MINISTRY OF DEFENCE

Military Aircraft Accident Summary

MILITARY AIRCRAFT ACCIDENT SUMMARY

AIRCRAFT ACCIDENT TO ROYAL AIR FORCE

HARRIER GR3 XZ990

Date:	14 May 1992
Parent Airfield:	RAF Wittering
Place of Accident:	RAF Wittering
Crew:	1
Casualties:	1 Major

CIRCUMSTANCES

1. After completing an air weapons range sortie, the pilot of XZ990 returned to RAF Wittering. On his third circuit, the pilot decelerated to the hover above a landing pad. The aircraft stabilised in the hover at about 100 feet above ground level. At this point, witnesses saw flames coming from the engine exhaust nozzles and heard a small explosion. The aircraft descended rapidly in a generally level attitude, slightly right wing low. The severe impact caused major airframe damage and a fire, which spread from beneath the fuselage. Shortly afterwards, there was a large explosion from the upper fuselage and smoke and flame quickly enveloped the aircraft. There was no ejection and the aircraft was destroyed.

2. Crash and rescue response was immediate but the fire engulfed the aircraft and explosions continued within the airframe. The fire crews doused the fire around the cockpit area to gain access to the unconscious pilot, who was doubled up in the ejection seat. A doctor examined the severely injured pilot before he was removed from the burning aircraft and transferred to the district hospital.

3. The RAF Wittering Fire and Rescue crews were commended for their bravery and dedication which undoubtedly saved the pilot's life.

CAUSE

4. Examination of the engine quickly led to the discovery that a first-stage, low-pressure compressor blade had suffered a

fatigue failure. Part of the blade had penetrated the engine casing and the engine bay doors. The resulting debris was ingested by the engine leading to catastrophic failure of the Low-Pressure and High-Pressure compressors and an instantaneous loss of thrust.

5. The fatigue failure had been initiated by "Foreign Object Damage", slightly behind the leading edge of the compressor blade. This was probably caused by the ingestion of a fragment of concrete or stone. Bearing in mind the many variables which influence crack propagation, the best estimate of when the damage had occurred was between 8 and 19 engine running hours prior to the accident. (This was based on past experience of crack propagation from initial damage to failure.)

6. A number of low-pressure compressor blade inspections had been performed diligently but all had failed to detect the "Foreign Object Damage" which had precipitated the engine failure. Unfortunately, the damage to the compressor blade was in such a position as to have been invisible from within the intake unless a mirror had been used, and then only in certain light conditions. Furthermore, the existing procedure of running a finger or thumb down the leading edge of the blade, would not have discovered the damage.

SUBSEQUENT ACTIONS

7. Improvements to the techniques for inspecting Harrier low-pressure compressor blades are being researched. In the meantime, the frequency of these inspections has been increased.