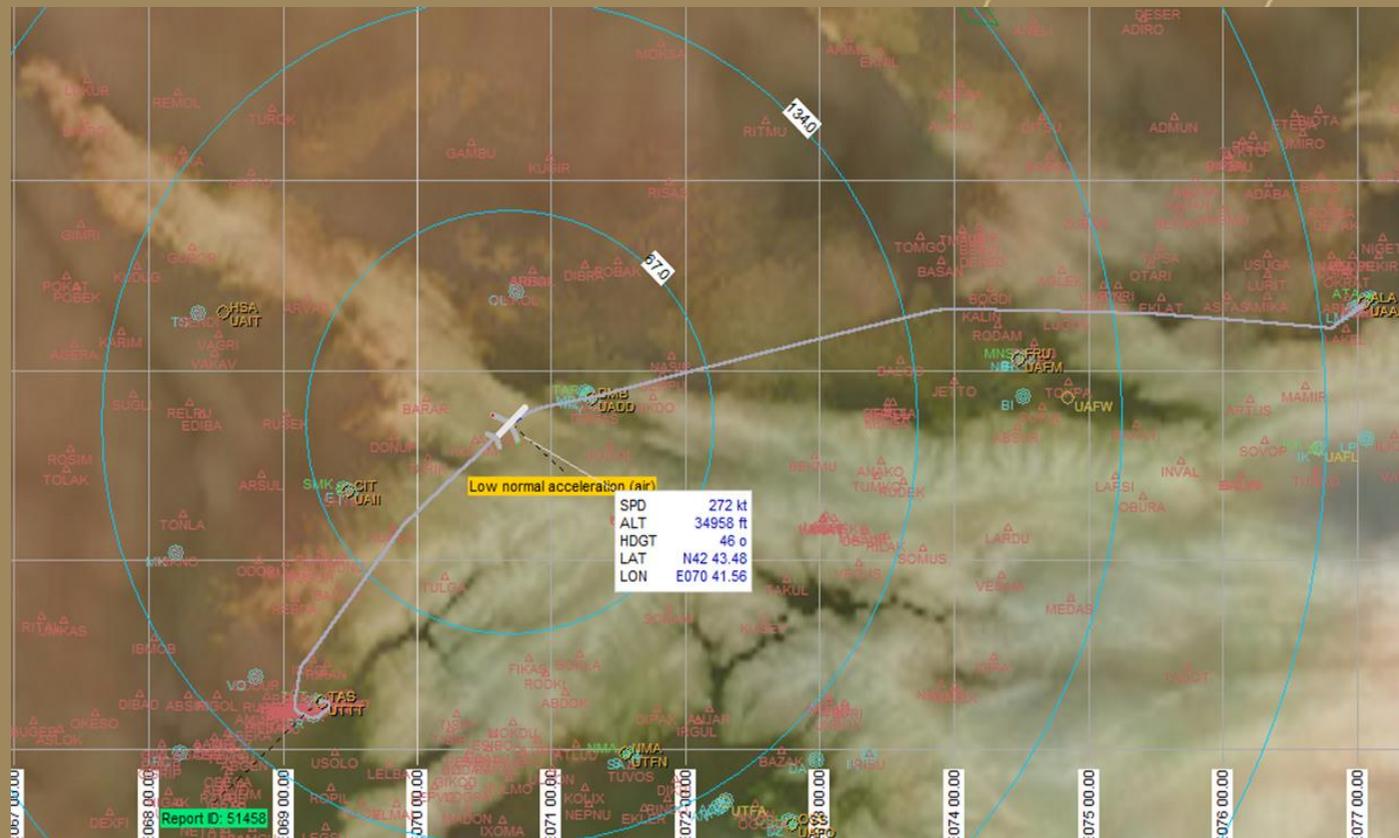


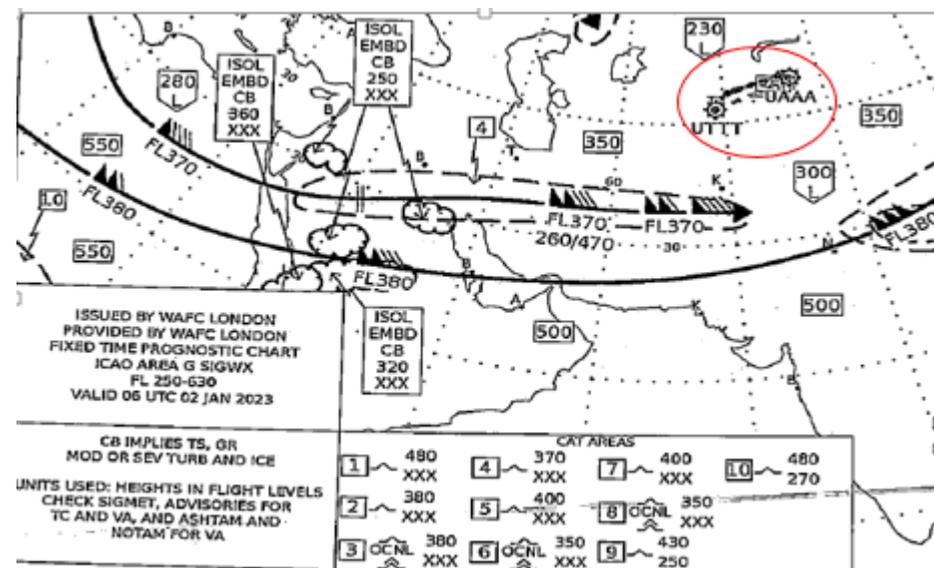
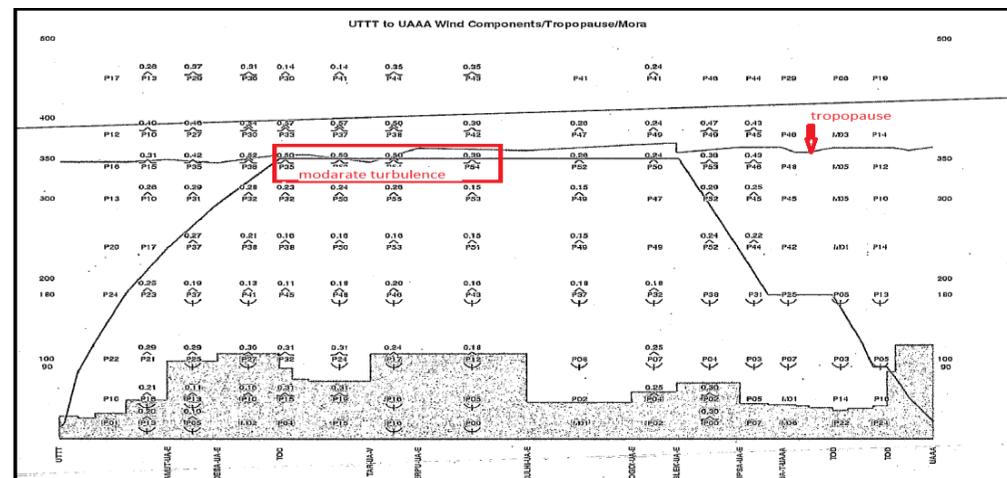
# January 2023, Tashkent (TAS) to Almaty (ALA) A321N 5 passengers received minor injuries



