircraft performance calculations.
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- **Responsibility for Events:** If an aircraft touches down beyond the TDZ as a result of misleading runway markings, or due to touchdown zone lights extending beyond the first third of the runway, and an operational safety event subsequently occurs (such as a runway excursion), responsibility for such an event remains unclear.

What We Have Done So Far

 **Meetings with Flight Standards and Flight OPS**

 **Reduced Runway LDA in Performance Softwares**

Creation of a reduced Runway LDA in the Performance Softwares for SLZ 06 and CGB both runways.

 **Pilot Awareness**

Heads up for the pilots, letting them know about the wrong runway markings.

 **Benchmarking & Industry Discussions**

Discussions with other companies and Benchmarking.

 **Safety Talk with ANAC**

 **BCAST — RE Group Collaborative Discussion**



Thank You!

Runway Markings Safety Azul

Together, through awareness, benchmarking, and regulatory collaboration, we continue to improve safety standards across our operations.