WAR Hawker Sea Fury Replica, G-BLTG, 1 September 1996

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Aircraft Type and Registration:	WAR Hawker Sea Fury Replica, G-BLTG
No & Type of Engines:	1 Rolls Royce O-200-A piston engine
Year of Manufacture:	1986
Date & Time (UTC):	1 September 1996 at 1445 hrs
Location:	Crosland Moor Airfield, Huddersfield
Type of Flight:	Private
Persons on Board:	Crew - One - Passengers - None
Injuries:	Crew - Fatal - Passengers - N/A
Nature of Damage:	Aircraft Destroyed
Commander's Licence:	Private Pilot's Licence
Commander's Age:	69 years
Commander's Flying Experience:	2,528 hours (of which 6 were on type)
	Last 90 days - 4 hours
	Last 28 days - 2 hours
Information Source:	AAIB Field Investigation

History of the Flight

The pilot gained his PPL in 1965. Most of his flying in recentyears had been in a Jodel D11, about 30 hours per annum. In May 1996, he purchased the Sea Fury Replica and based it atLeedsBradford Airport. On 26 August, the pilot flew theaircraft from Leeds-Bradford to Elvington Airfield. While atElvington, the aircraft uplifted 24 litres of Avgas. The returnflight to LeedsBradford took some 15 minutes. The aircraftnext flew on the day of the accident, departing from Leeds-Bradfordat 1220 hrs and arriving at Crosland Moor Airfield around 1300 hrs. The aircraft carried out a low pass followed by a circuit andlanding on arrival. A fly-in social event had been organisedat the airfield that day.

Prior to departure, the aircraft was held in a queue for severalminutes, while waiting to backtrack for a departure from Runway25. No abnormalities were noted by any of the spectators duringthis

period. In sequence, the aircraft backtracked the runwayand commenced its take-off run. Eyewitnesses observed that afterlift off, the aircraft accelerated and the landing gear was retractedwhile still at low level. On passing the western boundary ofthe airfield, the aircraft was observed to pull up into what wasdescribed as a steep climbing attitude, during which the aircraft'sspeed began to decay. The aircraft then entered a steep bankedturn to the left, with some eyewitnesses estimating the bank angleto be approaching 90°. The aircraft then appeared to sideslipto the left and then yawed and rolled to the left, assuming asteep nose down attitude. The aircraft continued to yaw and rollto the left and the flight path angle was initially steep, butwas reducing by the time the aircraft impacted the ground, leftwing low, in a farm field adjacent to the airfield. There wasno fire, but the pilot sustained fatal impact injuries, and apost-mortem examination did not reveal any condition which mayhave led to pilot incapacitation.

The surface wind was estimated as being from about 30° rightof the runway direction, generally light but with occasional increases. An aftercast from the Meteorological Office indicated that atthe time of the accident there was a westerly airstream establishedover the area with weak frontal systems moving east across Scotland. The visibility was 30 km and there was no significant weather. The cloud was scattered with a base of 3,000 to 4,000 feet, witha higher level broken cloud layer around 8,000 feet. The surfacewind was estimated to have been 270°/5 to 10 kt and the temperature+19°C. The wind at 2,000 feet was 280°/15 kt. Giventhe local topography of rolling hills, some funnelling effectwas possible, but in the opinion of the Meteorological Office,the wind speed was unlikely to have been greater than 15 kt.

During the course of the steep left turn, the aircraft turnedthrough the downwind track. Investigation of previous flightsmade in this aircraft by this pilot could not find any previousoccasion when he had performed such a manoeuvre immediately aftertake-off. He had written to the Popular Flying Association (PFA)shortly after purchasing the aircraft to enquire as to what modificationsor testing would be required to make the aircraft aerobatic. The current PFA Permit Limitations prohibited aerobatics and spinning. The PFA response indicated that the aircraft had an unusuallylow stick force per 'g' which was considered to make it too easyto overstress the aircraft. The normal requirement is for a minimumof 15 lbs pull force at the design maximum positive 'g' limitof +6'g' with the cg at the aft aerobatic limit. A weight andbalance check indicated that the aircraft was operating withinthe maximum permitted weight and normal centre of gravity rangeat the time of the accident.

Aircraft Description

The WAR Sea Fury was designed by the War Aircraft Replica companyof Santa Paula, California, in the early 1970's as a 'kit' or'plans' homebuilt aircraft. This diminutive half scale aircraftof 20.5 feet wing span was powered by a 100 HP Rolls Royce Continentalpiston engine driving a fixed pitch propeller, and was constructedin the UK, from plans, between 1981 and 1985, since when had flownfor approximately 100 hours. The basic structure of the aircraftis wood, with the scale aerodynamic profiles being achieved byshaped rigid foam panels skinned with GRP sheet. The retractablemain landing gear on this example was hydraulically operated bya handpump in the cockpit, this reportedly requiring some 20 pumpsfor full gear retraction.

Impact Parameters

The aircraft had crashed into a grass covered field, some 250metres to the south of the start of Runway 07, whilst on a trackof 060°M, narrowly avoiding a dry stone wall. Analysis ofthe ground marks and wreckage distribution showed the aircraftto have been erect at the time, but in a left

wing and nose lowattitude. Its vertical speed was assessed as being relativelyhigh but with low horizontal velocity, the wreckage trail beingonly some 75 feet in length. This was compatible with the aircraftbeing in a stalled condition, and moving downwind, at impact. There was evidence from the damage to the propeller that it hadbeen rotating under power at the time the first blade struck theground, and from the areas of contaminated grass along the trail,that the tank contained a reasonable quantity of fuel. The aircraft'sconfiguration at the time was determined to have been with thelanding gear and airbrakes/flaps retracted and the canopy closed.

Wreckage Examination

The wreckage was examined both in-situ and after recovery to theAAIB at Farnborough. It was established that the aircraft hadbeen complete and structurally intact, all failures being attributableto impact with the ground. This had shattered the left wing andcockpit structure, but the right wing, engine/cowling and fuselageaft of the cockpit, although all damaged, had survived relativelyintact. It was determined that all flying control linkages andengine controls had been connected prior to the impact, and thepitch trim lever was found set at its mid position. A partialstrip of the engine and carburettor failed to reveal any evidenceof pre-accident mechanical failures or defects, and it was establishedthat all fuel lines and filters were free from obstruction andthat the magnetos, ignition harnesses and spark plugs had beenserviceable. The throttle control was found set at maximum, themixture control at full rich, the carburettor heat control atcold, the fuel tap was found in the open position. The enginespeed indicator was found with the needle indicating 2,500 RPM,this all being consistent with a normal full power take off, butlittle other useful information was gained from the instruments. The cockpit of this aircraft was small, and was fitted with afour point harness. This was found undone but rescue personnelreportedly found it unnecessary to release the straps to recoverthe pilot. Examination of the harness revealed that it was serviceablewith no signs of distress on any of the components, and therewere no indications on the release mechanism of any witness marksto indicate that it might have self released during the impact.

Documentation

The aircraft had been issued with a Permit to Fly (PTF) by theCivil Aviation Authority in June 1993, and was subject to theirspecified conditions and operating limitations imposed by thePFA. The PTF remained valid until revoked, but was conditionalupon a current Certificate of Validity, issued annually followingan inspection and flight testing, by the PFA. GBLTG possessedsuch a certificate, which was issued on 26 June 1996.