

## Embraer EMB-145EP, G-RJXA

<b>AAIB Bulletin No: 7/2003</b>	<b>Ref: EW/G2003/01/23</b>	<b>Category: 1.1</b>
<b>INCIDENT</b>		
<b>Aircraft Type and Registration:</b>	Embraer EMB-145EP, G-RJXA	
<b>No &amp; Type of Engines:</b>	2 Allison AE3007A turbofan engines	
<b>Year of Manufacture:</b>	1999	
<b>Date &amp; Time (UTC):</b>	16 January 2003 at 1710 hrs	
<b>Location:</b>	Manchester Airport	
<b>Type of Flight:</b>	Public Transport (Passenger)	
<b>Persons on Board:</b>	Crew - 4	Passengers - 47
<b>Injuries:</b>	Crew - None	Passengers - None
<b>Nature of Damage:</b>	Damage to the right nose gear door	
<b>Commander's Licence:</b>	Airline Transport Pilot's Licence	
<b>Commander's Age:</b>	39 years	
<b>Commander's Flying Experience:</b>	7,586 hours (of which 1,876 were on type)	
	Last 90 days - 127 hours	
	Last 28 days - 32 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot	

The aircraft was parked on Stand 16 and the flight crew was preparing to start the engines using an external ground air supply (aircart) because the aircraft's Auxiliary Power Unit was unserviceable. The aircart was reluctant to start and this introduced a delay. The crew started the No 2 (right) engine first and noted that the start sequence was slower than normal. They suspected that the aircart was delivering a low pressure. The crew then initiated a start on the No 1 (left) engine but this did not accelerate beyond 25% N2, and there were no N1 or fuel flow indications. The start was aborted and the decision was taken to carry out a cross-bleed start using air from the No 2 engine. By this time the aircraft was beginning to run late, so the crew elected to be pushed back off the stand and start the No 1 engine when the tug was pulling the aircraft forward onto the taxiway centreline.

The aircraft was pushed back with the No 2 engine at idle thrust. As the tug began to pull the aircraft forward, the ground crew cleared the flight crew to start the No 1 engine. The commander disengaged the elevator gust lock and advanced the right thrust lever to give 81% N2 on the No 2 engine. The aircraft was still moving forward and the increased thrust caused the tug to jack-knife rapidly to the right. The commander immediately retarded the thrust lever and applied the brakes but by this stage the towbar had broken and the right nose gear door had struck the tug. A new towbar was attached, the aircraft was pushed clear of the tug and towed back on to the stand.

## Document title

At the time of the accident the Operator's Operations Manual did not specify a procedure for an Engine Start Assisted by the Opposite Engine (Cross Start), although the commander did recall carrying out such a procedure during his training three years prior to this event. The Manufacturer's Airplane Operations Manual does include this procedure, and the Operator has now adopted it. The Operator has also amplified the Manufacturer's procedure with the following instruction to crews:

*As the use of an engine cross-bleed start requires a relatively high thrust setting on the running engine the procedure must be used with caution and only when absolutely necessary. It must only be carried out on stand with the park brake applied or after completion of the push back with the tug disconnected and the park brake applied. Under no circumstances must thrust on any engine be advanced beyond ground idle during push back.*