



December 15, 2023

Michael Hauf
Investigator-In-Charge
National Transportation Safety Board
490 L'Enfant Plaza SW
Washington, DC 20594

Reference: FedEx Flight 1432, DCA23FA149

Dear Mr. Hauf,

In accordance with National Transportation Safety Board (NTSB) rules, the Air Line Pilots Association, International (ALPA) submits the attached comments, conclusions, and recommendations concerning the incident involving Federal Express (FedEx) flight 1432, a Boeing 767-32LF, and Southwest Airlines (Southwest) flight 708, a Boeing 737-79P. This incident occurred on February 4, 2023, at Austin-Bergstrom International Airport (AUS), Austin, Texas.

The following contains a synopsis of ALPA's analysis of the facts surrounding the event based on the information obtained through the NTSB's investigation. ALPA's proposed Safety Recommendations are based upon these facts.

History of flight

On February 4, 2023, at about 0640 Central Standard Time (CST), FedEx flight 1432, a B767-32LF, N297FE, was on approach to runway 18L at Austin-Bergstrom International Airport (AUS), Austin, Texas. At the same time, AUS Air Traffic Control (ATC) cleared Southwest flight 708 for takeoff from the same runway. A loss of separation occurred. The First Officer's situational awareness during the CAT III approach led him to glance out of the cockpit and visually detect the Southwest flight 708 taking off. He immediately called for a go-around to avoid the Southwest Boeing 737, which subsequently performed a takeoff and continued to its destination. FedEx flight 1432 had three flight crew members who were uninjured and were the only occupants on board. FedEx flight 1432 operated under Title 14 *Code of Federal Regulations* Part 121 as a cargo flight from Memphis International Airport (MEM), Memphis, Tennessee, to AUS. Southwest flight 708 had two flight crew members, three flight attendants, and 123 passengers on board who were all uninjured. Southwest Flight 708 was a regularly scheduled international passenger flight operating under the provisions of 14 Code of Federal Regulations (CFR) Part 121 from AUS to the Cancún International Airport (CUN), Cancún, Mexico.

Weather conditions at AUS

According to air traffic controllers in the tower during the incident, they were above the fog at the tower level at about 300 ft above ground level (AGL). They had unlimited visibility on top but could not see the surface due to the fog and the time of day.

The weather observation from about 22 minutes before the near-miss event occurred was recorded as follows:

KAUS special weather observation at 0618 CST (1218Z), wind calm, visibility 1/4 mile, runway 36R runway visual range 1800 variable 2400 ft, freezing fog, vertical visibility 200 ft agl, temperature -1° C, dew point temperature -1° C, and altimeter 30.43 inches of mercury (inHg). Remarks: automated station with a precipitation discriminator, temperature -0.6° C, dew point temperature -0.6° C.

At 06:38:02, after the FedEx flight crew checked in with AUS Tower, the controller informed FedEx flight 1432 that the runway visual range (RVR) values were 1,400 feet at touchdown, 600 feet at midpoint, and 1,800 feet for rollout¹.

The FedEx Flight Operations Manual (FOM) under section 76 6.15 defines a CAT III approach as a precision approach with a decision height of 50 feet or no decision height and an RVR less than 1000 feet.²

The FedEx crew was appropriately trained and the aircraft equipped to fly a CAT III approach to a minimum visibility of 300 ft. RVR. The ILS CAT III approach to runway 18L at AUS is capable of supporting operations to 600 ft. RVR.

ATC was unable to monitor the Southwest Flight 708 taxi and takeoff since the aircraft was not visible from the Tower due to the fog and lack of surface surveillance radar. Due to the cold temperature, the Southwest crew was required to perform an engine run up prior to takeoff which delayed Southwest's departure roll.

AUS has an assigned Contract Weather Office (CWO) with six certified weather observers to monitor and augment the installed ASOS. The CWO did not have the appropriate equipment to adequately perform their assigned duties. There was no available internet connection to access other FAA weather tools, the FAA-provided computer only had access to FAA intranet, yet the login credentials needed were not working and therefore even access to the FAA intranet was not available.

¹ Air Traffic Control Group Factual Report. PG6, Par. 1

² FedEx FOM 76 6.13

The CWO Supervisor stated, there were accuracy concerns regarding the reported temperatures from the ASOS. He believed it was linked to the physical location on the airfield, that it sat low in sort of a “bowl”, and allowed the cold air to sink, and provided temperature readings that could be significantly lower than that on the airport operating area. Locally based airlines had significant concern with regards to its effect on their deicing requirements. The CWO Supervisor had worked at AUS for more than 20 years, had local knowledge of weather disparities and would augment the METAR to reflect the disparity; however, he was instructed by the FAA to stop and no longer increase the temperature values.

