



MINISTRY OF DEFENCE

Military Aircraft Accident Summaries

25/88

December 19, 1988

AIRCRAFT ACCIDENT TO ROYAL AIR FORCE TORNADO GR1 ZD894

Date: 30 March 1987
Parent airfield: RAF Bruggen
Place of accident: 5 miles east of Wesel, FRG
Crew: Two
Casualties: One major, one slight injury

CIRCUMSTANCES

1. On 30 March 1987, Tornado ZD894 took off from RAF Bruggen as the No 2 of a formation of three aircraft on a low level training sortie. After take-off, the pilot commented that the aircraft handling characteristics were less precise than normal. He attributed this to his lack of recent flying practice, having been on leave.
2. On completion of the take-off procedure, the aircraft was accelerated and the wings swept from 45 deg to 67 deg with the height being maintained at between 700 ft and 900 ft AGL. The pilot turned slightly right to achieve his briefed formation position abeam the lead aircraft. As he rolled out of the turn the aircraft continued its roll and the nose of the aircraft dropped. The pilot attempted to counter the roll by moving the control column to the right but

with no effect and the aircraft continued to the left with greater acceleration. There were no other signs or warnings of an aircraft malfunction. As the aircraft passed through the inverted position, both crew members decided that the aircraft was out of control. They ejected as the aircraft approached an upright attitude. The aircraft continued rolling to the left and pitching down. After one further complete roll the aircraft struck the ground in a 15 degree dive with 70 degree left bank. The time from the pilot rolling out of the turn to aircraft impact was approximately 7.5 seconds. The aircraft crashed near to the hamlet of Waldheidewet causing damage to a number of buildings. There were no physical injuries to local civilians. Aircrew ejection was successful although the navigator suffered a broken arm. The rescue of the crew was subsequently complicated by their landing in tall trees with the pilot being recovered by the local fire brigade and the navigator having to be winched from a precarious position by a rescue helicopter.

CAUSE

3. Analysis of the Accident Data Recorder (ADR) information showed that the aircraft's fly-by-wire control system was operating correctly up to the point of impact. Further, the ADR traces showed that the hydraulic actuators for the flying control surfaces had responded correctly to commands. Examination of the aircraft wreckage established that the loss of control was due to a failure of the joint connecting the starboard taileron to its actuator ram. The bolt holding the joint together had fallen out due to a failure in its locking mechanism.

SUBSEQUENT ACTION

4. The locking mechanism for the bolt securing the joint has been re-designed to prevent a recurrence of this accident. Pending introduction of the new design to the Tornado fleet, a programme to inspect the joint periodically has been introduced.

CLAIMS

5. Some 80 claims were received in respect of damage to buildings and fields affected by aircraft fuel and debris. Some claims remain to be finalized, it is estimated that the total amount paid in compensation will be in the region of £300K.

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