

Air Accidents Investigation Branch

Aircraft Accident Report No: 2/2009 (EW/C2007/02/07)

Operator: United Airlines Incorporated
Aircraft Type and Model: Boeing 777-222
Registration: N786UA
Location: London (Heathrow) Airport, UK
Latitude: N 051° 29'
Longitude: W 000° 28'
Date and Time: 26 February 2007 at 1000 hrs
All times in this report are UTC

Synopsis

The aircraft operator's duty manager at Heathrow notified the Air Accidents Investigation Branch (AAIB) of the accident at 1140 hrs on 26 February 2007 and the investigation commenced the next day. The AAIB investigation team comprised:

Mr K Conradi	(Investigator-in-Charge)
Mr N Dann	(Operations)
Mr S Hawkins	(Engineering)
Mr R James	(Flight Recorders)

A preliminary report on the initial findings from the accident was published in AAIB Special Bulletin S2-2007 on 17 April 2007. This formal report contains the final findings and Safety Recommendations from the investigation.

The accident occurred during engine start after pushback from the stand. After the right generator came online an electrical failure occurred in the right main bus. The failure resulted in severe internal arcing and short circuits inside the two main power contactors of the right main bus. The heat generated during the failure resulted in the contactor casings becoming compromised, causing molten metal droplets to fall down onto the insulation blankets below. The insulation blankets ignited and a fire spread underneath a floor panel to the opposite electrical panel (P205), causing heat and fire damage to structure, cooling ducts and wiring. The flight crew responded to the bus failure and

a burning smell by shutting down the right engine and taxiing to a nearby stand. The Airfield Fire Service attended the aircraft when it arrived on stand and entered the Main Equipment Centre where they discovered significant smoke but no fire. The passengers were evacuated uneventfully via steps.

The investigation identified the following causal factors:

1. An internal failure of the Right Generator Circuit Breaker or Right Bus Tie Breaker contactor on the P200 power panel inside the Main Equipment Centre resulted in severe internal arcing and short-circuits which melted the contactor casings. The root cause of contactor failure could not be determined.
2. The open base of the P200 power panel allowed molten metal droplets from the failed contactors to drop down onto the insulation blankets and ignite them.
3. The aircraft's electrical protection system was not designed to detect and rapidly remove power from a contactor suffering from severe internal arcing and short-circuits.
4. The contactors had internal design features that probably contributed to the uncontained failures.

Five Safety Recommendations were made.