Considering the Engine runup procedure Southwest flight 708 had to perform due to the reported low temperature, that contributed to the incident, it needs to be ensured that the temperature reported are accurate and representative for the airport.

ANALYSIS

Conducting a CAT III Approach

Landing in conditions of low visibility requires special training and equipment. The runway has to be equipped with an ILS approach capable of providing an accurate signal sufficient to guide an airplane not only to the runway but allow it to track the centerline after touching down. This also requires that the area on and around the runway remain clear of obstacles such as other aircraft or ground vehicles which can cause interference affecting the quality of the signal and would certainly present a hazard that would not be visible to a crew landing in such conditions. Category III Autoland operations do not require specific visual references to land, the crew relies exclusively on their instruments. Both pilots are specifically trained, the Captain flies the approach on autopilot closely monitoring the flight path to ensure that the very tight criteria needed to fly an approach to CATIII minimum is maintained, any violation requires an immediate go-around. The First Officer assists in monitoring the flight path and also monitors that the aircraft equipment is functioning correctly, alerting the Captain of any malfunctions who is ready to take over manually to land if conditions permit or execute a go-around if required. This FedEx flight crew was trained and the aircraft was equipped to fly an approach to visibilities as low as 300 ft.

The CAT II/III ILS approach to 18L at Austin is an atypical design in that the final approach fix (FAF) is only 3.2 miles from the runway. This approach design is nearly half the normal distance pilots are accustomed to and would change the timing of the approach from FAF to touchdown from nearly 3 minutes to less than 90 seconds. Sequencing of arriving and departing traffic from the same runway is affected due to the reduced time available for departures. There is an expectation to have the runway and critical area clear for a CAT III autoland approach. Given the AUS 17L/R approach design was changed in 2017 (now AUS 18L/R), it would appear that the hazard of time compression (FAF to touchdown) along with normalized expectations for pilots

and controllers is an elevated risk for simultaneous runway occupancy and/or air-ground collision may not have been accounted for when the design of this approach was changed

Guidance for air traffic controllers in JO 7110.65 states with some exceptions that once inside the FAF, the critical area will remain clear and protected, without exception the area will be clear when the arriving aircraft reaches the middle marker or ½ mile final. Due to the FAF distance, this only allows about 1:14 for an aircraft to depart if a takeoff clearance was issued with an aircraft on approach over the FAF. Given the scenario on this day, the controller issued a takeoff clearance with FedEx flight 1432 inside the FAF on a 3-mile final. This would only allow about 1 minute for the departing aircraft to taxi onto the runway, takeoff and clear the localizer critical area. While this is allowed by FAA JO 7110.65 3-7-5(a)(1)(a)(2) and encouraged by local ATC memo "CAT II/III Good Operating Practices"³ it does not seem appropriate. Given the light traffic volume at the time, it would seem departing traffic on the same runway with aircraft on approach inside the FAF causes undue pressure and elevated risk.

Additionally, as described in JO 7110.65AA, Paragraph 5-8-4, requires separation between departing aircraft and a subsequent arrival to be at least 2 NM at the start of roll (i.e. the "2 increasing to 3" rule) when tower applied visual separation is not feasible (i.e. low IMC conditions). This rule was established to reduce the risk of simultaneous runway occupancy as associated adverse safety events, including ground and airborne collision risk. This is in addition to the risk described above in relation to JO 7110.65AA Paragraph 3-9-6.

Surface Movement Guidance and Control System (SMGCS)

Low visibility operations also require specific guidance and equipment to ensure safe movement of aircraft on the ground when not visible from the tower. The Surface Movement Guidance and Control System plan for AUS is to be used when conditions indicate visibility are at and remain below 1200 RVR. The visibility on the day of the incident fluctuated between 1000 RVR and 2800 RVR. The Operations Supervisor stated that SMGCS had not officially been enacted because the visibility was not consistently at or below 1200 RVR, however taxi instructions were being issued in accordance with the SMGCS plan. Air traffic control has a responsibility under the SMGCS plan to monitor and control aircraft in the movement area. Due to a lack of surveillance radar such as ASDE-X it would be nearly impossible to monitor aircraft taxi progress or compliance with clearances from the tower in low visibility. The Local Controller cleared Southwest for takeoff with FedEx on approach inside the FAF, however extra time was required for an engine runup due to the icing conditions. Unable to monitor their progress, the controller did not realize the severity of the impending loss of separation.

