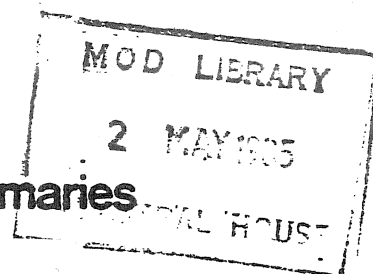




MINISTRY OF DEFENCE

Military Aircraft Accident Summaries



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1 May 1985

AIRCRAFT ACCIDENT INVOLVING ROYAL AIR FORCE

CANBERRA B2 WJ678

Date: 19 October 1983

Parent Airfield: RAF Wyton

Place of Accident: Over North Sea

Crew: One Pilot, one Navigator

Casualties: Nil

CIRCUMSTANCES

1. On 19 October 1983, 2 Canberra B2 aircraft were programmed to carry out practice interceptions for the School of Fighter Control. Before the flight, both crews were briefed on the possibility that clear air turbulence (CAT) could occur at high level; in view of this warning, the pilots descended to a lower Flight Level when they experienced moderate turbulence during their first interception. After a further 3 interceptions the pilot of the No 2 aircraft, acting on instructions from the ground controller, initiated a turn to the right during which he intended to descend and increase speed. Halfway round the turn he felt several 'bumps' through the airframe; the aircraft then started an undemanded roll to the right. Despite use of opposite aileron the pilot was unable to correct the roll until the aircraft was close to, or in, the inverted position.

The crew then felt 'g' forces, and in an effort to regain control, the pilot selected full airbrake. After a period of buffeting the 'g' forces relaxed, leaving the aircraft in a steep nose down attitude from which the pilot was able to recover to straight and level flight. A cockpit inspection showed that a severe overstress had occurred during the loss of control, but after an in-flight inspection, safely from the formation leader which revealed no obvious signs of damage, the aircraft was landed at base. Subsequent engineering investigation revealed that the aircraft had suffered severe overstress damage.

CAUSES

2. In diagnosing the cause of the loss of control, it was possible to eliminate both aircraft unserviceability and wake turbulence as factors. It was considered that the aircraft had encountered CAT in association with a high level jet stream (ie a channel of high speed air) known to be in the area at the time. The 'bumps' and undemanded roll experienced by the crew were also considered to be manifestations of turbulence. Following the undemanded roll the aircraft was accelerated into flight regime where the effects of aerodynamic compressibility reduced the effectiveness of the flying controls, and the aircraft's behaviour became unpredictable as a consequence of the changing shockwave pattern in the airflow. Recovery of the aircraft was brought about by the combined effects of the airbrakes, natural drag and the increased air pressure which occurs with height loss. In the subsequent investigation it was decided that the pilot was not blameworthy for the initial loss of control since he was unaware of the exact location of the jet stream. However, his preception of the problem and the recovery technique which he employed were both examined and criticised.

SUBSEQUENT ACTIONS

3. Appropriate action was taken against the pilot.

4. The effects of jet streams and compressibility has received additional publicity within the RAF.

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