

2005: A340 Toronto

■ General Context

- Scheduled passenger flight Paris-Toronto
- 12 crew members
- 297 pax
- Bad weather at Toronto:
 - × Localized TS
 - × Heavy RA
 - × Severe winds

2005: A340, Toronto (con'd)

■ Approach context:

● The tower

- Wind measuring system were **not** functioning
- Provide the wind reported by **previous** aircraft

● APP partially **IMC** with:

- Heavy rain,
- Turbulences
- Only half of the RWY was visible
- Lightning on L & R side of RWY and its far end
- Wind switching from crosswind to tail wind

● **No** indications of windshear:

- Neither by the A/C windshear detection
- Nor the Windshear prediction systems

2005: A340 Toronto (con'd)

■ Landing context:

● RWY 24L:

- ➔ The shortest RWY in Toronto
- ➔ Breaking action reported “poor” by previous A/C

● During flare:

- ➔ A/C entered heavy shower area, with severely reduced visibility

● Touch down:

- ➔ Almost **mid** runway (1220m for a 2743m RWY)



1) 2001:23
 2) 2001:39
 3) 2001:41
 4) 2001:53
 5) 2001:56
 6) 2001:57
 7) 2002:06
 8) 2002:18
 9) 2002:23

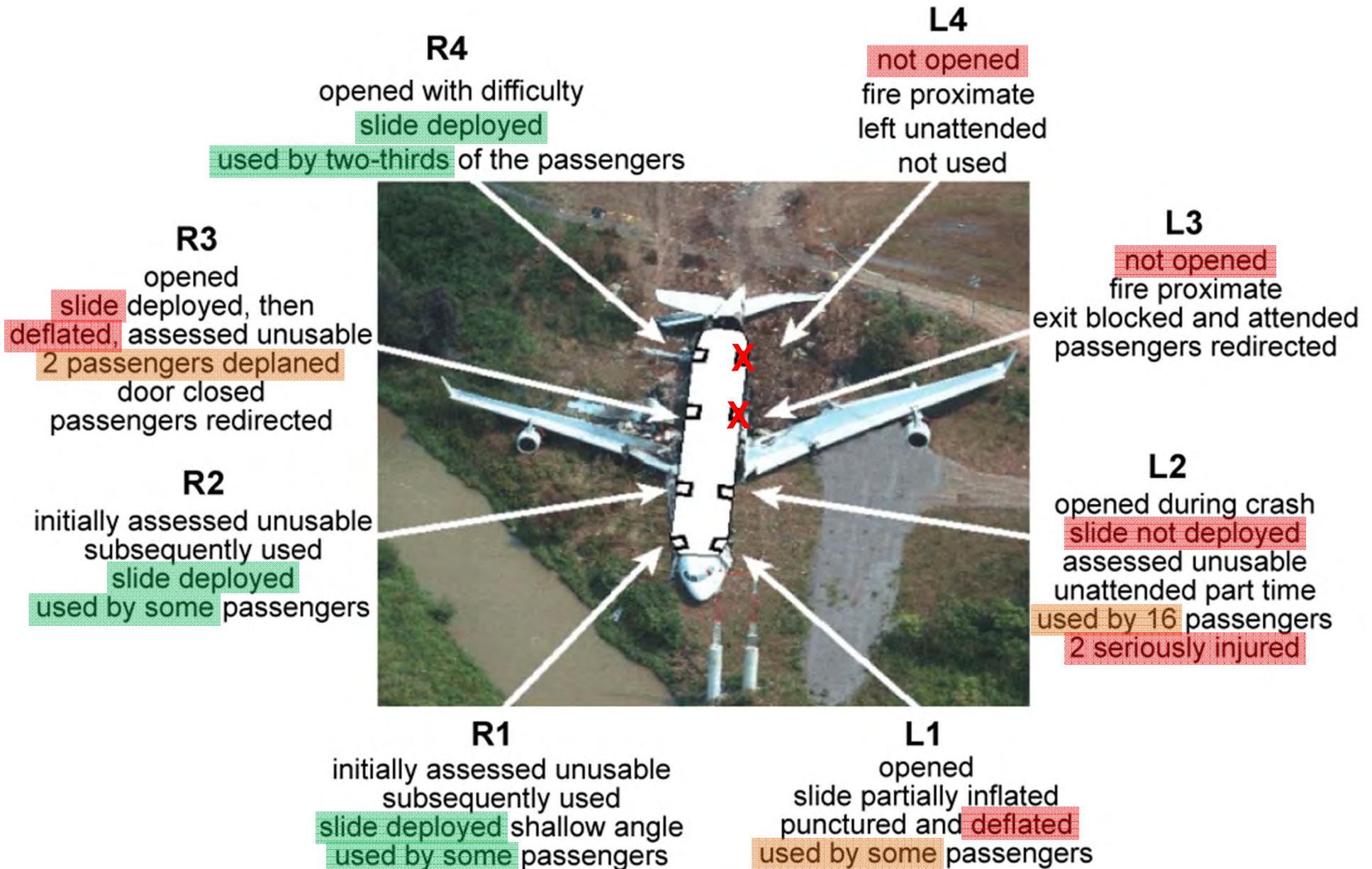
Engines Idle
 Thrust 24%
 147 kt
 153 kt
 146 kt
 243 kt
 241°
 1158m
 Touch Down
 Reverse
 35°
 2002:18
 DEDR & CVR stopped
 Aircraft departs Rwy
 Gndspoiler extended,
 Spoiler applied
 86 kt
 66 kt
 134 kt
 238°
 250°
 246°
 1400 m remaining

RWY 24L, 237 degree

2005: A340 Toronto (con'd)

■ Successful evacuation

- After the aircraft stopped, flight attendants:
 - Observed a fire outside the aircraft
 - Order the evacuation.
- Many passengers took carry-on luggage during evacuation
- The complete evacuation was effected in less than 2 mn.
- Assisted by airport Emergency Response Services (ERS)



2005: A340 Toronto (con'd)

■ Consequences

- 21 persons received minor injuries
- 2 crews and 10 pax received serious injuries
- No fatalities
- A/C substantially damaged then destroyed by post-crash fire
- Hundred of flights were diverted.

2005: A340 Toronto (con'd)

■ Analysis

- At 320ft PF:
 - ➔ Disconnected the A/P and A/T
 - ➔ PF increase thrust
 - ✗ Because a perception that speed was decreasing
- At 300ft:
 - ➔ Wind shift to tail wind increasing A/C ground speed
- PM:
 - ➔ Made no call even though A/C was well above GS
- At threshold:
 - ➔ Aircraft Is at 80 ft
 - ➔ Entered an intense downpour severely reducing visibility
 - ➔ Crew is committed to landing and their G/A option no longer exists

2005: A340 Toronto (con'd)

■ Analysis (end)

- Both pilot were concerned with the reduced visibility (i.e. looking mainly outside):
 - The **speed scan** decreased
 - The extra thrust increased airspeed and groundspeed
 - They did not become aware the wind shift to tail wind
 - Since they were in the flare, they did not appreciate how much runway was being used up
- Very **long touch down**
- **PM did not make usual calls** regarding:
 - “Speedbrakes”
 - “Reverses Green”
- **12”** elapsed before the reverses being used

2005: A340 Toronto (end)

■ Causes (TSB)

- The following factors did not allow aircraft to stop before the end of RWY:
 1. Extra thrust
 2. Tail wind
 3. 12" time before using reverses
 4. RWY contaminated (braking action poor).



