



# MINISTRY OF DEFENCE

## Military Aircraft Accident Summaries

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19 July 1990

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### AIRCRAFT ACCIDENT TO ROYAL AIR FORCE CHINOOK HC1 ZA678

Date:	24 July 1989
Parent Airfield:	Royal Air Force Odiham
Place of Accident:	Odiham Airfield
Crew:	One pilot, one co-pilot, one crewman and four groundcrew
Casualties:	Two slight injuries

### CIRCUMSTANCES

1. On 24 July 1989, Chinook HC1 ZA678 was prepared for an air test following a Minor Servicing during which the aft drive transmission had been changed. The air test was to comprise a series of ground runs with the rotors turning followed by a flight test. In addition to the three aircraft crew members, four groundcrew technicians were detailed to assist; their duties were to record vibration levels and, if necessary, carry out adjustments to the aircraft systems.
2. The ground runs were carried out without incident. The pilot then hover-taxed the aircraft towards a grassed area where cross-wind hover checks were to be conducted. During the hover-taxi, the groundcrew sitting in the rear of the cabin heard an unusual whirring noise, lasting for about two seconds, coming from the vicinity of the aft transmission. However, the noise did not recur and the crew proceeded to the hover check.
3. The Chinook HC1 is fitted with a number of systems to warn the crew of an incipient failure of critical components in the transmission system. One of these - the centreline transmission chip warning light - was noticed by the co-pilot to flicker faintly during the hover check. The air test was therefore terminated. As the aircraft started to hover taxi back towards the dispersal area, there was a second flicker of the chip warning light and the crewman reported that wispy smoke had been seen behind the aircraft. The captain, therefore, immediately initiated a running landing onto the grass, but before the landing could be completed, a loud bang was heard, and the aircraft fell to the ground and performed a ground loop.

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4. During the ground loop, the front rotor head, transmission and pylon broke away from the aircraft and debris was flung in all directions. The aircraft came to rest in an upright position with the roof of the cockpit missing and the rear pylon assembly bent at an angle of about 70 degrees to the vertical. The aircraft was evacuated quickly and only slight injuries were sustained by the crew.

#### CAUSE

5. The accident was caused by the incorrect assembly of the aft transmission input thrust bearing by an agency outside Royal Air Force control. The transmission then failed the first time it was subjected to normal loads in flight, resulting in the desynchronisation of the rotor systems and subsequent collision between the aft and front rotors.

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#### SUBSEQUENT ACTIONS

6. The aircraft was beyond economical repair. Procedures have now been introduced to prevent the incorrect fitment of transmission input thrust bearings, and a claim for compensation is being pursued against the agency that undertook the assembly of the aft transmission.

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