

ASSOCIAÇÃO DOS PILOTOS PORTUGUESES DE LINHA AÉREA

# Runway Excursions





Runway excursions can result in loss of life and/or damage to aircraft, buildings or other items struck by the aircraft. Excursions are estimated to cost the global industry about \$900M every year.





### Runway excursions Still most frequent type of accidents









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A total of 483 lives were lost in
runway excursions between 2004
and 2009 inclusive, the vast
majority (469) resulted from the
15 fatal jet aircraft accidents.
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## **Runway Excursions**

According to research carried out by three groups, The Flight Safety Foundation, the Netherlands Lab R and IATA, runway excursions are now the most common type of event leading to accidents in commercial operations. These excursions are generally as a result of a poor approach leading to an abnormal landing or a loss of control on the runway either during takeoff or landing.

















# $\succ$ A total of 40 accidents ocurred in 2010.

Represents 35% decrease from 62 in 2009 and 25% decrease from 53 in 2008

➢ Eleven accidents were classified as "major" in 2010, compared with 13 in 2009.





Landing overruns	
Factor	Percentage
Wet/Contaminated runway	58.8%
Long landing	38.9%
Speed too high	19.9%
Incorrect decision to land	16.3%
Aquaplaning	13.8%
Tailwind	13.6%
Late/incorrect use of brakes	11.3%
Late/incorrect use of reverse thrust	11.1%
Too high on approach	6.1%

Landing veeroffs	
Factor	Percentage
Wet/Contaminated runway	36.9%
Crosswind	26.2%
Aircraft directional control not maintained	13.9%
Hard landing	12.1%
Nose wheel steering issues	10.1%
Tire failure	6.4%
Landing gear collapsed	6.2%

Worldwide. approximately 10% of all landings are conducted on a wet/contaminated runway EVan Es. (2005)]. The risk of a landing overrun is about 13 times higher on a wet/contaminated runway than on a dry runway.





Takeoff overruns	
Factor	Percentage
Abort/reject - After V1	40.8%
Wet/Contaminated runway	14.2%
Tire failure	12.5%
Takeoff mass too high/incorrect	10.8%
Late/incorrect use of brakes	4.2%

Takeoff veeroffs		
Factor	Percentage	
Wet/Contaminated runway	41.3%	
Aircraft directional control not maintained	33.9%	
Crosswind	18.3%	
Nose wheel steering issues	17.4%	
Asymmetric power	9.2%	





On a worldwide basis, there appears to be a significant increase in landing overrun risk when one of the following factors is present during landing:

Description approach.
Description approach.
Description approach speed.
Description approach.
Description

The highest risk occurs when the aircraft touches down far beyond the threshold (long landing), followed by excess approach speed.





**PREVENTING MEASURES:** 

#### **l**.Pilots should:

Be aware of the risk of making long landings.

- Output Comply with operators SOPs. Deviation call-outs.
- Be trained to go-around when needed at low altitudes (approach not stabilized).
- Always conduct an in-flight assessment of the landing distance (EU-OPS 1.400). Be conservative (calculated landing distance + 15%).
- Be aware of the associated risks of landing on wet/contaminated runways combined with crosswinds.
- Select the appropriate braking performance. Use of auto brakes is strongly recommended.

# Always aim to fly stabilized approaches.





PREVENTING MEASURES:

#### 2.ATC should:

- Provide correct information about the runway condition and the braking friction. For this to happen there must be a harmonized system of runway condition reporting.
- □Vector aircraft to final approach according to ICA0 guidelines.
- Should carefully design airspace to avoid unstable approaches.

#### **3.Aerodromes should:**

□ Have runway markings according to ICAO provisions.
□ Have appropriate RESA dimensions.
□ Assure proper runway surface condition.
□ Assure correct and updated aerodrome information



#### RESA Dimensions Code 3 and 4 Runways



Analysis of data from runway overrun events has shown that in the overwhelming majority of cases the aircraft leave the runway surface at a speed of less than 70kts and, furthermore, generally come to a final stop within 300m of the runway end.











# Airbus Delivers First A320 Family Aircraft With The Runway Overrun Prevention System







The patented Airbus ROPS system computes minimum realistic in-flight landing and on-ground stopping distances and compares them to available landing distances in real time

The system combines data on weather, runway condition and topography, and aircraft weight and configuration. Depending on the resulting analysis, ROPS may prompt immediate callouts and alerts for pilots, assisting the crew in the go-around decision-making process and/or the timely application of stopping means on touchdown."





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Documentos de Referência:
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IATA Safety Reports (2010, 2011)
IFALPA Runway Safety Manual (2009)
Flight Safety Foundation (2009)
IATA Runway Excursion Analysis Report 2004-2009
EUROCONTROL Study on Runway Excursions (1980-
2008)
Running out of Runway / National Aerospace
Laboratory NLR (2005)
Skybrary
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