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MILITARY AIRCRAFT ACCIDENT SUMMARY  
AIRCRAFT ACCIDENT TO ROYAL AIR FORCE  
JAGUAR T2A XX834

Date:	7 Sep 1988
Parent Airfield:	RAF Coltishall
Place of Accident:	15 miles SSE of Karlsruhe, West Germany
Crew:	Two
Casualties:	1 x Fatal 1 x Slight

CIRCUMSTANCES

1. On 7 Sep 88, as part of a squadron detachment to the USAF base at Hahn in West Germany, Jaguar T2A XX834 took off with a USAF F-16 pilot as a rear-seat passenger on an aircraft familiarisation sortie. The flight was briefed and authorised to be flown at a minimum of 500 feet Minimum Separation Distance (MSD) within the German low flying system.
2. The RAF pilot flew the aircraft at 1500 feet above ground level (AGL) to the first turning point and turned south-east towards the Rhine. He then allowed the USAF pilot to fly the aircraft while he demonstrated the tone made by the low height warning system linked to the radar altimeter. Approaching the Rhine, the USAF pilot descended to low level as planned prior to turning towards the Black Forest.

3. As the aircraft approached the Black Forest, the RAF pilot saw a large valley to the right of planned track, took control, and turned into it flying southwards. Having moved to the western side of the valley to avoid overflying a town, he encountered multiple power cables suspended across the valley directly in his path. The aircraft struck the power cables and went out of control in a rapid rolling descent.

4. The USAF passenger initiated ejection just as the RAF pilot told him to eject; the 2 occupants left the aircraft in quick succession. However, although the passenger's ejection was successful, the RAF pilot ejected from the aircraft on an horizontal trajectory because of the rapid roll rate, and the ejection seat had insufficient time to complete its automatic sequence before it hit the wooded side of the valley. The pilot did not survive the impact. The aircraft crashed 500 metres beyond the cables and was destroyed.

#### CAUSE

5. The aircraft had struck the lower of 2 sets of cables suspended across the valley from a 56 metre pylon at their western end and one of a row of pylons running down the valley side at their eastern end. The impact point was estimated to be 420 feet above the valley floor. These cables, which were erected in 1966, were not marked on the 1:500,000 Low Flying Chart (LFC); the earliest depiction found was on a German 1:50,000 map dated 1984.

6. The direction of approach of the aircraft southwards along the western side of the valley would have made acquisition of the cables extremely difficult. The pylon supporting the western end of the span would have been hidden by a small spur and there would have been no indication that one of the row of pylons carrying other cables into the valley was supporting the eastern end. The 1,380 metre cable span itself was found to be extremely difficult to see despite the presence of small balls of approximately 200 metre intervals along the top cable.

7. The USAF passenger stated that the aircraft had been flying at 500-600 feet, indicated on the radar altimeter, immediately after the RAF pilot had taken back control and flown the aircraft into the valley. However, as the RAF pilot moved to the right to avoid a small town in the centre of the valley, the low height warning sounded for a few seconds. The aircraft at this point was very close to the side of the valley and, in the estimation of the USAF passenger, 200-250 feet above the trees.

8. As the aircraft was moving back towards the middle of the valley past the town, the passenger saw wires ahead of the aircraft and the RAF pilot cried out. There was not time to react before the aircraft struck the cables. The cause of the pilot's flying below his authorised MSD was probably his manoeuvring to avoid the town, which was not marked on the 1:500,000 LFC.

9. Therefore, the primary cause of the accident was the pilot's action in flying below briefed MSD; the main contributory cause was pilot's failure to see the cables in time to take avoiding action. A further contributory cause was the absence of any information concerning the presence of the cables, which were extremely difficult to see; indeed, they may have been impossible to see until just before the impact.

#### SUBSEQUENT ACTION

10. Action to publicise the need for crews to be aware of chart limitations and their responsibility for reporting unmarked obstructions is in hand. In addition, the need to adhere to authorised MSD, in every respect, will be emphasised.