



MINISTRY OF DEFENCE

Military Aircraft Accident Summaries

MAAS 9/83

22 April 1983

AIRCRAFT ACCIDENT INVOLVING ROYAL AIR FORCE BULLDOG TMk 1 XX662

Date: 20 February 1982
Parent Airfield: RAF Leuchars, Fife
Place of Accident: 6 miles south of Leuchars
Crew: Two pilots
Casualties: One (slight)

CIRCUMSTANCES

1. On the morning of 20 Feb 82 the Squadron Commander and a Qualified Flying Instructor (QFI) from a University Air Squadron (UAS) took off in Bulldog XX662 on a staff continuing training (SCT) sortie that was to include high rotational spinning practice. The weather was ideal for the exercise with no cloud cover, a good horizon and good visibility. The QFI, in the right hand seat, entered a high rotational spin to the right and recovered normally, using the standard recovery drill. The Sqn Cdr then took control and climbed the aircraft back up to Flight Level (FL) 100 for a further high rotational spin. He completed the pre-spinning checks for the second time and rebriefed the technique he would use and the drills to be followed by each pilot in the event of an abandonment. The aircraft entered a normal spin to the left cleanly and, after about 3 turns and with the aircraft's nose about 70° below the horizon, the Sqn Cdr initiated a high rotational spin by applying full right (anti-spin) rudder and moving the control column 1½ ins forward from the fully aft position. The speed of rotation increased and after about 2 turns the Sqn Cdr moved the control column fully forward while maintaining full right rudder (the standard recovery technique for the Bulldog) and confirmed the direction of spin by reference to the turn needle. After a further 2½ turns both pilots noticed that the spin characteristics had changed; the nose had risen to an estimated 30° to 40° below the horizon, there was considerable yaw, little roll and almost no buffet or oscillation. As the aircraft approached FL 65, having completed an estimated 12 turns with anti-spin control applied, the pilots confirmed that correct recovery action was being taken and attempted to rock the aircraft out of its stable condition by use of elevator; this was unsuccessful and at FL 40 the Sqn Cdr ordered abandonment. Both pilots successfully left the aircraft and landed safely although the QFI sustained a broken nose. The aircraft continued to spin until it crashed in open ground.

/CAUSE...

CAUSE

2. During ~~the~~ recovery from the high rotational spin XX662 assumed a spin whose characteristics differed from the description of high rotational spins contained in the Aircrew Manual and from any spin encountered in the extensive spin trials previously carried out in the Bulldog. The pitch attitude was shallower than normal, there was an increase in yaw and an absence of roll. Despite applying the recommended recovery action the aircraft did not recover from the spin. Evidence was found that the bolts securing the elevator operating lever and control torque tubes were loose, but the slight asymmetry resulting from this would not have materially altered the spin recovery capability of the aircraft. The Board therefore dismissed this evidence as a contributory cause of the accident. The Board found that the spin characteristics were outside the knowledge and experience of both pilots who persevered with normal recovery action for longer than required and who cannot be criticised for the loss of the aircraft.

COMMENT

3. High rotational spinning, like spinning in general, is an essential handling exercise for all Bulldog QFIs. The Bulldog exhibits both normal and high rotational spin characteristics which must be practised by QFIs. This is in order to familiarise them with the aircraft handling and enable them to deal with the ever present likelihood of a high rotational spin entered inadvertently by an inexperienced student. The investigation into the accident was unable to establish precisely what caused the particular characteristic of this spin, which was unusually flat, or why the aircraft failed to respond to the standard recovery action. It was an isolated occurrence in the tens of thousands of spins completed by Bulldog aircraft since their introduction into RAF training in 1973. The standard spin recovery was confirmed as the only technique to be used and any departure from that drill is likely to impede recovery.

CLAIMS

4. One claim in respect of crop damage and deterioration of farm access roads was received. This has been settled in the sum of £340.

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