

April 5, 2022

IN REPLY REFER TO: L-175-22-013

Joshua Cawthra Senior Aviation Accident Investigator National Transportation Safety Board

RE: 2003 560XL; Serial number: 560-5314; REG: N91GY Location: Oroville, CA; D/A: 08-21-19 NTSB report number: WPR19FA230

Dear Mr. Cawthra,

Textron Aviation is making the following Party submission regarding the accident referenced above.

Accident Synopsis

On August 21, 2019 about 1132 pacific daylight time, a Cessna 560XL, N91GY, being operated by Delta Private Jets as a Part 135 on-demand charter flight experienced a rejected takeoff while departing from Oroville Municipal Airport (KOVE), Oroville, CA. The two crew members and eight occupants exited the aircraft uninjured after the aircraft came to rest beyond the end of Runway 2.

FACTUAL INFORMATION

Airport information

Runway 2 at KOVE is listed by the Federal Aviation Administration (FAA) as being 6,020 feet long and 100 feet wide. The airport's elevation is reported as 194 feet.

Weather information

The reported weather at KOVE at 11:14:16 was: wind, variable at 3 knots; visibility, 10 SM; sky condition, clear; temperature, 27°C; dew point, 14°C; altimeter setting, 29.94 inHg. Additionally, the automated weather station was reporting a density altitude of 1,600'

Accident site

The aircraft came to rest approximately 7,900' from the start of Runway 2. Tire tracks, rubber transfer marks, and ground scars were observed from near the start of the aircraft's takeoff roll to where the aircraft came to rest.

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Aircraft examination

A grass fire, which started near where the left main gear came to rest, progressed towards the aircraft and ignited it. The subsequent fire consumed a majority of the aircraft. The main landing gear separated from the aircraft towards the end of the wreckage path. Both main landing gear were damaged and brake position could not be determined. The brakes were determined to be within serviceable limits. Due to aircraft damage, only partial flight control cable continuity was confirmed. The flaps were set to the 7° takeoff position. The horizontal stabilizer was in the takeoff position. The parking brake valve was found in the ENGAGED position at the accident site. An engine examination was not conducted.

Checklists

The flight crew was utilizing a checklist developed by the operator and approved by the FAA. Both the operator's and the manufacturer's checklist call for the parking brake to be set before the engines are started. In the operator's checklist, the rudder bias system is checked in the Taxi checklist, in the manufacturer's checklist the rudder bias system is checked in the Before Taxi checklist.

Operator's Standard Operating Procedure (SOP) manual

According to the operator's SOP manual, the pilot conducting the rudder bias check is supposed to verbalize conducting the check.

Aircraft weight

The aircraft's takeoff weight and center of gravity were within the Center of Gravity envelope.

Takeoff distance

Using performance calculating software, the takeoff distance was calculated to be 4,638 feet.

Crew usage of the parking brake

During an NTSB conducted interview, the pilot stated he normally pressed on the toe brakes enough to stop the airplane's taxi movement, and then pushed the toe brakes "a little bit more" and pulled the 'lever.' He added that "you're not standing on them [toe brakes]." During the same interview, the pilot stated the parking brake was set before the aircraft taxied onto the runway so that he could accomplish the rudder bias check. The NTSB Operations Group Chairman asked the pilot if he had activated the parking brakes by, "just hold your feet on the brakes, and then pull the handle back." The pilot responded "yes." Later the pilot stated he did not recall turning the parking brake off before takeoff.

The Cockpit Voice Recorder (CVR) transcript recorded the copilot making a "parking brake" call out to which the pilot replied, "set." This occurred before engine start. No other mention of the wheel brake system was recorded on the CVR.

ANAYLSIS

Parking brake system operation by the crew

The operation of the parking brake system by the crew was not in line with the information provided in the Operations Manual. The section of the Operations Manual detailing the operation of the parking brake valve states, in part, "Parking brakes are set by depressing the toe brakes and pulling out the black parking brake handle located under the lower left side of the instrument panel." In the crew interview, the pilot stated he pressed them enough to stop the

airplane's taxi movement and then pushed them a little bit more. The Operations Manual does not say to only partially depress the parking brakes.

Rudder Bias Check

The operator's checklist calls for the rudder bias check to be accomplished at the end of the "Taxi" checklist, after the brake/steering check. The manufacturer checklist calls for the rudder bias check to be accomplished near the start of the "Before Taxi" checklist. Neither checklist calls for the parking brake to be set before the rudder bias check, however, in the case of the manufacturer's checklist, the parking brake would still have been set from the "Before Starting Engines."

