

SERIOUS INCIDENT

Aircraft Type and Registration:	P84 Jet Provost T3, G-BKOU	
No & Type of Engines:	1 Rolls-Royce Viper 10201 turbojet engine	
Year of Manufacture:	1961 (Serial no: PAC/W/13901)	
Date & Time (UTC):	28 March 2012 at 1145 hrs	
Location:	RAF Wyton, Cambridgeshire	
Type of Flight:	Private	
Persons on Board:	Crew - 2	Passengers - N/A
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Fire and heat damage to areas of the fuselage and jet pipe	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	69 years	
Commander's Flying Experience:	11,970 hours (of which 450 were on type) Last 90 days - 8 hours Last 28 days - 4 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

The aircraft engine did not relight following a planned in-flight shutdown, conducted during a post-maintenance flight test. A fire warning occurred and the appropriate emergency actions were carried out, after which the fire warning extinguished. The aircraft made a successful forced landing at RAF Wyton. Evidence was found of a fire in the region of the aircraft where the engine exhaust cone is joined to the jet pipe.

History of the flight

The aircraft was being flown to complete a flight test following minor control adjustments. Takeoff from North Weald was at 1100 hrs, with two experienced Jet

Provost pilots onboard. Weather conditions were fine, with light westerly winds, good visibility and no low cloud.

The aircraft was climbed to FL200, initially, before being descended to FL100 to continue the test items. During this period, the crew were receiving a Lower Airspace Radar Service from RAF Cottesmore. The pilot in the left seat carried out a 'hot' relight at about 160 kt airspeed, with no adverse indications. The captain, flying in the right seat, then took control and prepared to carry out an engine shut-down and cold relight. With the engine shut down and the airspeed at 120 to 130 kt, the jet pipe temperature (JPT) indicated 20 to 30°C and the engine rpm was about 12%. The

relight was initiated by pressing the relight button and opening the HP fuel cock, but the JPT and rpm remained unchanged.

The right-seat pilot closed the HP fuel cock and both pilots confirmed the correct setting of the relevant controls and switches. A further relight was attempted, this time using the emergency relight switch, with non-essential electrics switched off. After 15 to 20 seconds, and still with no rise in the JPT or rpm, light smoke was seen rising in the cockpit in the vicinity of the left seat. The relight attempt was aborted and both pilots selected 100% oxygen to their masks.

While the crew attempted to determine the source of the smoke, the fire warning light illuminated. No smoke was visible trailing behind the aircraft but they decided to treat the warning as genuine, given the preceding events. Flight Reference Cards actions were carried out and, after the fire extinguisher had been discharged, the fire warning light extinguished. The left-seat pilot made a MAYDAY call before transferring to RAF Wyton ATC, in preparation for a forced landing at the air station.

The crew flew a standard forced landing pattern to Runway 26 at RAF Wyton, with the aircraft touching down about one third distance along the approximately

2,500 m runway. The aircraft was brought to a halt and the crew vacated the cockpit normally. The airport fire service attended but, with no indications of an ongoing fire, did not employ any extinguishing equipment. Subsequent inspection of the aircraft revealed 'sooting' inside the fuselage and jet pipe, with an area of paint scorching and blistering evident on the upper fuselage in the area of the engine cone / jet pipe join.

The aircraft captain noted that the relight attempts were continued for about 20 seconds, and that the JPT and rpm would normally begin to increase within 5 to 10 seconds of opening the HP fuel cock. The cockpit smoke was never thick enough to be a significant issue and eventually dispersed.

The aircraft's maintenance organisation advised that there appeared to be no pre-existing defect. It was considered likely that fuel had pooled in the area of the engine cone/jet pipe union during the relight attempts and had subsequently ignited. Although there is a fuel drain in that area, fuel may not drain effectively if the aircraft is in other than a level attitude.