SIRM 31 Brussels 2024

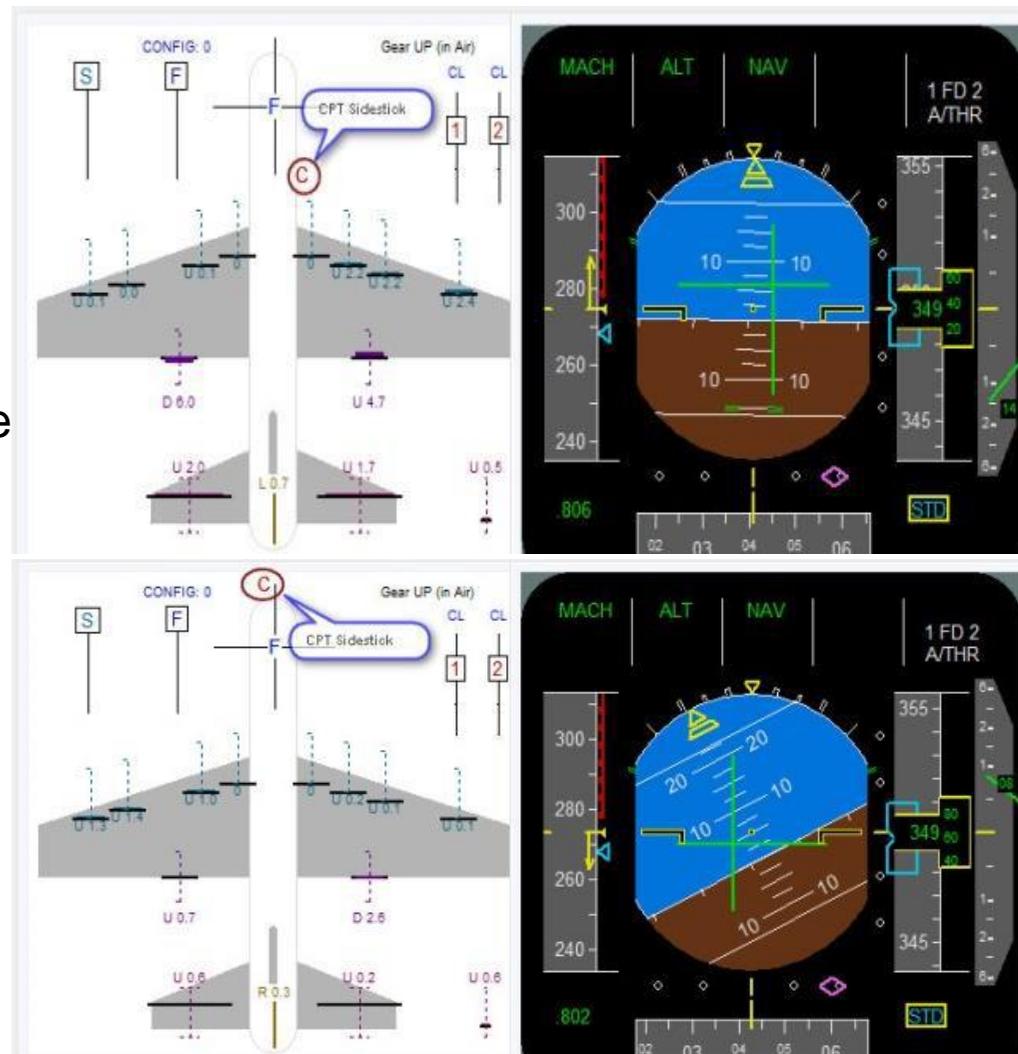
# History of flight

- On pre-flight briefing with flight attendants before the first sector of the flight, the flight crew mentioned the possibility of turbulence activity at cruise level on both flight sectors.
- Flight crew didn't notice any turbulence in flight to TAS at FL340. The crew decided to fly TAS-ALA sector at FL350 in accordance with OFP.
- Significant Prognostic Weather Chart - no significant weather phenomena was observed on the route Tashkent-Almaty.
- Hazardous Weather Chart indicates the tropopause level is crossing FL350.



