Cause Of Rolls-Royce Turbine Failures: Faulty Bearing Box

Jane Wardell, Associated Press

LONDON (AP) — An Airbus executive said Friday that Rolls-Royce has identified a faulty bearing box as the cause of the oil leak problem implicated in the midair disintegration of an engine on one of the world's largest airliners, an Australian newspaper reported.

Airbus Chief Operating Officer John Leahy told reporters in Sydney that Rolls-Royce had at some point fixed the bearing box on newer versions of the massive Trent 900 engine, a model designed for the massive A380 superjumbo. He said Rolls was now fixing it on older versions. The Herald Sun reported his comments on its website.

His comments did not address why Rolls-Royce had not fixed the bearing box in older versions of the engine.

Airbus did not elaborate and Rolls-Royce declined to comment on his remarks.

The box in question contains the metal ball bearings that allow movement of the drive shaft that spins the turbines inside jet engines. Investigators have said that leaking oil caused a fire in the engine of a Qantas A380 that heated metal parts and made the motor disintegrate over Indonesia last week, sending shrapnel into the wing and cutting vital safety systems before the jetliner landed safely in Singapore.

They have focused on broken pieces of the engine's heavy turbine disc, a plate that holds the turbine blades that move air through the motor.

Engines on the A380 malfunctioned four times before the disintegration on the flight from Singapore to Sydney. All of the planes landed safely.

The problems dating to 2008 led to two warnings for airlines to check parts of the Trent 900.

Three of the four problems centered on the turbines or oil system.

Rolls-Royce Group PLC said in an update to investors Friday that the disintegration of the Qantas engine resulted from a problem in a specific component in the Trent 900, but it did not provide details.

"The failure was confined to a specific component in the turbine area of the engine. This caused an oil fire, which led to the release of the intermediate pressure turbine disc," Rolls-Royce said.

The statement supports a report from the European Aviation Safety Agency, which

issued an emergency order Thursday requiring airlines to re-examine their Trent 900s and ground any planes with suspicious leaks.

Leahy said the new models of the Trent 900 had been redesigned to eliminate the problem of excess oil causing turbine fires. He said that Rolls-Royce was retrofitting the older versions with new parts to stop the oil leaks and computer software that would shut down an engine with leaking oil before it was put at risk of disintegration.

"In the future the computer will have software that can identify a problem at the outset and it will shut down an engine before a turbine disc can go out of control and come apart," Leahy told the Herald Sun.

Leaks or oil stains have been discovered on six of the total of twenty A380s operated by Qantas, Lufthansa and Singapore Airlines that use the Trent 900, a technologically advanced model designed to be lighter, quieter and more efficient than older engines. Qantas and Singapore Airlines have grounded nine of the world's largest airliner between them while Germany's Lufthansa has already replaced an engine on one of its A380s.

Rolls-Royce's chief executive said the company will be replacing the relevant part to enable its customers to bring the whole fleet back into service.

Airbus will take Rolls-Royce engines off the final assembly line in Toulouse, France, and send them to Qantas "so we can get Qantas back up and flying," the Airbus press office said.

The disintegration on the Qantas A380 was far more serious than the airline has implied in its public statements, however, experts said.

Damage from engine shrapnel to the wing over the engine occurred very close to the wing's front spar, one of two support beams in the wing that attach the wing to the plane, said John Goglia, a former member of the National Transportation Safety Board and an expert on airline maintenance. If the shrapnel had hit the spar it could possibly have weakened the spar and even have caused the wing to fall off, he said.

As it was, the shrapnel appears to have damaged electrical cables and hydraulic lines inside the wing, Goglia said. Pilots were unable to close the landing gear doors, an indication of hydraulic damage, and had difficulty shutting down the engine next to the engine that disintegrated, an indication of an electrical problem, he said. The A380 has four engines.

Photos and video of the incident and its aftermath show the shrapnel clearly ruptured a hydraulic line and an electric line in the wing, cutting off the pilots' control of half the brake flaps and the remaining engine on the affected wing, along with the door of the landing-gear compartment, said Joerg Handwerg, a spokesman for the pilots' union for Lufthansa.

In its trading update Friday, London-based Rolls-Royce said the incident will cause

full year profit growth "to be slightly lower than previously guided," but it also said that the company's other operations will help to offset any losses. Back in July, the company said that its underlying profits would grow by 4-5 percent compared to 2009.

Shares in the company rose after the update — a signal that investors are happy to see a definitive statement after days of silence from the world's second-biggest engine maker behind General Electric and one of the last globally important industrial manufacturing companies in Britain.

Rolls-Royce shares were up 4 percent at 607.5 pence ($9.74) in midmorning trade on the London Stock Exchange.

Handwerg said that minor problems are routine for any jet engine, but it is possible that the issues were an indication that regulators did not adequately check the engine before approving it for commercial use.

"When you see we have a problem with not just one of these engines but several then it points towards that we have a problem in the certification process," Handwerg said.

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Associated Press Reporters Michael Weissenstein in London and Joan Lowy in Washington contributed to this report.