Boeing Surprised By 737 Fuselage Tears, Holes

Bob Christie and Joan Lowy, Associated Press

PHOENIX (AP) — Boeing was surprised when a section of a Southwest jetliner's fuselage ripped open in flight because the plane wasn't old enough to be worrisome, a company official said Tuesday, as the airline cleared most of its older 737 planes to return to the skies.

Southwest said it had inspected nearly all of the jets it grounded after the accident on Friday. Five were found with the same kinds of cracks suspected of causing the 5-foot-long hole to open as the jet cruised around 34,000 feet. The planes are being repaired, the airline said.

Boeing engineers did not expect to see the cracks because they thought they had designed the joints that hold the 737-300s' aluminum skin in place to be more robust.

They believe the planes would not need inspections for at least 60,000 pressurization cycles, the number of times that a plane takes off and lands. The company hadn't even issued inspection specifications because none of the planes involved were anywhere near that old.

The Southwest jet was 15 years old and logged 39,000 cycles.

"I would say that it's regrettable that we had to accelerate our plans to recommend inspections based on an event of this nature," Boeing chief 737 engineer Paul Richter said. He said the company has given repair instructions to Southwest for three planes.

A "service bulletin" from Boeing and an emergency Federal Aviation Administration order that will be issued on Tuesday mean inspection on 737-300s, 737-400s and 737-500s will be done starting at 30,000 cycles.

The FAA order is aimed at finding weaknesses in the metal exterior, but virtually all of the affected aircraft will have already been inspected by the time the order takes effect.

The safety directive applies to about 175 aircraft worldwide, including 80 planes registered in the U.S., the FAA said. Of those 80, nearly all are operated by Southwest. Two belong to Alaska Airlines.

Southwest grounded nearly 80 Boeing 737-300s after its jet leaving Phoenix lost pressure Friday, forcing pilots to make an emergency landing 125 miles away in Yuma.

Friday's incident, however, raised questions about the impact that frequent takeoffs

and landings by short-haul carriers like Southwest put on their aircraft and the adequacy of the inspections.

Cracks can develop from the constant cycle of pressurizing the cabin for flight, and releasing it.

Since there had been no previous accidents or major incidents involving metal fatigue in the middle part of the fuselage, Boeing maintenance procedures called only for airlines to perform a visual inspection.

But airlines, manufacturers and federal regulators have known since at least 1988 that planes can suffer microscopic fractures. That year, an 18-foot section of the upper cabin of an Aloha Airlines 737-200 peeled away in flight, sucking out a flight attendant.

The order is "certainly a step in the right direction," said National Transportation Safety Board member Robert Sumwalt, who is in Yuma with the board's accident investigation team.

The FAA's emergency order will require initial inspections using electromagnetic devices on some Boeing 737 aircraft in the -300, -400 and -500 series that have accumulated more than 30,000 takeoffs and landings. It will require repetitive inspections at regular intervals.

The Southwest jet in Friday's incident had logged 39,000 pressurization cycles, a measurement of the number of takeoffs and landings. That's 7.2 cycles every day for every year it has been in service.

Planes that have 30,000 cycles or have been in service for 15 years are considered about halfway through their useful life.

Boeing Co. said Monday that it will issue guidance this week on how airlines should do checks on the affected airplanes now in service. An estimated 1,800 airplanes, including -300, -400, -500 model 737s, are affected by the aircraft maker's service bulletin.

Southwest officials said the Arizona flight was given a routine inspection on Tuesday and underwent its last so-called heavy check, a more costly and extensive overhaul, in March 2010.

Southwest appeared eager Monday to shift blame to Boeing. The airline said it had never been alerted to a potential problem where overlapping panels of aluminum skin are riveted together on the 737-300.

"This is a Boeing-designed airplane. This is a Boeing-produced airplane," Southwest spokeswoman Linda Rutherford said. "It's obviously concerning to us that we're finding skin-fatigue issues."

Boeing officials declined to respond to Rutherford's comments.

Many of the planes that fall under the FAA order don't fall under U.S. auspices. FAA has authority only over U.S. operators, but government aviation agencies in most other countries usually follow FAA's safety directives with their own orders.

Germany's Lufthansa has a fleet of 63 737s, including 33 of the 300 series, but just three are from the same series as the Southwest jet.

The problem of what is known as "widespread fatigue damage" in aging planes has a long, well-documented history.

It became a major safety focus of the FAA and was the subject of congressional hearings after the Aloha Airlines 737-200 accident in April 1988. There were 95 people on board. A flight attendant and seven passengers were seriously injured.

Following the accident, the FAA instituted a new safety regime for older 737s for cracking that includes not only visual inspections, but the use of devices that employ electromagnetic currents to spot fatigue and corrosion.

The agency also began work in 2004 on a rule that would require more detailed inspections and maintenance procedures for other types of aging aircraft, not just the 737. Initially there was opposition from airlines to the new procedures because of the cost involved.

After over six years of work, FAA published a rule requiring the new procedures late last year. It went into effect in January.

It gives manufacturers 18 months to five years, depending upon the plane involved, to develop inspection programs. Airlines and other operators then have another two and a half to six years to implement the inspection requirements.

Bill Voss, president of the Flight Safety Foundation in Alexandria, Va., said an FAA safety order to be issued Tuesday is an acknowledgement that previous inspection procedures were inadequate. "There is no question this was a very serious safety event," Voss said.

That the skin peeled away shouldn't come as a surprise, said Paul Czysz, professor emeritus of aeronautical engineering at St. Louis University.

Czysz said fuselages are designed with a specific stress limit, based on the number of cycles a plane flies. When a fatigue crack emerges, he said, that means the limit is being pushed. The trick is to keep up a rigorous inspection program.

"It's not magic," he said. "It's just basic physics."

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Lowy reported from Washington. Associated Press writers David Koenig in Dallas contributed to this report.

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