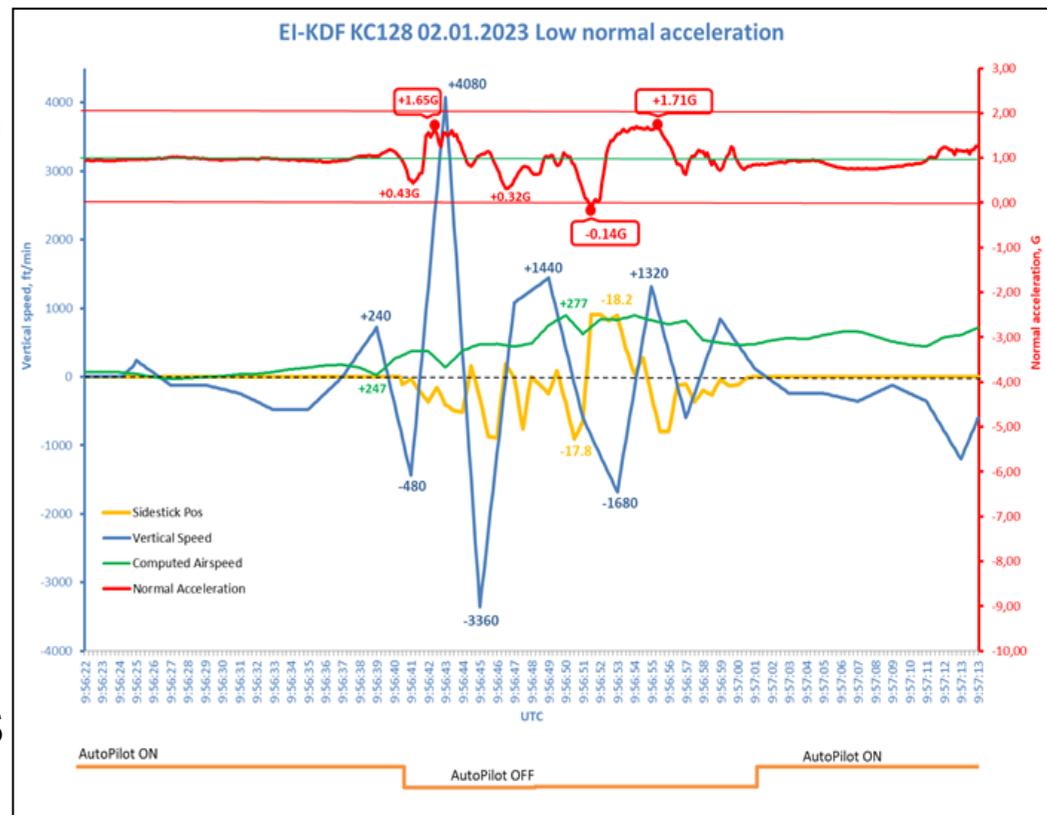
# History of flight

- Flying at FL350 IAS decreased to 245kts (selected speed 266kts) probably due to the wind change. PM announced “SPEED SPEED”.
- Turbulence intensity increased from light to moderate or severe. The IAS started to fluctuate and dynamically increased to 259kts with a speed trending up to 20knots above Mmo and Vertical speed value changes to -1305ft/min.
- PF disengaged the autopilot “instinctively” due to sudden appearance of severe turbulence. QRH PR-ABN-SEVERE TURBULENCE procedure states “Keep auto pilot ON”.

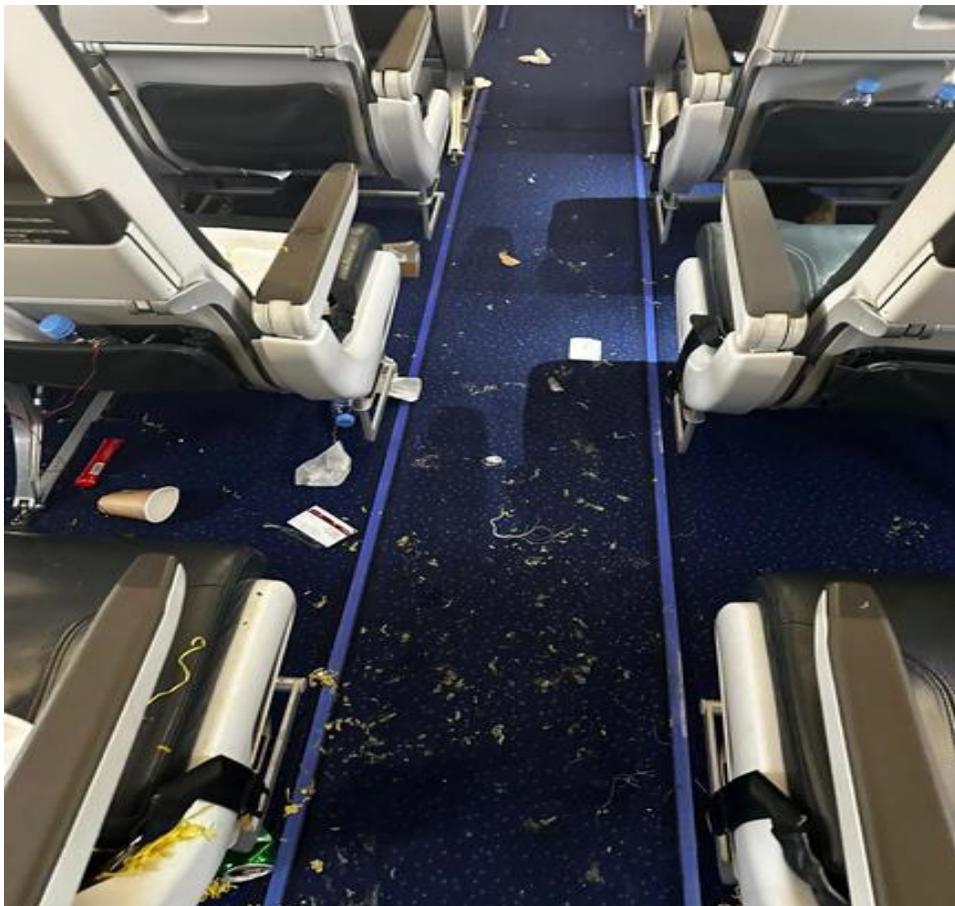


# History of flight

- PF controlled the aircraft manually next 20 seconds. During the manual flight parameters reached next maximum values: right bank angle reached 28.5°, MACH indication reached 0.813, Pitch varied: +10.9/-3.9° vertical speed changed from +4080ft/min to -3360ft/min with full sidestick application ±18.2° units.
- In view of the sudden appearance of severe turbulence and subsequent large changes in IAS and vertical speed, the PF focused more on maintaining IAS in operational limits.



