Guidance on Operations & Performance

Doc 10064 Aeroplane Performance Manual

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27 March 2019

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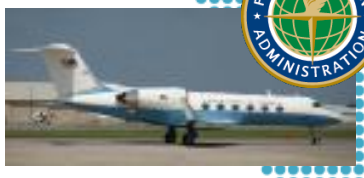
Contributors










THANK YOU

Australian Government
Civil Aviation Safety Authority

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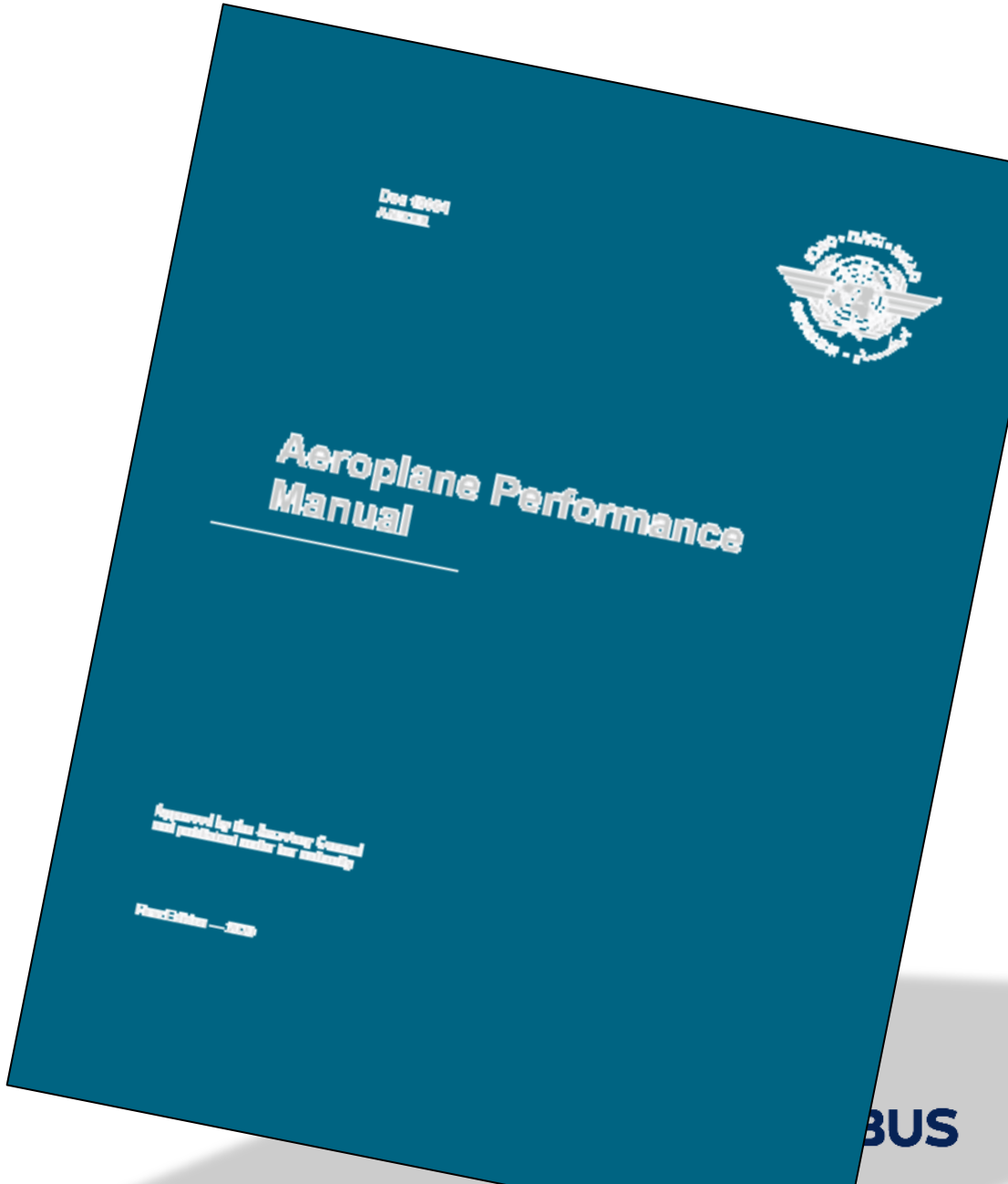
Content

- Introduction to Operations on Contaminated Runways
- 4 Flight-Phase oriented Chapter
  - Take-off
  - En-Route
  - Landing
  - Missed Approach

- **Clear Focus on GRF**

- Other information considered as non-controversial
- Based on existing national guidance and practices

