MINISTRY OF DEFENCE

Military Aircraft Accident Summaries

MAAS 21/82
21 December 1982

AIRCRAFT ACCIDENT TO ROYAL AIR FORCE HUNTER T MK 7 ~~XL597~~

Date:	29 May 1980
Parent Airfield:	RAF Honington
Place of Accident:	1km South of Little Saxham
Crew:	Two pilots
Casualties	Nil

CIRCUMSTANCES

1. On 29 May 1980, Hunter XL597 was being crewed by two senior squadron pilots in company with another Hunter on a routine training mission. The aircraft were flying at 500 ft above the ground and 420 kts. While changing formation prior to beginning a climb, the pilot in control of XL597 became aware that his aircraft was dropping back relative to the other Hunter. He advanced the throttle and, on checking his instruments, discovered that the engine RPM had inexplicably reduced from about 7100 to 4000. He sumultaneously began a climbing turn towards the nearest airfield, retarded the throttle to its previous cruise power setting and, believing the engine to be in the process of flaming-out, attempted a relight. The aircraft gained about 2000 ft before the pilot was obliged to select a gliding attitude because speed had decreased to 20 kts and the RPM had decayed to about 3000. Each pilot prepared to eject and in an attempt to restore engine power, the Captain partially closed the throttl and operated the High Pressure Pump Isolate Switch (HPPIS). (This switch is provided to override the automatic fuel system, in the event of a failure and causes one of the two high pressure pumps to deliver full fuel to the engine via the throttle). The engine began to respond, with the RPM increasing to about 6000. However, there was marked vibration accompanied by a very high Jet Pipe Temperature (JPT) indication. The crew heard a muffled bang and noticed the RPM decreasing again. At this stage the aircraft was approaching 1000 ft above ground and the captain ordered abandonment. Both ejections were successful and the pilots sustained only superficial injuries. The aircraft struck trees before crashing in open farmland.

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CAUSE

2. A severe post crash fire caused extensive damage to the aircraft and this prevented the precise determination of the reason for the initial loss of power, but this was thought to be an unidentified failure in the engine fuel system. It was also not possible to establish whether the increase in RPM was the result of the relight attempt, or use of the HPPIS. However, the latter is considered to be more likely, since use of the switch, with the throttle in other than the closed position, can produce a degree of overfuelling which the engine cannot accelerate quickly enough to accept, resulting in a compressor stall; the vibration and excessive JPT expressed by the crew are both symptomatic of this. In the circumstances, this would have led to severe overheating of the turbine which, it was found, had virtually disintegrated prior to impact. The pilot of the other Hunter and some ground observers reported seeing a plume of flame emanating from the jet pipe just prior to the crew ejecting and it is likely that the turbine failure occurred at this time. Thus, while the primary cause of the engine failure has been diagnosed the reason for the initial RPM decay has not. An experiment by the engine manufacturer has shown that a leak in the fuel pump automatic control system could cause symptoms similar to those reported by the pilots in XL597 and this is thought to be the most likely explanation.

SUBSEQUENT ACTION

3. Instructions to Hunter pilots for dealing with emergencies have been amended to include an appropriate caution on the implications of operating the HPPIS with the throttle open.

CLAIMS

4. A claim for damage to land was settled in the sum of £160.

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