



# MINISTRY OF DEFENCE

## Military Aircraft Accident Summaries

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FILE

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### AIRCRAFT ACCIDENT TO ROYAL AIR FORCE TORNADO GR1 ZA448

Date: 30 March 1988  
Parent Airfield: RAF Laarbruch, Federal Republic of Germany  
Place of accident: Nevada, USA  
Crew: Two  
Casualties: One major injury, one minor injury.

#### CIRCUMSTANCES

1. On 30 Mar 88 the crew of Tornado ZA448 took off from Nellis Air Force Base, USA to fly as the lead aircraft of the rear 4-ship forming part of an 8 aircraft formation participating in Exercise Green Flag over the Nevada Desert. The formation successfully executed a planned coordinated attack against a simulated airfield target as part of the low level training sortie. The weather throughout the route was excellent. After the target the formation flew eastwards at high speed and low level through an area of intense 'enemy' air and ground threats. Several air-to-air engagements took place with individual formation aircraft engaging 'enemy' aircraft.
2. Approximately 6 minutes after departing the target, the crew of XA448 successfully engaged an 'enemy' in their 12 o'clock before commencing a climbing right hand turn to engage another fighter. The pilot commenced his manoeuvre from 200 ft at 509 kts with the wings in the 45 degree position. He climbed to approximately 2750 ft AGL in a 4 'g' turn, using maximum dry power before tracking his intended target for 10 seconds. The crew then realised

that they were being tracked by a Hawk SAM system and the pilot over-banked to the right and commenced a descent back to low level. At this point the speed had decreased to 265 kts and the pilot was pulling 2.5 'g' using 20-22 degrees angle of attack (AOA). During the next 15 seconds the speed and 'g' remained roughly constant at 250 kts and 2.5 'g' although the AOA increased beyond the normal limit and from this point onwards the pilot began to experience control difficulties. The aircraft descended rapidly and the crew ejected at approximately 100 ft AGL.

3. On landing, the pilot broke his leg and received severe lacerations to the face and a severe blow to the head. The navigator's injuries were less severe and he was able to go to the assistance of his pilot. Both crewmen had been dragged in their parachutes by the strong surface wind. US Army personnel were quickly on the scene and the crew were airlifted to safety shortly afterwards.

4. Post-ejection the aircraft descended to about 25 ft AGL, recovered to level flight (by virtue of the gently sloping terrain) and continued to fly for some 40 seconds until it hit rising ground and was destroyed.

#### CAUSE

5. Unfortunately, the pilot was unable to recall any details of the flight due to regressive amnesia although the navigator's recollection were more complete. However, using information from the accident data recorder (ADR), the cockpit voice recorder (CVR) and a ground based recording system the final minutes of the flight were reconstructed with great accuracy. It was established that the cause of the accident was that the pilot had flown the aircraft to the extremes of the flight envelope and the crew had failed to recognise

the symptoms of imminent departure from controlled flight. The pilot failed to take correct and timely recovery action such that he lost control and was forced to abandon the aircraft. Contributory causes were:

- a. The pilot had failed to use the Spin Prevention and Incidence Limiting System (SPILS) which would have prevented the aircraft departing from controlled flight.
- b. The pilot failed to match the wing configuration to the manoeuvre he attempted.
- c. The pilot disregarded the Release to Service AOA limits.

#### SUBSEQUENT ACTIONS

6. A challenge and response check of 'SPILS ON' will be included in the Tornado flight checklist.
7. Appropriate disciplinary action has been taken in respect of the pilot.

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