

Case Study Sundsvall

Objectives: To identify what technical and non-technical [CRM] factors that contributed to a B737 incident at Sundsvall/Härnösand.

Please note:

It is not intended in any way to establish faults or lay blame.

Task: You will have 20 minutes in your groups to study the incident and complete the following tasks:

- Produce a list of the contributing factors to the incident. You should identify which THREATS that was present.
- Any situational triggers
- Consider the possible Countermeasures that could have been made by the crew and suggest how they could have prevented the outcome of the incident.

Each group should be prepared to present their results to the other group(s).

The events of the Sundsvall incident

The 737 from Sundsvall to Stockholm Arlanda was parked at the gate. The weather conditions at the time were such that the aircraft required de-icing prior to departure.

In most operational situations the aircraft is either de-iced at the gate prior to taxi or taxied under power to the de-icing area. However, at Sundsvall the normal procedure at the time was to tow the aircraft from the gate to the de-icing area with the engines shutdown. This was a routine decision determined by the ground crew/airport procedures.

The Commander and the First Officer had limited experience of being towed to the de-icing platform with the engine's not started. With the passengers all onboard the aircraft was towed, with the APU running but engines off, from the gate to the de-icing platform where de-icing commenced. During the de-icing treatment, which lasted approximately 5 minutes, the crew discussed how they were going to handle the checklists in this situation.

With the de-icing procedure completed, the engines were started. However, before commencing the after start checklist, the ground crew provided the de-/anti-icing report. During this report, the tower interrupted this event with the flight's route and taxi clearance. The after start checklist was not conducted by the crew. The crew left the de-icing platform to taxi to the departure runway 16 and did not conduct the taxi checklist during the few minutes it took to arrive at the runway departure point.

A few minutes later the aircraft was cleared for take off and at thrust application the Takeoff warning was activated. The crew responded immediately, the FO was PF and the throttles were immediately retarded and the brakes applied. The aircraft had only moved a few meters. The crew quickly discovered that the reason for the Take off warning was that the flaps were not selected for t/o configuration. There was no communication with ATC about their situation but the crew decided to read the Taxi checklist from the beginning.

With the Taxi checklist now completed the crew then started another take off. Around 100 kts the Master Caution came on. The Commander decided to continue and a normal rotation and lift off was performed. Shortly after takeoff the CDR checked the master caution "eng", and found the probe heat switch in the off position. The probe heat was switched on, and the climb out continued normally.

Later, at around 3-4000 feet, the crew discovered that the APU was still running, and that the aircraft's main generators were not connected to their respective buses. The main generators were then connected to their respective buses.

The remainder of the flight continued uneventfully, and the crew made a routine landing at Stockholm Arlanda where the Commander submitted an incident report.