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NTSB ISSUES URGENT SAFETY RECOMMENDATION TO ADDRESS ENGINE THRUST ROLLBACK EVENTS ON B-777 AIRCRAFT

Washington, DC - Following two engine thrust rollback events on Boeing 777 aircraft powered by Rolls-Royce engines, the National Transportation Safety Board issued an urgent safety recommendation today calling for the redesign of a Rolls- Royce engine component. The Safety Board also recommended that, after the redesign is completed, the new system be installed on all affected B-777 airplanes at the next maintenance check or within six months.

These recommendations are being issued in response to the findings in two investigations - an accident and an incident - involving engine thrust rollbacks on Boeing 777-200ER airplanes powered by Rolls-Royce RB211 Trent 800 Series engines. In both cases a build-up of ice (from water normally present in all jet fuel) on the fuel/oil heat exchanger (FOHE) restricted the flow of fuel to the engine, resulting in an uncommanded engine rollback.

The first event, which is still being investigated by the UK's Air Accidents Investigation Branch (AAIB), occurred on January 17, 2008, when a Boeing 777 experienced a dual engine rollback on final approach and crashed short of the runway at London's Heathrow International Airport. One passenger was seriously injured, eight passengers and four of the flight crew sustained minor injuries; the airplane was substantially damaged.

The second event occurred on November 26, 2008, when a Delta Air Lines Boeing 777 experienced a single engine rollback during cruise flight over Montana while en route from Shanghai to Atlanta. Normal operations resumed after the flight crew followed Boeing's published procedure to recover engine performance; the airplane landed safely in Atlanta.

Testing in support of the UK accident investigation led Boeing to develop procedures to help prevent ice accumulation, and to recover thrust in cases of ice blockage. As more information from the Delta rollback event was developed, Boeing modified the procedures, which became the basis of an airworthiness directive issued by the Federal Aviation Administration.

While the procedures may reduce the risk of a rollback in one or both engines due to FOHE ice blockage, they add complexity to flight crew operations, and the level of risk reduction is not well established. And because the recovery procedure requires a descent, the aircraft may be exposed to other risks such as rising terrain or hazardous weather, or the inability to achieve maximum thrust during a critical phase of flight, such as during a missed approach.

Because of these hazards, the Safety Board has determined that the only acceptable solution to this safety vulnerability is a redesigned FOHE that would eliminate the potential of ice build-up. On February 23, 2009, Rolls-Royce indicated that a redesign of the FOHE was underway, and that they anticipated the redesign to be tested, certified and ready for installation within 12 months.

"With two of these rollback events occurring within a year, we believe that there is a high probability

of something similar happening again," said NTSB Acting Chairman Mark V. Rosenker. "We are encouraged to see that Rolls-Royce is already working on a redesign, and we are confident that with the FAA and EASA (European Aviation Safety Agency) overseeing the process, this flight safety issue - even one as complex as this - will be successfully and expeditiously resolved."

The NTSB has made the following two recommendations to both the Federal Aviation Administration and the European Aviation Safety Agency:

- Require that Rolls-Royce redesign the RB211 Trent 800 series engine fuel/oil heat exchanger (FOHE) such that ice accumulation on the face of the FOHE will not restrict fuel flow to the extent that the ability to achieve commanded thrust is reduced.
- Once the fuel/oil heat exchanger (FOHE) is redesigned and approved by certification authorities, require that operators of Boeing 777-200 airplanes powered by Rolls Royce RB211 Trent 800 series engines install the redesigned FOHE at the next scheduled maintenance opportunity or within 6 months after the revised FOHE design has been certificated, whichever comes first.

The NTSB and AAIB will continue to work together closely on both of the rollback events as each of the investigations move forward.

- Safety recommendation letter to the Federal Aviation Administration: http://ntsb.gov/Recs/letters/2009/A09_17_18.pdf
- Safety recommendation letter to the European Aviation Safety Agency: http://ntsb.gov/Recs/letters/2009/A09_19_20.pdf

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Photo

Ice accumulation on the inlet face of a Rolls-Royce RB211 Trent 800 Series Fuel/Oil Heat Exchanger during testing - Larger photo at: http://www.ntsb.gov/Pressrel/2009/FOHEface.jpg

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