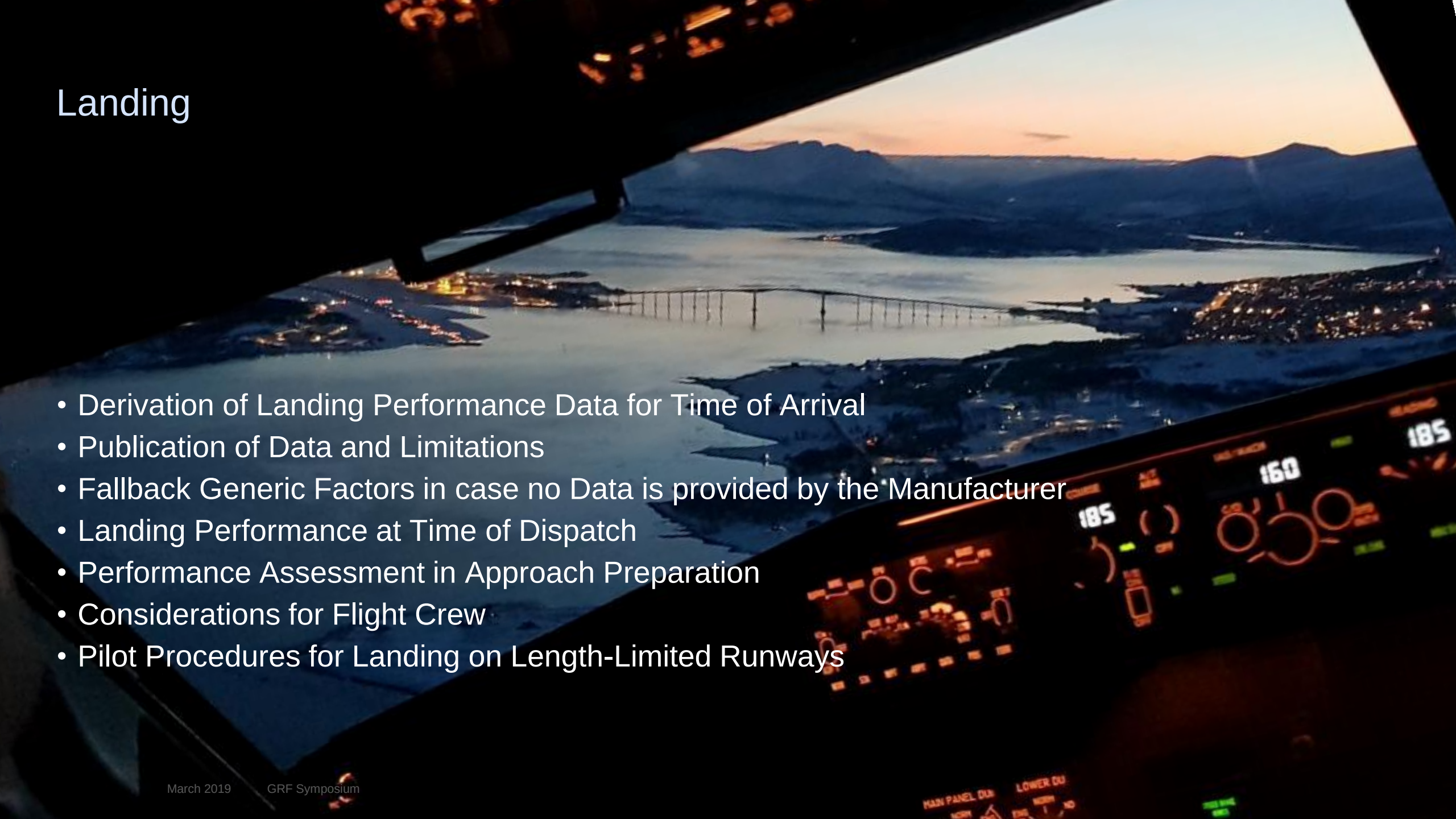
- Still under Review by Ops Section



Introduction - Operations On Contaminated Runways

- Description of the RCR for Operators and Pilots
- Introduction to the Assessment Process applied by the Aerodrome
- Description and use of the RCAM and RWYCC
- Considerations for making AIREPs of Braking Action
- Guidance on Training

