MINISTRY OF DEFENCE

MILITARY AIRCRAFT ACCIDENT SUMMARY

AIRCRAFT ACCIDENT TO ROYAL AIR FORCE TORNADO GR1 ZA330 AND CIVILIAN CESSNA 152 G-BPZX ON 21 JANUARY 1999, NEAR MATTERSEY, NOTTINGHAMSHIRE

	RAF TORNADO GR1 ZA330	CIVILIAN CESSNA 152 G-BPZX
PARENT UNIT / AERODROME:	Tri-national Tornado Training Establishment, RAF Cottesmore	On hire from The Flight Centre, Gamston Aerodrome
CREW:	Two	One Pilot, One Passenger
CASUALTIES:	Two Fatal	Two Fatal

Issued by: Secretariat (Air Staff), Ministry of Defence, Whitehall, London SW1A 2HB

April 2000

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SYNOPSIS

1. At 1125 on 21 January 1999, Tornado GR1 ZA330 departed RAF Cottesmore to begin the 10 minute low level portion of a routine training sortie. At 1132, ZA330 collided with a civilian Cessna 152 G-BPZX, 300 metres west of Mattersey, Nottinghamshire. The wreckage of the Cessna landed in open ground directly below the point of collision. ZA330 flew on for a further 3 kilometres before crashing into fields. Both ZA330's two crewmembers, as well as the Cessna's pilot and passenger, were killed.

2. A Tornado Combined Safety Investigation (TCSI) concluded that the cause of the accident was the failure of the pilots of both aircraft to see each other in sufficient time to take avoiding action.

BACKGROUND

3. ZA330 was on a routine pilot transition sortie from the Tornado Tri-national Training Establishment (TTTE) at RAF Cottesmore. An Italian Air Force student pilot occupied ZA330's front seat and an experienced RAF pilot occupied the rear seat as captain and instructor. This was the Italian's second sortie in a Tornado but his first in the UK low flying system. The sortie profile included an initial 10 minutes of low level flying followed by medium level general handling, a practice diversion and extensive circuit work.

4. The Cessna was being flown by a private pilot who, as a professional photographer regularly undertook aerial photography.

5. On the day of the accident, the Cessna was on hire for three hours from 'The Flying Centre', at Gamston aerodrome near Retford, Nottinghamshire. A friend accompanied the pilot, probably in the right-hand passenger seat, whilst the pilot probably occupied the left-hand captain's seat.

CIRCUMSTANCES

6. ZA330's crew attended the meteorological brief at 0800. Visibility was excellent with light winds and no significant cloud. They then planned their sortie, checked all appropriate warnings for low level civilian activity and Notices to Airmen (NOTAM) before submitting a low flying booking. No Civilian Air Notification Procedures (CANP) or late warnings were in force.

7. At 1125, ZA330 departed RAF Cottesmore at low level and six minutes later the crew began a routine check of their cockpit instruments. Whilst they were conducting this check, at a speed of 435 knots and an altitude of 650 feet, ZA330 collided with the Cessna.

8. The Cessna's pilot had obtained a meteorological brief over the telephone from a friend. He did not file a flight plan, nor did he file any CANP warnings. At 1100, the Cessna departed Gamston Aerodrome, heading north-west.

9. Witnesses state that for the six to eight minutes preceding the accident, the Cessna had been circling the villages of Mattersey and Mattersey Thorpe at low level. The aircraft had completed at least two orbits and had entered its third sustained left-hand turn when the collision occurred.

RESCUE OPERATION

10. Although medical assistance arrived on scene quickly, the occupants of both aircraft were already dead.

AIRCRAFT DAMAGE

11. The Cessna was destroyed by the collision and its wreckage fell into open ground immediately below the point of collision. The canopy of ZA330 was damaged by the collision and the aircraft flew on for a further 3 kilometres before it too crashed into fields and was destroyed.

INVESTIGATION

12. A Tornado Combined Safety Investigation (TCSI) was carried out into the accident. This type of investigation follows very similar lines to a RAF Board of Inquiry but, because the TTTE is a multinational organisation, the board contains German and Italian members. In conjunction with this military investigation, an investigation was also carried out by the Air Accidents Investigation Branch (AAIB).

13. The Tornado's Accident Data Recorder (ADR) and statements from several eyewitnesses were amongst the large amount of evidence available to the investigation. The TCSI established that ZA330 had been fully serviceable at the time of impact and, more importantly, it found no evidence to indicate that either aircraft had attempted to avoid the other prior to the collision.

14. The TCSI concluded that the accident was caused by the failure of the crew of both aircraft to see each other in time to take avoiding action. The TCSI highlighted a number of factors that contributed to these circumstances including:

- the sortie preparation of the Cessna;
- the restricted visibility from both the rear of ZA330's cockpit and the cockpit of the Cessna, and;
- the limitations of the 'see and avoid' principle.

SAFETY RECOMMENDATIONS

15. The TCSI recommended that a Collision Warning System (CWS) for all military and civilian aircraft operating below 2000 feet be pursued with all possible haste. The TCSI further recommended that all relevant information on military low flying operations should be made available to the general aviation community, and that CANP reporting should become mandatory for all civilian low-level aerial activity. Finally, the TCSI recommended an urgent review of the minimum civilian licence requirements and crew composition for the conduct of aerial photography.