Southwest engine runup procedure

³ ATC Attachment 8, pg. 191

Per the Southwest B-737 Aircraft Operating Manual (AOM) Section 15.1.14.2 lists the following procedure:

“(NG) When engine anti-ice is required, and the OAT is three °C or below, accomplish a static engine run-up to a minimum of 70 percent N1 and confirm stable engine operation before the start of the takeoff roll. A 30-second run-up is highly recommended whenever possible. If airport congestion and runway surface conditions do not allow for an engine run-up, continue the takeoff normally.”

At the time of the event, the temperature was -1 degree C.

While there was no procedural fault by the Southwest crew, it would be advisable if procedures were in place to require alerting for ATC if a flight cannot comply immediately with a takeoff clearance. For future considerations, clear guidance should be developed that reporting any impediment from an immediate takeoff. ALPA believes that air carriers should develop procedures that advises flight crews that in case the engine runup procedure is necessary to alert ATC preferably before a takeoff clearance is issued so that ATC can work out the spacing and avoid a loss of separation scenario.

Air Traffic Control Tower (ATCT) Operational Issues

Only two controllers were in the tower during the incident, a Local Controller working combined Local Control East and Local Control West positions and the Operations Supervisor working combined ground control and clearance delivery. While the visibility may not have consistently below 1200 feet it had favored SMGCS operations that were used but not officially activated. When asked, both controllers assumed that they had received initial training on the SMGCS Plan but neither could specifically recall any training. The Local Controller stated that he could not provide any details on what his duties or responsibilities would be during SMGCS operations. Monitor and control of aircraft during low visibility is crucial to safe operations in low visibility. This is a stated responsibility of Air Traffic Control in the LVO/SMGCS plan for AUS and the lack of monitoring of the Southwest aircraft’s departure contributed to this incident.

An external compliance verification conducted November 14 – 17, 2022, noted three items as non-compliance high under key findings for the operations section. Two of these include issues with visual scanning stating “Local Control scanning was good at times however there were equal number of times when scanning was not being done. The Tower Team was not assisting Local in scanning when they had the opportunity to do so.” Also, under operational oversight, the Controller In Charge at the tower did not make spot corrections when visual scanning was not being done.⁴

⁴ ATC Attachment 4

While surface operations at the time of the incident may have been obscured by fog, the proximity of the aircraft on approach may have been recognized as more significant with better visual scanning.

The Local Controller had been documented during radar training as needing more training in the area of Ensuring Separation and Scanning Entire Control Environment.⁵ This incident involved a significant loss of separation and scanning of the control environment appears to have been a factor as well.

A review of training records revealed that the controller working the AUS Local Controller position still needed to complete 24 required refresher training items. Several other controllers at AUS also had numerous required training items that they needed to complete. Reviewing facility training records revealed several controllers missing numerous required training items. Only 25 of 36 controllers were documented during an inspection completing CIC refresher training. Additionally, AUS staffing has vacancies for all positions. At the time of the incident, AUS had one opening for Operational Manager (OM), three Operations Supervisors (OS), and four Certified Professional Controllers (CPC)

The Tower Simulator System (TSS) had no known AUS scenarios or simulations and was described as inadequate by the staff. They also stated however, that they had never actually used the simulator themselves, and were speaking either third-hand or had only “observed” others attempts to use it..

Traffic Alert and Collision Avoidance System (TCAS)

TCAS is a valuable safety asset to aircraft in flight, it can warn pilots of aircraft in the proximity and provide guidance to prevent a collision. Due to the fact that this system is designed to operate in flight and corrective actions would require altitude to maneuver, it is inhibited near the ground. Through this investigation a difference in TCAS operation was discovered. While neither aircraft would have received a TCAS warning, the Southwest display would have shown the approaching FedEx airplane as proximate traffic. The FedEx aircraft would have likely not indicated the position of Southwest on the runway as aircraft on the ground are biased out of the display. Additional training should be provided to flight crews to allow them to fully understand the situation awareness that can be provided to flight crews prior to departure.

Two qualified pilots in the flight deck

NTSB Chair Jennifer Homendy said, “I’m very proud of the FedEx flight crew and that pilot... In my view, they saved 128 people from a potential catastrophe.”

