

1978: DC8 Portland

■ General context

- 189 people on board
- Commercial flight JFK-Denver-Portland
- Descent and approach at Portland International
- Day light and good weather

1978: DC8 Portland (con'd)

- Operational context
 - Landing gear is set down at 8000 feet
 - **No light** indicating main gear fully down and locked
 - Crew felt strange events:
 - Unusual rapid landing gear extension
 - Thump, knocks and jolts
 - Aircraft yawing to the right
 - **Maintain** 5000 feet for procedures

1978: DC8 Portland (con'd)

■ Situation management

● During first 23 mn:

- Crew conversations
- Accomplished all of the emergency and precautionary actions available to them to assure themselves that all landing gear was locked in the full down position.
- FE checked the visual indicators on top of both wings

1978: DC8 Portland (con'd)

■ Situation management (con'd)

● Contacts (6 mn, +29 mn)

- United Systems Line maintenance Control Center (Dispatch and maintenance)
- Captain explained:
 - ✗ the landing gear problem,
 - ✗ what the flight crew had done to assure that the landing gear was fully extended.
 - ✗ reported about 7,000 lbs of fuel on board
 - ✗ stated his intention to hold for **another 15 or 20** minutes.
 - ✗ was going to have the flight attendants prepare the passengers for emergency evacuation.

1978: DC8 Portland (con'd)

■ Situation management (con'd)

● Conversations (7 mn, +36 mn)

➤ With CA1 concerning:

- × passenger preparation
- × crash landing procedures
- × evacuation procedures

➤ FO raises 2 questions about fuel quantity

➤ Feed pumps lights start **blinking** (i.e. about 5000 lbs of fuel)

➤ Further conversation about landing gear status

➤ Captain request a current card on weight for another 15 mn

➤ FE responded:

- × "Not enough. Fifteen minutes is gonna... really run us low on fuel here."

1978: DC8 Portland (con'd)

- Situation management (con'd)
 - Contact United OPS in Portland (2 mn, +38 mn)
 - FO question about fuel
 - ➔ FE responded: "4,000 lbs remained, 1,000 lbs in each tank"
 - Captain sent the FE to the cabin to "...kinda see how things are going...." (4 mn, +42 mn)
 - 2 conversations (4 mn, +46 mn)
 - ➔ About giving CAs ample time to prepare for the emergency,
 - ➔ About cockpit procedures (evacuation after landing, possible antiskid protection after landing, procedures used during approach and landing)
 - FE returned and reported that the cabin would be ready in "another two or three minutes."

1978: DC8 Portland (con'd)

- Situation management (con'd)
 - Conversation (3 mn, +49 mn)
 - Captain-FE about pax and their attitudes to the emergency
 - At this time Captain thinks he needs 3 to 5 minutes before starting approach
 - Fuel status given to ATC:
 - 3000 lbs
 - Conversations (3 mn, +51 mn)
 - Checking the landing gear warning horn as further evidence that the landing gear was fully down and locked
 - Whether automatic spoilers and antiskid would operate normally with the landing gear circuit breakers pulled

1978: DC8 Portland (con'd)

- Situation management (end)
 - FO says to Cpt engine #4 is stopping (+55 mn)
 - Cpt: "Why?"
 - FO replied: "Fuel!"
 - Cpt requested FE to reset that circuit breaker momentarily
 - CVR revealed conflicting and confusing conversation between flight crewmembers as to the aircraft fuel status
 - **First** request for an approach clearance (+56 mn, 19 nm from RWY)
 - Cpt turned toward airport (+58 mn)
 - Engines #1 & #2 stop (+61 mn)
 - Mayday call (+62 mn)



1978: DC8 Portland (con'd)

■ Consequences

- Crashed into a wooded section of a populated area of suburban Portland
- 6 nm east southeast of the airport
- No fire (but...no fuel)
- Aircraft destroyed
- Of 181 pax: 10 killed, 23 injured
- Of 8 crew members: 2 killed, 2 injured

1978: DC8 Portland (end)

■ Causes (NTSB conclusion)

- Captain failed to properly :
 - Monitor the aircraft's fuel
 - Respond with decisive and timely decisions
 - Respond to the crewmember's advisories regarding fuel status
 - To relate time and distance from the airport
- This resulted in fuel exhaustion to all engines
- Captain attention was directed **completely** towards:
 - The diagnosis of the gear problem
 - Preparation of the passengers for an emergency landing

■ Contributing to the accident

- Failure of the **other two flight crewmembers** to:
 - ✗ Fully comprehend the criticality of the fuel state
 - ✗ Successfully communicate their concerns to the captain.