No: 9/92	**Ref: EW/G92/6/3**	**Category: 1a**
Aircraft Type and Registration:	McDonnell-Douglas DC10-30, N316FE	
No & Type of Engines:	Three General Electric CF6-50C2 turbofan engines	
Year of Manufacture:	1988	
Date & Time (UTC):	24 June 1992 at 2029 hrs	
Location:	London Heathrow Airport	
Type of Flight:	Public Transport (Cargo)	
Persons on Board:	Crew - 3	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Nosewheel detached	
Commander's Licence:	Airline Transport Pilot's Licence	
Commander's Age:	47 years	
Commander's Flying Experience:	12,075 hours (of which 881 were on type)	
Information Source:	AAIB Field Investigation	

The aircraft was carrying out a scheduled freight flight from London Heathrow to Memphis. The take-off weight was structurally limited to 580,000 lb and the aircraft took off at 518,000 lb. The wind was 040°/05 kt and runway 09R was in use for take-off. No anomalies had been discovered during the external inspection of the aircraft but, during the take-off run, the right nose wheel dropped off the axle and bounced along runways 09R and 05, before coming to rest in Block 64 of runway 05. Parts of the wheel/axle assembly were later found beside the threshold of runway 09R and further along adjacent to Block 89.

ATC informed the crew of the event and, after consultation with outside agencies, were able to identify which wheel had been lost. The commander elected to continue the flight to Memphis.

The eight and a half hour flight was uneventful and the aircraft made a normal landing. Using reverse thrust, it stopped on the runway without braking and, although the emergency services had been alerted, they were not required to lend assistance. The ground engineers then inspected the nose landing gear and replaced the missing wheel/tyre assembly before the aircraft was taxied to the ramp.

Inspection of the debris recovered from the runway revealed that it comprised parts from both the inner and outer nosewheel bearings including badly distressed and broken rollers. The wheel itself, still fully inflated, retained the inner and outer bearing cups which bore evidence of smeared-in cage material, heat generation and evidence of the cone not running correctly within the cup.

The operator had also examined the remains of the inner bearing cone which remained on the axle after landing. This was rapidly identified as part no. M224749, being a Boeing 727 mainwheel bearing cone and therefore incorrect. Whilst superficially similar it has a different effective load centre from the correct bearing, part no. NCG6205-15 and fitment to a DC-10 nosewheel would result in a gross mismatch and overloading of the rollers. Following break-up of the inner and then outer bearings, the wheel would be able to slip over the axle nut and be released. It is understood that the wheel with the incorrect bearing fitted had been installed on 16 June.

McDonnell-Douglas advise that they are aware of a number of incidents where Boeing 727 mainwheel bearings, and one case of an Airbus A300 nosewheel bearing, were fitted to DC-10 nosewheels in error resulting in liberation of the wheel. Since there was some commonality between the bearings fitted to DC-10-30 nosewheels, DC-10-10 nosewheels and DC-9 series 33, 40 and 50 mainwheels they had issued an All Operators Letter (AOL 9-1069 and AOL 10-1238) dated 15 June 1977. Circulated to operators of all these types the letter recommended "that those operators who may be servicing DC-9, DC-10 and Boeing 727 wheels exercise extreme care to avoid installation of an incorrect bearing".