



MINISTRY OF DEFENCE

Military Aircraft Accident Summaries

23/88

December 14, 1988

AIRCRAFT ACCIDENT TO ROYAL AIR FORCE METEOR T7 WF791

Date: 30 May 1988
Parent airfield: RAF Scampton
Place of accident: 3 miles SE Coventry
Crew: One
Sortie: Flying Display
Casualties: One fatal

CIRCUMSTANCES

1. On 30 May 1988, the pilot of Meteor WF791 took-off from RAF Scampton for a display during the Warwickshire Air Pageant at Coventry airport. The weather was good, visibility 30 kms with 3/8 cloud at 2500 ft. The display followed the normal sequence for about 3 minutes, until a wingover to the right, which was intended to bring the aircraft back along the display line with undercarriage and flap extended. However, although the manoeuvres up to this point seemed normal, the Meteor had been flown throughout the sequence with airbrakes extended, contrary to normal practice.
2. As the pilot started the wingover, flaps were at about $\frac{1}{2}$ and airbrakes were extended. The undercarriage appeared to lower normally as the Meteor climbed

to the highest point of the wingover to the right. As the aircraft began the descending turn back to the airfield, the roll rate appeared faster than on previous occasions, the bank increased to 45 degrees and the nose dropped. The aircraft turned rapidly through 90 degrees to the right and settled into a dive, with the nose some 45 degrees below the horizon and the wings approximately level. This attitude remained fairly constant, apart from small variations in bank, until shortly before impact, when a roll to the right developed. The aircraft crashed into an area of open ground close to the airfield and was destroyed.

3. The Meteor was not fitted with ejection seats and there was insufficient height or time for successful abandonment. The Airport Fire Services were at the scene within 8 minutes and extinguished small residual fires. It was established that the pilot had died on impact.

CAUSE

4. Video recordings and photographs of the Meteor show that much, and probably all, of the display had been flown with the airbrakes extended. Examination of the wreckage indicated that the airbrakes were extended at impact. However, the Meteor T7 Pilot's notes include the following:

"If the aircraft is yawed at speeds below 170 knots with the airbrakes out, the nose may drop suddenly and the elevators become ineffective until the yaw is removed or the airbrakes retracted. The tendency is aggravated if the ventral tank is fitted. Airbrakes should not be used at airspeeds below 170 knots at circuit height and should be in before the undercarriage is lowered."

This phenomenon, colloquially known as the "Phantom Dive", is due to airflow being disturbed at high angles of attack by turbulence from the airbrakes; such disturbance would be increased by sideslip. The directional stability of the Meteor T7 is less than that of earlier marks of Meteor because of the increased nose and canopy size, and directional stability is further degraded by the ventral tank and the nosewheel when extended. Any sideslip at conditions of marginal directional stability would increase this effect and result in loss of elevator and rudder effectiveness and a nose down pitch.

5. When Meteor WF791 began to roll right into its final dive, the aircraft was at its lowest speed in the display, probably around 150 knots, had its undercarriage down and airbrakes extended. The investigation considered that all of the criteria required for a "Phantom Dive" were present and that the cause of the accident was that the aircraft entered an undemanded dive, due to the airbrakes being extended at low speed. There was no evidence of any pre-crash defect in the aircraft's airbrake system.

CLAIMS

6. Two claims have been settled totalling some £2,600 in respect of damage to masonry caused by this accident.

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