



MINISTRY OF DEFENCE

MILITARY AIRCRAFT ACCIDENT SUMMARY

AIRCRAFT ACCIDENT TO ROYAL AIR FORCE HARRIER ZD324

DATE:	31 October 1997
PARENT UNIT:	No 20(R) Squadron, RAF Wittering
LOCATION OF ACCIDENT:	½nm NW RAF Wittering
CREW:	1
CASUALTIES:	1 Minor Injuries

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SYNOPSIS

1. As ZD324 came in to land at RAF Wittering, the pilot noticed that the cockpit displays indicated that the engine's jet pipes were overheating. He diagnosed the problem to be engine trouble and attempted, without success, to bring the temperature indicator within limits. As the aircraft descended through 500 feet, the engine began to wind down, at which point the aircraft was at a slow speed and descending. The pilot judged recovery was not possible and ejected. The aircraft crashed into woodland.
2. The Inquiry found the temperature indication was spurious and concluded that the accident was caused by the attempt to recover what appeared to be an engine malfunction.

BACKGROUND

3. The temperature of the Harrier's jet pipes is measured by a single thermocouple at the rear of the Pegasus engine and is transmitted via a single electrical circuit to a number of displays within the cockpit. Aircrew had been advised that the symptom for a spurious Jet Pipe Temperature indication is a gradual rise in temperature up to a reading of 999.9°C, advice which will have been reinforced during simulator training.

CIRCUMSTANCES

4. ZD324 was returning to RAF Wittering from a week-long detachment to RAF Coningsby. As the aircraft entered Wittering's circuit, the Head Up Display (HUD) showed the aircraft's engine Jet Pipe Temperature (JPT) rising above normal levels. The pilot checked the HUD indication with the digital reading on the Engine Display Panel (EDP), which showed an abnormal temperature of between 700°C and 800°C.
5. The EDP reading did not accord with the recognised symptom of a spurious temperature reading. Although he had not detected either a loss of thrust or an engine surge, the pilot believed the readings to be accurate and diagnosed the problem as some form of engine trouble. He then began to take appropriate action by taking manual control of the engine's fuel system. As the aircraft descended, the engine wound down. At 500 feet, the pilot ejected.

AIRCRAFT DAMAGE

6. The aircraft was destroyed by the crash.

INVESTIGATION

7. The Accident Data Recorder (ADR) confirmed that the JPT indications in the cockpit were incorrect and that the engine had been working normally. The Board was able to trace the spurious reading to a dry-soldered joint within the internal wiring of the EDP.
8. The Board concluded that the accident was caused by the attempt to recover what appeared to be an engine malfunction, when in reality, the engine was operating normally. The pilot had followed procedure and could not be criticised for reacting to information he considered to be accurate. The Board concluded that the single source temperature sensor along with the advice and training given to Harrier aircrew had all contributed to the crash.

SAFETY RECOMMENDATIONS

9. The Board recommended that a technical solution to the spurious JPT indications be reviewed. They also recommended that the quality issue of poor workmanship on the EDP be addressed. On the matter of advice and training provided to Harrier aircrew, the Board recommended a review of documentation, and that training for handling spurious JPT indications be included into Harrier simulator syllabuses. Finally, they

recommended that all Harrier pilots be briefed on the importance of checking for available thrust during appropriate engine emergencies.