⁵ ATC Attachment 6, pg.4

The crew of FedEx flight 1432 acted professionally, using experience and intuition to intervene in a highly automated CAT III approach. During a normal CAT III approach, the captain as the “pilot flying” per FedEx SOP, is responsible for flying the airplane. The First Officer is the “pilot monitoring”, and is responsible for monitoring the pilot’s flying actions, the flight path of the aircraft, the aircraft and systems state, and supports functions, including communications with air traffic control and ensuring checklist completion. Due to the appropriate use of automation and clear, VMC conditions above the fog, they were afforded a heightened state of situational awareness. They identified a potential safety issue when they were 3 miles out, and Southwest flight 708 was cleared for takeoff. The First Officer confirmed that FedEx flight 1432 was cleared to land with ATC. While FedEx flight 1432 descended through 300 feet, ATC followed up with Southwest flight 708 and asked to confirm that they were rolling. Both FedEx pilots stated that the response of the Southwest crew was concerning as it sounded like they just started to their takeoff roll. During the approach, the flight crew utilized their high level of proficiency they achieved through flight experience, a robust training program focused on proper cockpit resource management (CRM) and the appropriate use of automatic systems. The flight crew displayed exemplary CRM and ensured they had a shared mental model.

Recognizing the potential conflict on the runway, the First Officer started glancing outside, more than he normally would on a CAT III approach. He could only see glow through the fog below them, which he had for the last eight or nine miles. While FedEx flight 1432 was about 150 – 100 feet above the touchdown zone, the First Officer noticed a white light that did not match the runway lighting, and shortly thereafter, he saw what he described as the silhouette of a left aircraft wing. At that point, the First Officer called for a go-around three times. In this case, human intuition and effective communication built situational awareness which allowed the crew to take preventative measures, avoiding disaster. During this flight, the pilots needed to intervene a highly automated approach because of the situation they were put into by ATC and accentuated by the challenging weather conditions. This is exactly the reason why a two pilot configuration is necessary for safe and secure commercial airline operations. It provides redundancy and system resiliency, which depends on maintaining a high level of proficiency in multiple skills like workload sharing, qualified backup in the event of pilot incapacitation, and application of security protocols.

FINDINGS AND SAFETY RECOMMENDATIONS

Findings

1. Both FedEx flight 1432 and Southwest flight 708 flight crews were current and qualified
2. Weather conditions prevailing at the time of the incident required a CAT III approach to be performed by FedEx flight 1432
3. Weather conditions prevailing at the time of the incident required Southwest flight 708 to perform an engine run-up procedure in accordance with Southwest Flight Manuals after receiving takeoff clearance. ATC was not advised of the delay.
4. Weather conditions at the time made it impossible to visually monitor aircraft on the surface to ensure compliance with clearances, there was no other surface surveillance.
5. The approach design was changed in 2017, the hazard of time compression (FAF to touchdown) along with normalized expectations for pilots and controllers is an elevated risk for simultaneous runway occupancy and/or air-ground collision may not have been accounted for when the design of this approach was changed.
6. FedEx flight 1432 queried ATC they still were cleared to land after ATC cleared Southwest flight 708 for takeoff.
7. ATC asked Southwest flight 708 if they were rolling for takeoff after over 30 seconds after issuing a takeoff clearance for Southwest flight 708.
8. Proper traffic separation was lost between the arriving and departing traffic
9. The situational awareness of the FedEx First Officer made him question the separation with departing traffic and to look outside more than normal during a CAT III approach
10. The visual acquisition and quick action of the two pilots on the FedEx flight prevented a collision as Southwest was still on the runway when FedEx was about to land but executed an immediate go-around.
11. FedEx flight 1432 conducted a missed approach and later landed safely at the AUS airport
12. Missing recurrent training items were noted at the AUS ATCT during an audit in Nov 2022
13. AUS did not have any tools available to monitor ground movement of traffic

Safety Recommendations

To the Federal Aviation Administration

- Ensure regulations continue to include the requirement of having two current and qualified pilots in commercial airline aircraft. FAA should not allow any deterioration of the current requirements since it will add significant risk to the NAS.
- Invest in new technologies that can supplement current TCAS technology, systems like ASDE-X or similar would be a great improvement and provide great safety improvement for low visibility operations.
- Review the current status of the Air Traffic Control system. Apparent staffing and training issues at AUS might be prevalent at other facilities throughout the US ATC system. A recent report titled "Discussion and Recommendations to address risk in the National Airspace System" by the National Airspace System Safety Review Team, evaluating the US ATC system provides some first steps, FAA should expand and act on these recommendations.
- Require approach design criteria to include a process to ensure standards are suitable for all users and stakeholders.
- To evaluate US airspace for Low Visibility operations and add that to the Top 5 Group for 2024.
- Like pilot training requirements, recurrent training required compliance for controllers should be established and enforced.
- Ensure better protection for CAT III approach areas either through technology or ATC procedures.
- Clearly define when SMGCS is to be used with varying RVR.

ALPA appreciates the opportunity to participate in this investigation and hopes that the attached Findings and Safety Recommendations will help as the NTSB concludes this investigation.



Ian Carrero
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