MINISTRY OF DEFENCE

Military Aircraft Accident Summaries

9 December 1982
18/82

ACCIDENT TO ROYAL AIR FORCE LIGHTNING F MK 6 XR 765

Date:	23 July 1982
Parent Airfield:	RAF Binbrook
Place of Accident:	50 nm NNE of RAF Binbrook
Crew:	One pilot
Casualties:	Nil

CIRCUMSTANCES

1. The pilot of XR 765 was participating in an air defence training exercise during which the aircraft was 'scrambled' as one of two Lightnings allocated to a low-level Combat Air Patrol (CAP) over the North Sea. This was his second sortie of the day in the same aircraft; the first had been uneventful and the aircraft had landed with no unserviceabilities. After some time on CAP the other Lightning departed to join up with a tanker in order to refuel. The pilot of XR 765 elected to remain on CAP and closed down his No 2 (the upper) engine to conserve fuel. About 15 mins later, he advised the ground controller that his fuel state was such that he would shortly have to return to base unless he also could refuel in flight. When told that a tanker was available, he tried to relight the windmilling No 2 Engine, however, this attempt failed and he shut the No 2 engine high pressure fuel cock; thereafter, with full dry power on the No 1 engine, he began a gentle climb with the intention of making a single-engined recovery to base. During the climb, the audio alarm sounded and a Reheat Fire Warning on the live No 1 engine occurred followed almost immediately by a similar warning on the No 2 engine. The pilot transmitted a Mayday call, asked for an airborne inspection to check for external signs of fire, and levelled at 10,000 ft. At this stage the arrester hook warning light illuminated and the pilot noticed a reduction in elevator effectiveness. He then attempted a second relight on the No 2 engine which, if successful, would have allowed him to shut down the No 1. This attempt also failed; there was a jolt (subsequently attributed to the disengagement of the electrical air turbine) and a progressive degradation in longitudinal control which required the pilot to move the control column fully forward in order to hold level flight. The audio alarm sounded again and several warning captions illuminated.

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he aircraft began an uncontrollable roll to the left and the pilot ejected. He was subsequently rescued by helicopter and flown to hospital from which he was discharged on the following day after being classified as uninjured. Lightning XR 765 crashed into the sea and was destroyed.

CAUSE

2. Examination of wreckage recovered by a Dutch trawler some 3 months after the accident confirmed the deduction that the primary cause of the accident had been a major fire in the rear fuselage which had led to a loss of control. However, the limited evidence available precluded a precise determination of how the fire had originated. The Board of Inquiry, advised by AIB and experts from industry, reasoned that in all probability a fuel leak had occurred in the No 2 engine fuel system (which coincidentally prevented a successful relight), and leaking fuel had drained from the engine bay and had been reingested into the rear fuselage via a ram air scoop and No 1 engine reheat jet-pipe cooling ducts. The jet-pipe temperature had been sufficient to ignite this fuel, and the resulting fire had ruptured the No 1 engine jet-pipe and allowed hot exhaust gases to impinge on the rear fuselage structure. This structure had distorted and burned, and in so doing had produced the white plume which was seen by the pilot of another Lightning shortly before the aircraft crashed. It was considere to have been extremely unlikely that the deliberate shutting down of the No 2 engine and the subsequent relight attempts had contributed to the loss of the aircraft.

SUBSEQUENT ACTIONS

3. Since subsequent modifications may have invalidated earlier flight trials into fuel drainage patters, a further trial is being arranged to determine whether any additional measures are necessary to prevent draining fuel being reingested into the hot areas of the rear fuselage. Additionally, although the Lightning is subject to comprehensive Fire Integrity checks, (which were introduced after a spate of in-flight fires some 10 years ago), further inspections have been introduced into the periodic servicing schedules.

CLAIMS

4. (To be inserted by Claims Abroad).

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