MINISTRY OF DEFENCE

Military Aircraft Accident Summary of a Royal Air Force Board of Inquiry

Aircraft:	Tornado F3 ZE733
Date of accident:	30 October 1995
Place of accident:	North Sea, 56nm east of RAF Leuchars
Casualties:	1 minor, 3 slight

Synopsis

1. ZE733 was one of a formation of two Tornado F3s engaged in a Night Vision Goggle (NVG) training sortie over the North Sea when, during a join-up manoeuvre, they collided. As a result of the collision, control of ZE733 was lost and the crew ejected safely, the aircraft crashing into the sea. The other Tornado, ZE210, was damaged extensively in the collision, although the crew managed to recover the aircraft to RAF Leuchars, where it landed safely. The Inquiry concluded that the accident was caused by the crew of ZE210, who did not adhere to the briefed procedures for joining in close formation whilst using NVGs.

Background

2. The sortie was the first in a series being flown as part of work-up training in the use of NVGs prior to an operational detachment to the former-Republic of Yugoslavia. NVGs are an important part of air defence operations and work by amplifying natural light to present aircrew with an enhanced image of events outside the cockpit. The standard procedure for joining in close formation when using NVGs consists of a controlled radar approach

to a position 200-300 yards from the target aircraft, offset by 30° (to ensure that NVGs are not swamped by light from the aircraft's engines) and with height separation, followed by a gradual visual join-up.

Circumstances

3. After a thorough pre-flight brief on the sortie profile and use of NVGs, the formation took off and carried out the initial part of the sortie. With the aircraft in a tactical formation with ZE210 to the left of, and 1,000 feet lower than, ZE733, the pilot of ZE210, without assistance from the navigator and using NVGs alone, manoeuvred his aircraft directly behind the other and began to close formation. The two aircraft collided, causing the crew of ZE733 to lose control of their aircraft and eject. Although ZE210's left engine had a mechanical failure due to debris ingestion and many of the flight instruments in the front cockpit were unusable, the crew managed to recover the aircraft to RAF Leuchars, where they landed safely.

Rescue operation

4. The crew of a Sea King Search and Rescue helicopter involved in a training sortie off the Northumbrian coast heard the self-activated Pye Locator Beacon (PLB) of the downed aircrew and, after refuelling at RAF Boulmer, homed on the PLB. The aircrew were picked up uneventfully and taken to hospital for routine checks.

Aircraft damage

5. ZE733 was destroyed on impact with the sea. Despite sustaining extensive damage to the left side of the fuselage and engine intake box, as well as lesser damage to both tailerons, the inboard slat on the left wing, the right hand underwing fuel tank, rudder and fin, ZE210 is expected to be repaired and returned to service in due course.

Investigation

6. As a result of the statements of the aircrew involved, examination of the damaged aircraft and analysis of its Accident Data Recorder, the Inquiry was able to rule out a number of factors as potential causes of the accident. These included technical failure, levels of supervision and training, crew distraction and the actions of the crew of ZE733. The Inquiry established that the sortie was briefed to include a close formation join-up using the standard procedure, but that this procedure was not followed by the crew of ZE210. Instead, the pilot relied entirely on his NVGs to provide him with target information assuming that, as he closed, he would become visual with the target aircraft. However, by approaching ZE733 directly from the rear, the pilot allowed his NVGs to be swamped by light from the aircraft's engines, thereby exceeding the known technical limitations of the NVGs. This prevented him from seeing the airframe of ZE733 until it was too late to avoid the collision. For his part, the navigator failed to lock-on his radar to the target aircraft and thereby denied the pilot important range information.

Safety recommendations

8. A fundamental review of the rules, regulations and procedures relating to Tornado F3 NVG training has been carried out and a number of changes made as a result. In addition, NVG training procedures generally have been examined to ensure best practice across the aircraft fleet.

Issued 22 Jan 97