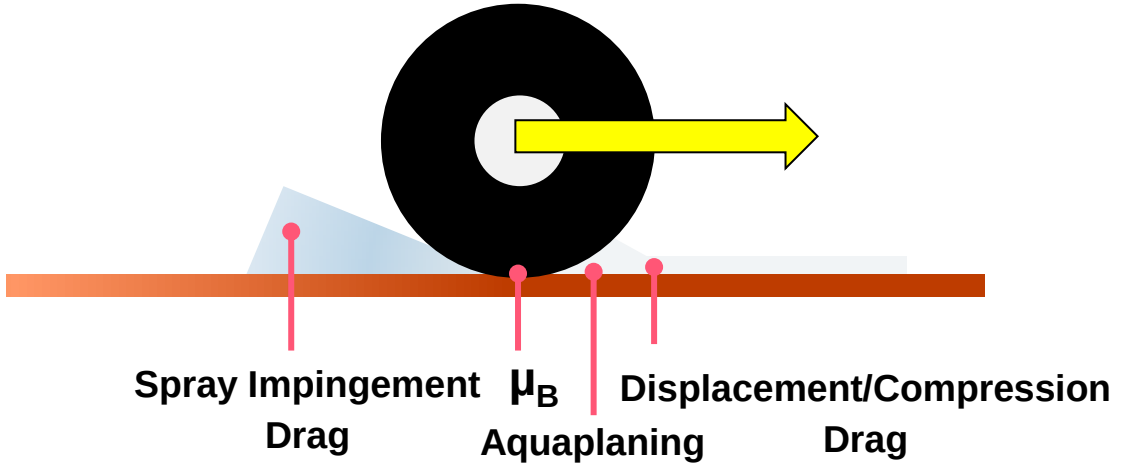
Landing



- Derivation of Landing Performance Data for Time of Arrival
- Publication of Data and Limitations
- Fallback Generic Factors in case no Data is provided by the Manufacturer
- Landing Performance at Time of Dispatch
- Performance Assessment in Approach Preparation
- Considerations for Flight Crew
- Pilot Procedures for Landing on Length-Limited Runways

The Situation for Takeoff

- RWYCC provides information on friction only
- At takeoff fluid contaminants generate drag
  - Displacement
  - Compression
  - Impingement
- Takeoff can be limited by
  - Distance needed to accelerate to lift-off speed
  - Distance needed to accelerate to decision speed V1 and come to full stop on available runway
- Contaminant drag must be accounted for in takeoff computations



Takeoff computation must be done for prevailing contaminant!

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Takeoff

Computation with Contaminant Type and Depth

- Typical manufacturer data certified to CS25 pre-Amdt 2 does not cover many contaminants in the RCAM
- Missing:
  - Frost
  - Dry Snow
  - Wet Snow
  - Compacted Snow at OAT above -15ºC
  - Slippery When Wet
  - Ice Cold & Dry

- APM offers advice on how to compute for missing contaminants conservatively

Runway condition assessment matrix (RCAM)

Assessment criteria		Downgrade assessment criteria	
Runway condition code	Runway surface description	Aeroplane deceleration or directional control observation	Pilot report of runway braking action
6	• DRY	---	---
5	• FROST • WET (The runway surface is covered by any visible dampness or water less than 3 mm deep) ***Less than 3 mm depth:*** • SLUSH • DRY SNOW • WET SNOW	Braking deceleration is normal for the wheel braking effort applied AND directional control is normal.	GOOD
4	***-15ºC and Lower outside air temperature:*** • COMPACTED SNOW	Braking deceleration OR directional control is between Good and Medium.	GOOD TO MEDIUM
3	• WET ("Slippery wet" runway) • DRY SNOW or WET SNOW (Any depth) ON TOP OF COMPACTED SNOW ***3 mm and more depth:*** • DRY SNOW • WET SNOW ***Higher than -15ºC outside air temperature[1]:*** • COMPACTED SNOW	Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced.	MEDIUM
2	***3 mm and more depth of water or slush:*** • STANDING WATER • SLUSH	Braking deceleration OR directional control is between Medium and Poor.	MEDIUM TO POOR
1	• ICE [2]	Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced.	POOR
0	• WET ICE [2] • WATER ON TOP OF COMPACTED SNOW [2] • DRY SNOW or WET SNOW ON TOP OF ICE [2]	Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain.	LESS THAN POOR

Takeoff

Computation with Downgraded RWYCC

METAR

PAMC 13$^{09:53\ Z}$ AUTO 000°00^{KT} 10SM CLR M09/M12

A2972 *RMK AO2 SLP073 T10891117 TSNO=*

RCR

PAMC 12130942 05 2/2/2 100/100/100 // COMPACTED SNOW/COMPACTED SNOW/COMPACTED SNOW

APM recommends “to delay take-off. However, […], it may be sufficient to determine performance in nominal conditions and to adopt appropriate operational procedures such as considering reduced crosswind limits, using the full length of available runway and avoiding rolling take-off.”

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Thank you

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