INCIDENT

Aircraft Type and Registration:	Boeing 767-31K, G-DAJC
No & Type of Engines:	2 General Electric CF6-80C2B7F turbofan engines
Year of Manufacture:	1994
Date & Time (UTC):	21 October 2006 at 0735 hrs
Location:	Manchester Airport
Type of Flight:	Commercial Air Transport (Passenger)
Persons on Board:	Crew - 12 Passengers - 278
Injuries:	Crew - None Passengers - None
Nature of Damage:	None
Commander's Licence:	Air Transport Pilot's Licence
Commander's Age:	36 years
Commander's Flying Experience:	5,800 hours (of which 4,500 were on type) Last 90 days - 115 hours Last 28 days - 22 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synopsis

On the aircraft's first flight since the left engine had been changed, the flight crew experienced burning smells together with smoke on the flight deck. The aircraft returned for an uneventful landing. The source of the smoke was suspected to be oil contamination associated with the replacement engine.

History of the flight

The aircraft was due to fly from Manchester to Palma, Majorca. It was its first flight since a period of maintenance during which the left engine was changed.

The engines were started without incident and the crew were cleared to taxi the aircraft to Runway 24L. As part of the taxi instructions they were also cleared to cross Runway 24R behind a landing Airbus A330. The commander, who was the handling pilot, stated that as they crossed Runway 24R, power was increased on the engines, the first time that any significant power had been used that day. At this point the pilots became aware of a smell of burning rubber and were also notified of a similar smell in the cabin by the Cabin Supervisor. The flight crew considered that the smell might have been due to taxiing behind the landing A330 and decided to delay their takeoff to see if the smell would clear. By the time the aircraft was cleared for takeoff, five minutes later, the smell had gone, both on the flight deck and in the cabin, and as a result the commander was happy to continue the flight. The weather at the time was fine with light winds, good visibility and scattered cloud at 3,000 feet.

Takeoff was commenced but on accelerating through approximately 80 kt the smell returned. The commander decided to continue the takeoff and stated that on becoming airborne the smell became stronger. At the same time faint traces of smoke appeared on the left side of the flight deck. The autopilot was engaged and the pilots donned their oxygen masks. The Cabin Supervisor reported to the flight crew that there were fumes and smoke in the cabin.

The flight crew declared a 'MAYDAY' to ATC, requesting an immediate return to the airport, and they were provided with radar vectors to position the aircraft downwind for an approach to Runway 24R.

The commander made an announcement to the passengers over the cabin public address system, advising them of the situation. He stated that this announcement, made with his oxygen mask on, came across only faintly in the cabin. At about this time the smoke on the flight deck had dissipated sufficiently for the commander to remove his oxygen mask before repeating his announcement to the passengers which this time could be heard more clearly.

The co-pilot completed the checklist for air conditioning smoke and the utility electrical busbar was switched off as an additional precaution. Once the aircraft was on finals, by which time the fumes were far less noticeable, the co-pilot also removed his oxygen mask. The flight crew completed an ILS approach and after landing cleared the runway onto an adjacent taxiway where the left engine was shutdown. The total airborne time was about nine minutes.

Communications were established with the attending fire services who informed the flight crew that there were no external signs of smoke or fire. The aircraft was then taxied to a remote stand using the right engine where the aircraft was shutdown. About eight minutes later steps were brought to the aircraft and the passengers were disembarked and taken by bus to an airport terminal. The commander stated that on boarding the aircraft, the fire service commented on the strength of the lingering odour of burning rubber and advised that the other cabin doors be opened.

Crew debrief

The crew were debriefed after the incident. The company medical adviser was contacted and he provided the crew with guidance on smoke inhalation and re-issued the operator's smoke inhalation policy to them. He also advised the crew to refrain from flying duties for 24 hours.

During the crew debrief it transpired that smoke had activated the rear left toilet smoke detector, prompting the cabin crew to prepare to discharge two fire extinguishers. The cabin crew had attempted to inform the flight crew (who were unaware that the smoke detector had activated) via the aircraft intercom but refrained from interrupting the co-pilot's declaration of an emergency to ATC.

Engineering issues

After the passengers had disembarked, an engineer boarded the aircraft and informed the flight crew that the replacement left engine had not been subjected to high-power ground runs because it had been supplied "pre-tested".

The source of the smoke was suspected to be oil contamination associated with the replacement engine. The operator was unable to establish the source of the oil contamination so the aircraft and engine manufacturer's advice was sought.

The possibility that the engine had been overfilled with oil was considered but discounted by the engine manufacturer because overfilling "does not result in contamination of the compressor and engine bleed off-takes". The manufacturer believed that the most likely reason for the oil smoke was contamination of the gas path during the engine's overhaul or during its installation in the aircraft. Moreover, although the engine had been test-run before installation, there is no test cell monitoring for smoke or smells emanating from the engine bleeds.

A further pilot report relating to cabin smells was submitted four days later when an electrical burning smell was reported. This was cleared by inspection of the cabin air re-circulation system.