Additionally, during the check, the pilot chose to disregard the operator's SOP instruction concerning verbalizing the rudder bias check since the copilot was talking on the phone.

Crew

For a majority of the transcript, when discussing checklist items, the crew members used a challenge/response format. While there are some differences between the operator's and manufacturer's checklists, a majority of the items are the same. Both contain a checklist titled "Taxi" that begins after engine start but before the aircraft moves. Both checklists call for the brake and steering to be checked at the start of the checklist. In the operator's checklist the checks are combined in step 2, in the manufacturer's checklist they are separated and are steps 3 and 4, respectively. Based on the CVR transcript, after engine start, as the aircraft was beginning to leave the ramp area, both crew members were looking outside the cockpit to ensure the aircraft did not impact any stationary aircraft in the immediate area. There was no mention of a brake or steering check recorded on the CVR. The distraction of having to taxi unassisted through a congested ramp area may have contributed to them not accomplishing the required brake and steering checks.

According to the CVR transcript, as the pilot was taxing onto the runway the crew was distracted by two unexpected items. At 11:29:37.0, the pilot stated, "except the yoke is stuck." This was followed by the sound of the autopilot disconnect tone and the pilot saying, "Your iPad hit it." Immediately after this, the copilot stated, "You still have no takeoff." Forty-five seconds later that pilot asks, "What's that?" The copilot responds, "turn – turn knob – I don't know – probably who the [expletive] knows" followed by, "I don't know what that is." The turn knob is mentioned two more times and then the copilot announces they are on the runway followed by, "I don't know what that one is – it's your choice – go or no go." The pilot responds, "We'll go we just won't turn it on until we figure it out." The distraction of the unexpected autopilot activation along with the PFD annunciation when the aircraft first started moving from its hold short position could have caused the pilot to not be aware of unusual aircraft taxi behavior caused by a partially set parking brake.

During the takeoff roll, based on the CVR transcript, the crew was aware that the aircraft was not accelerating normally. At 11:31:00.9, the copilot stated, "she's barely movin' dude" followed by "something ain't right dude." Approximately 20 seconds later the pilot stated, "she's takin some runway." This was followed by the copilot calling V1.

FINDINGS

The aircraft systems were operating normally at the time of the accident.

The aircraft met all certification requirements in place at the time it was certified by the FAA.

The crew was utilizing a checklist provided by the aircraft operator.

Both the operator's and the manufacturer's Taxi checklists begin with steps calling for a brake check.

The aircraft's flaps and horizontal stabilizer were in the correct position for takeoff.

The weather, runway conditions, and runway length were within operating limits.

No mention of a brake check was made by the crew as the aircraft began to taxi.

The pilot elected to engage the parking brake valve outside of the checklist flow to conduct the rudder bias check.

The pilot did not follow the operator's SOP instruction regarding verbalizing the rudder bias check so as not to disturb the copilot who was on a phone call.

The crew observed a turn knob flag on the PFD before takeoff, were unable to remove it, and elected to takeoff.

The parking brake valve was found in the ENGAGED position at the accident site.

CONCLUSIONS

Textron Aviation believes that the evidence supports the following conclusions:

The crew failed to operate the parking brake system as detailed in the aircraft's manuals.

The flight crew was distracted with the need to maneuver their aircraft around other aircraft on the ramp at the start of the taxi and failed to conduct a brake check.

The pilot partially set the parking brake a second time while holding short of the runway to conduct the rudder bias check outside of the checklist flow. In order to not disturb the copilot, who was making a telephone call, the pilot did not verbalize that he had set the parking brake nor did he follow company SOP and verbalize that he was conducting the rudder bias check.

The crew was distracted as the aircraft was taxied onto the runway by an unexpected activation of the autopilot and a PFD annunciation they could not remove. This distraction masked the effects of the partially applied parking brake.

Before V1 speed was reached, the crew observed the aircraft was not accelerating normally and was using additional runway but did not abort the takeoff.

PROBABLE CAUSE

Based on an analysis of the information obtained during the investigation, the following Probable Cause is proposed:

The failure of the crew to abort the takeoff before V1 after realizing the aircraft was not accelerating normally and was utilizing an unexpected amount of runway. Contributing factors

were the distraction caused by the turn knob annunciation as the aircraft was taxing onto the runway which masked any taxi speed anomalies due to a partially applied parking brake and the crew's failure to ensure the parking brake was disengaged after engaging it outside of the normal checklist flow.

If further assistance is required, please contact me or another member of our Air Safety Investigations Department.

Sincerely,

Henry J. Soderlund Chief Air Safety Investigator Textron Aviation Air Safety Investigations

Cc: FAA, Wheels Up Private Jets