

RUDDER CONTROL BINDING



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February 5, 2012

The NTSB has issued its final report on the first of several incidents in which Cessna Citation 560XL Excels encountered rudder binding while in flight. The Board ruled that the manufacturer's inadequate initial design and subsequent modifications of the aircraft's tailcone allowed moisture to collect and freeze around rudder cables during flight above the freezing level, resulting in a loss of rudder authority. The Board cited the FAA's lack of oversight of the manufacturer's design and production as a contributing factor.

On Dec. 1, 2010, a NetJets-operated Excel encountered the problem while on a flight from Monmouth Executive Airport near Belmar, N.J. The crew reported it had been raining during the preflight examination, which included a visual inspection of the control cables in the aft equipment bay. No irregularities in the control systems were noted.

As the twinjet cruised at altitude above the freezing level on its way to Toledo, Ohio, the crew experienced no difficulties until they disconnected the autopilot and yaw damper on descent. During the landing flare, the pilot found he could not move the rudder pedals, but was able to land the aircraft safely. The Excel taxied to the ramp using differential thrust and braking. Once the engines were shut down, manual attempts to move the rudder were unsuccessful, and examination by maintenance personnel revealed that an accumulation of ice in the tailcone stinger had interfered with movement of the rudder control cables and pulleys.

Similar situations involving the 560XL were reported on Dec. 13, 2010, in Birmingham, Ala.; Dec. 20, 2010, in Idaho Falls, Idaho; and March 10, 2011, in Haynesville, Md. None of the incidents resulted in personal injury or damage to the aircraft.

Moisture Projection

In April 2005, Cessna issued a service letter directing operators of early production Excels to drill a 0.201-inch hole in the stinger to provide a drain path for accumulated moisture. Later models (S/N5545 and up) were to have this hole installed at the factory, but the FAA found that the hole diameter on some aircraft had been drilled smaller than prescribed.

On Jan. 21, 2011, the manufacturer issued an alert service letter (ASL560XL-53-08) acknowledging water-collection issues in the airplane's stinger that could result in ice formation. The mandatory actions prescribed in the letter advised operators to look for drain holes in frames immediately forward and aft of access panel 321ABC and to drill them if not present. The letter also instructed operators to drill a drain hole in the aft canted bulkhead. According to the NTSB's preliminary report, the Excel involved in the March 10, 2011 incident had been modified to comply with the ASL.

Last October, Cessna issued a new service bulletin (560XL-53-16) regarding the installation of a stinger drain as a follow up to its previous ASL. Recipients of the bulletin (aircraft S/Ns 5002-5372, 5501-5830, 6002-6080 and 6082-6086) were supplied parts and instructions to install a drain and seal. The service bulletin specified a compliance time of "within 1,200 flight hours or 18 months from the date of receipt, whichever occurs first."

In response to the NTSB report, the Wichita airframer said it “has been looking at this issue since it first came to light and has developed a solution to address it,” citing the October service bulletin. “This service bulletin, which Cessna provides free of charge to operators, provides for the installation of a drain and seal that will reduce the amount of water entering the stinger and improve drainage.”

The FAA is in the process of composing a new airworthiness directive addressing affected 560XL models and has designated February 13 as the closing period for comments. The proposed AD would shorten the period of the mandatory required installation of the stinger drain modification to within 800 flight hours or 12 months after the effective date of the AD, whichever occurs first.

BACKGROUND INFORMATION

ATA: 27-20 Models: 560XL Published: 12-22-2010

Team Excel is requesting all Model 560XL/XLS/XLS+ operators inspect the drain hole in the lower forward edge of the tailcone stinger for proper size. The hole must be 0.201 inches in diameter. The inspection should also verify the drain hole is open and free of debris.

A potential exists for water to accumulate in the tailcone stinger, leading to the possibility of the rudder control cable pulleys freezing at altitude or in cold weather conditions.

Cessna is currently developing further field modifications for the tailcone stinger drain hole, which will be communicated in early 2011. For the interim, operators should verify the rudder control system has freedom of movement. If the aircraft is exposed to ramp conditions in long periods of precipitation, operators should also verify the tailcone stinger drain hole is clear and draining.