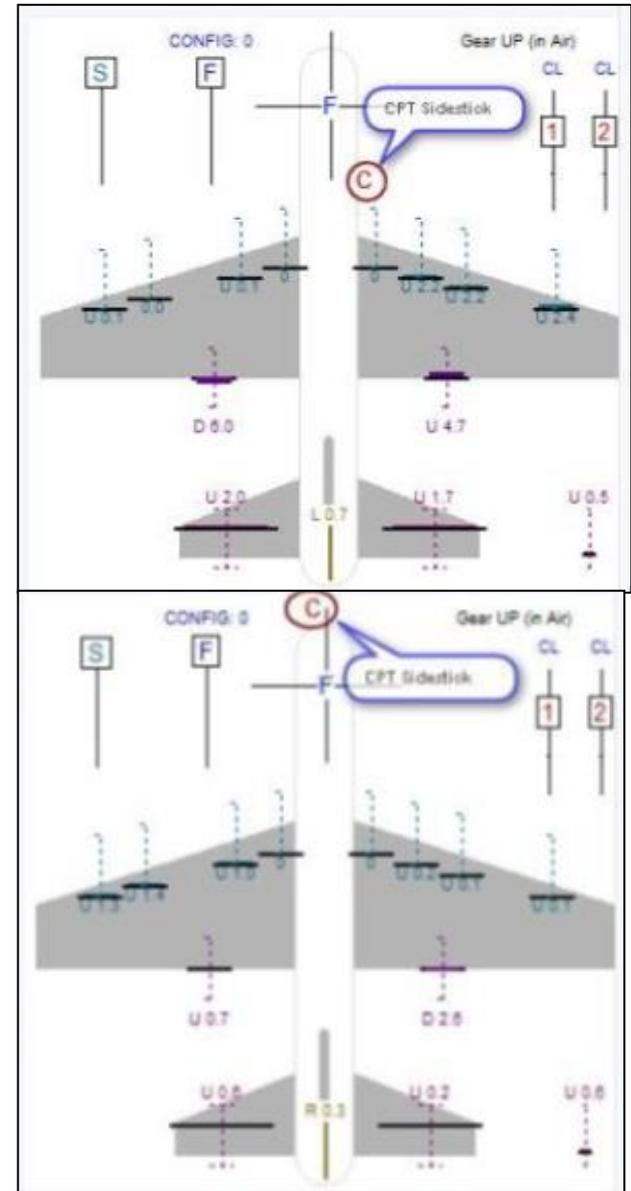
# History of flight



The turbulence started suddenly, the “FASTEN SEAT BELT” sign was switched on and Captain PA command: “Cabin crew be seated”, at the same time a severe vertical acceleration (jump), alike to zero-G state occurred. There were 3 jumps in total, and it lasted for about 20 sec. All CA’s together with the trolleys and equipment flew up to the ceiling vertically. The liquids and foods splashed out to the ceiling, floor and aircraft fuselage.

# Why it happened?

- Poor analysis of Hazardous Weather chart
- Switching to manual control of aircraft in contradiction with Airbus QRH PR-ABN-SEVERE TURBULENCE procedure
- While manual flying PF was chasing the vertical speed changes instead of keeping pitch in recommended limits 2-5 degrees
- Disengagement of AP resulted in increasing PF workload as a result reduced capacity to manage pitch attitude



# Lessons learned

- Flight OPS issued a MAN-003-23 dated 18 January 2023 notifying all pilots about the events of severe turbulence at high altitudes and reminding to use good airmanship during weather analysis and highlighted the risks associated with automation disconnection at high altitude.

## **Safety recommendations:**

### **To Flight Operations Training department:**

- Advise all pilots re the risk of rapid sidestick movements at high altitude;
- Improve pilot's confidence in automation when encountering weather upset at altitude.

### **To Corporate Safety Compliance department:**

- Issue a safety notice based on the report materials.

### **To Inflight Service Department:**

- In collaboration with Occupational Health & Safety to establish the procedure of crew's medical check with the possibility of crew support/psychological help after the serious events related to crew injuries;
- To reconsider the service with hot beverages during any level of turbulence and add it to the current procedure;
- Cabin crew should remember that they must first ensure their own safety by immediately seating in the closest available seat and securely fasten their seatbelt in the case of sudden severe turbulence (either in the Galley or in the passenger cabin).
- To include the situation into the part of cabin crew training.



QUESTIONS?

Thank you