



# MINISTRY OF DEFENCE

## Military Aircraft Accident Summaries

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7/88

July 13, 1988

### AIRCRAFT ACCIDENT TO ROYAL AIR FORCE TORNADO GR1 ZD738

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Date: 27 July 1987

Parent Airfield: RAF Bruggen, Federal Republic of Germany

Place of Accident: 10NM North West of Pickering, Yorkshire

Crew: Two

Casualties: One Major Injury and one Slight Injury

#### CIRCUMSTANCES

1. On 27 July 1987, Tornado ZD738 was tasked as the lead aircraft of a 3 ship formation on a routine training mission to the UK. The lead pilot, having sighted a tented gathering in the Kirbymoorside area, eased his aircraft up to 1,500 ft above ground level (AGL) and reduced the throttles to less than 80% power to avoid infringing a possibly sensitive area. As the pilot completed the manoeuvre, the audio "lyre bird" alarm sounded and he noted the left and right flying control captions on the central warning panel (CWP) were illuminated along with a number of other warnings. The pilot immediately experienced control difficulties with initially the aircraft, pitching up, before pitching downwards. Despite the pilot's application of aft stick with both hands, the aircraft maintained its nose down attitude and the pilot ordered ejection action.
2. The command ejection operated normally with the crew leaving the aircraft at approximately 800 ft AGL. The aircraft continued in a 15 deg nose down attitude, with the wings almost level and struck gently rising ground and was destroyed. The total elapsed time from the first CWP warning, through the control difficulties,

to the initiation of ejection was less than 9 seconds.

#### CAUSE

3. It was concluded that the aircraft suffered the loss of both left and right flight control system hydraulic pressures during a gentle push over manoeuvre. The most likely cause of the hydraulic pressure drop was the presence of an excessive amount of free gas in both hydraulic reservoirs which led to the simultaneous de-priming of both hydraulic pumps during the push over manoeuvre. It now seemed most likely that the sources of the gas were a defective accumulator in the right hand hydraulic system combined with the poor condition of the canopy accumulator in the left hydraulic system and the pitch feel accumulators in both systems.

#### SUBSEQUENT ACTION

4. Following a review of the maintenance doctrine for Tornado hydraulic systems, amendments to the servicing procedures were introduced to ensure that system de-aeration is carried out more frequently. In addition, a modification to introduce an auto-bleed facility is being progressed.

#### CLAIMS

5. Four claims totalling £9,500 have been settled in respect of various types of damage caused by this accident.

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