

ACCIDENT

Aircraft Type and Registration:	Hawker Hurricane IIB, G-HHII	
No & Type of Engines:	1 Rolls-Royce Merlin 29 piston engine	
Year of Manufacture:	1940	
Date & Time (UTC):	28 August 2011 at 1200 hrs	
Location:	North Weald Airfield, Essex	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Radiator scoop and propeller damaged	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	53 years	
Commander's Flying Experience:	7,000 hours (of which 1,500 were on type) Last 90 days - 120 hours Last 28 days - 43 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

Whilst landing at North Weald following a flying display at another airfield, the aircraft was observed to fly the approach and subsequent landing with the landing gear retracted, despite warnings from the control tower.

History of the flight

The aircraft was returning to its base at North Weald following a flying display; the pilot then intended to depart in his Spitfire PRXI for a second display. His usual approach for landing on the grass Runway 20 was to perform a 'run and break' along the runway, followed by a curved left-hand approach to land. In this instance he stated that he would be joining the circuit on the crosswind leg.

A controller in the control tower watched as the Hurricane joined the crosswind leg and climbed before turning left onto the downwind leg. The pilot stated that he then slowed the aircraft to the gear limiting speed and moved the selector to the U/C DOWN position (see Figure 1). However, at the point on the downwind where the controller expected to see the landing gear extend, he saw no sign of this happening, despite hearing the pilot call on the radio 'TURNING FINAL, GEAR DOWN' as the aircraft reached the end of the downwind leg. After the controller had transmitted the wind, 290° at 14 kt, and still unable to see the landing gear, he checked with binoculars and could see that both were fully retracted. He then called the aircraft and said 'HURRICANE, YOUR UNDERCARRIAGE IS NOT

DOWN' but received no response. He tried to warn the pilot twice more as the aircraft completed the finals turn followed by the instruction 'HURRICANE GO AROUND I SAY AGAIN GO AROUND'. This call was also repeated but there was no response. The controller watched as the aircraft flared onto the runway on its belly and slid along the grass, coming to rest about halfway along the runway length. The controller pressed the crash alarm and broadcast to the fire crew that the Hurricane had landed wheels-up.

Before evacuating the aircraft, the pilot radioed the tower to express his incomprehension at what had happened. The controller replied that he had tried to warn him that his undercarriage was not down and had told him to go around. The fire crew arrived within three minutes and made sure the aircraft was safe. It was apparent that, apart from the extensive damage to the ventral radiator and the fuselage in that area, the airframe had been spared some of the typical consequences of a wheels-up landing. In particular, it appeared that some of the loads had been taken by the underwing bomb racks and damage to the extended flaps was slight. The metal propeller blades had been badly distorted.

Description of the Main Landing Gear (MLG)

The Hawker Hurricane has two retractable MLGs and a fixed tailwheel. Actuation of the MLGs and the flaps uses hydraulic power supplied by an engine driven pump. The selector in the cockpit is a combined flap and MLG lever working in an 'H' shaped gate, much like the selector in a four-speed manual gearbox car (Figure 1). When no flap or MLG selections are being made, the lever should be placed in the 'neutral' position. If flap selection is required, the lever is moved to the right and down and returned to neutral when the flaps have extended. If the MLG is then required to be

lowered, the lever is moved to the left and down and returned to neutral when gear extension is confirmed by the illumination of two green lights on a unit to the left of the main instrument panel. A spring-loaded thumb-latch needs to be released each time the selector lever is moved from one of the operating positions but this is not the case when making a selection from neutral.

The MLG uplocks are released hydraulically upon a gear down selection and hydraulic jacks extend the legs until a geometric overcentre condition of the sidestays is achieved, effecting a downlock and closing two microswitches to illuminate the two green lights. If a failure of the engine-driven pump has occurred, then the pilot can use a hand pump to power the hydraulic system. Alternatively, there is also a foot-activated lever, directly linked to the uplocks, release of which should allow the MLGs to drop and downlock under gravity.

As a precaution against inadvertently landing with the landing gear retracted, an audio buzzer sounds when the throttle is less than about one third open without

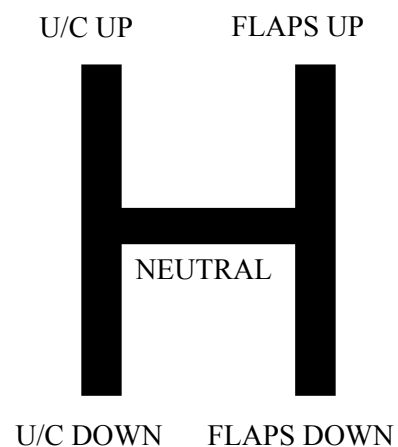


Figure 1

Schematic representation of the hydraulic selector lever gate

the two green lights illuminated to indicate that both MLGs are down and locked. Some pilots have, over the years, apparently commented that this audio warning is not particularly loud or compelling and a modern modification is available to have the warning fed into the pilot's headset. G-HHII did not have this modification.

Investigation

The aircraft was found with the hydraulic selector lever in the U/C DOWN detent but the MLG was found in the locked UP condition. When the aircraft was recovered, the foot lever was activated to release the uplock and

extension and downlock was achieved using the hand pump without any anomalies. No faults were found with the engine-driven hydraulic pump, the indicator lights or audio warning, although a detailed investigation of the hydraulic system is continuing.

The pilot, in his statement, said that he had slowed the aircraft to 110 mph to allow gear extension on the crosswind leg by climbing, as observed by the controller. He then made the landing gear DOWN selection as normal, just before selecting the flaps. He attributed the subsequent failure to extend as due to "a failure of a hydraulic link or system".