MINISTRY OF DEFENCE
MILITARY AIRCRAFT ACCIDENT SUMMARY

AIRCRAFT ACCIDENT TO ROYAL AIR FORCE HAWK T1 XX352

AIRCRAFT:	**Hawk T1 XX352**
DATE:	**15 February 2002**
LOCATION:	**RAF Valley**
PARENT UNIT:	**RAF Valley**
CREW:	**One – pilot**
CASUALTIES:	**One - minor**

Issued by: Directorate of Air Staff, Metropole Building, Northumberland Avenue, London, WC2N 5BP

September 2003

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SYNOPSIS

1. On the morning of 15 February 2002, the pilot of Hawk T1 XX352 was flying a weather check sortie from RAF Valley. Immediately after getting airborne he saw a large bird pass close to the right hand side of the aircraft and heard a loud thump, followed by engine vibrations. From the engine indications the pilot diagnosed an engine surge. Commencing a climbing turn back towards the airfield, he immediately attempted to relight the engine. This was unsuccessful and, assessing that by then the aircraft had descended to approaching 300ft, he made the decision to eject. The aircraft crashed onto farmland and was totally destroyed. The Board found the cause of the accident to be that, following an engine surge at a critical stage of flight, the

aircraft's subsequent flightpath meant that useful thrust could not be achieved before an ejection became imperative.

BACKGROUND

2. The pilot was an experienced weather-ship pilot and intended to fly a standard weather-ship profile. The forecast weather was for calm wind with 9km visibility and overcast.

CIRCUMSTANCES

3. On the morning of 15th February 2002, the pilot of Hawk T1 XX352 took off from runway 32 at 0730 hours. Once airborne, he selected gear and flap up and switched on his Transponder, which had been left in STANDBY. He looked briefly into the cockpit to do this, and on looking up saw a large bird close to the right hand side of the canopy. He could not avoid the bird, and heard a loud thump followed by moderate vibration. The T6NL caption illuminated (indicating a high temperature in the engine), along with an amber caption. Eyewitnesses reported seeing a flame extend from the jetpipe of the aircraft and hearing an unusual engine noise. The pilot commenced a climbing right-hand turn to assess the feasibility of a forced landing onto runway 19. Having assessed that the bird had gone down the engine and caused a surge, he briefly brought the throttle to idle before attempting an immediate relight. This was unsuccessful. Visually assessing that the aircraft's height had dropped to approaching 300ft, he made a radio call, released the flying controls, and initiated ejection with both hands. The aircraft hit the ground with 46° right hand bank and a 17° nose down attitude. The wreckage destroyed a dry stone wall, a fence post and a wire fence before passing within 20 metres of a house as it spread up to 155m from the initial impact point. Two fires within the wreckage were extinguished quickly by the fire services. The aircraft was totally destroyed.

INVESTIGATION

4. The Board was able to confirm at an early stage of investigation that a Herring Gull had passed into the engine. The Board therefore concentrated its inquiries on the precise cause of loss of thrust to the engine and on the handling of the emergency. The engine remained intact after the crash. Rolls Royce carried out a strip examination of the engine which established that it had not suffered mechanical failure, but that it had

surged. The Board discounted engine handling and intake airflow distortion as the cause of the surge, and as the remains of a Herring Gull were found in the engine they concluded that the birdstrike was the cause. They established that a pilot is most unlikely to be able to see a bird, assess the risk and take appropriate action in time to avoid it.

5. Following the surge, the aircraft was put into a climbing turn to the right, towards runway 19, and an immediate relight of the engine was attempted, without success. The Board established that the aircraft impacted the ground 19 seconds after the birdstrike, while work in the simulator showed that at least 26.5 seconds were necessary for a successful relight. They also found that if the aircraft had continued to fly straight and level, rather than attempting the climbing turn, it may, hypothetically, have gained an extra 15 seconds of flight. Waiting for the engine to relight would therefore have been most unlikely to have given the pilot time to eject safely. Moreover, the rationale for the change in flightpath was found to be entirely reasonable, as it turned the aircraft away from an area of higher population density back towards the airfield.

6. The Board thus concluded that the accident was caused when, following a birdstrike at a critical stage of flight, the subsequent flightpath meant that useful thrust could not be achieved before ejection became imperative.