FINAL REPORT

AAIU Synoptic Report No: 2004-010
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In accordance with the provisions of SI 205 of 1997, the Chief Inspector of Accidents, on 12 April 2004, appointed Jurgen Whyte as the Investigator-in-Charge to carry out a Investigation into this occurrence and prepare a Synoptic Report.

Aircraft Type and Registration:	Cessna 172 R, EI-MCF
No. and Type of Engines:	1 x Lycoming 10-360-L2A
Aircraft Serial Number:	17280799
Year of Manufacture:	1999
Date and Time (UTC):	11 April 2004 @ 13.40 hrs
Location:	Southern side of Runway (RWY) 26 at Galway Airport (EICM)
Type of Flight:	Training – Solo
Persons on Board:	Crew - 1 Passengers - Nil
Injuries:	Crew - Nil Passengers - Nil
Nature of Damage:	Minor to engine cowling, propeller, spinner, nose wheel oleo strut, main wheel strut fairings, left hand side wing strut, and left hand side elevator.
Commander's Licence:	Student Pilot's Licence (Irish)
Commander's Details:	Female aged 50 years
Commander's Flying Experience:	87.5 hours of which 80 hours were on type and 4.5 hours were as P1.
Information Source:	AAIU Incident Report Form submitted by Pilot and AAIU Field Investigation

FACTUAL INFORMATION

The aircraft took off from RWY 26 at EICM at 13.00 hrs in calm conditions with a student pilot and chief flying instructor (CFI) on board. The purpose of the flight was to checkout the student pilot for a solo circuit detail. Two circuits consisting of a "Touch and Go" and a "Full Stop" landing were completed. On vacating the runway the CFI briefed the pilot to carry out a number of solo "Touch and Go" circuits.

The first two circuits were uneventful. On the third "Touch and Go" circuit, the aircraft landed within the touchdown zone on centreline. The pilot raised the flaps and applied power. Almost immediately the aircraft was seen to veer gently to the left and depart the southern side of the runway abeam the control tower. The aircraft continued its transition across the grass and came to a stop when it impacted the airfield boundry barbed wire fence. The time of impact was approximately 13.40 hrs. A length of barbed wire coiled around the propeller/spinner and fence impact damage was caused to both sides of the engine cowling, the propeller, spinner, nose wheel oleo strut, main wheel strut fairings, left hand side wing strut, and left hand side elevator.

In the AAIU Pilot Accident Report Form submitted to the Investigation, the following was described. *"When the aircraft started to veer off the runway, I tried to correct with rudder (but the correction didn't bring it back), while at the same time closing the throttle, I applied brakes but was unable to stop before hitting the fence. I believed at the time what I did was correct but in hindsight, maybe I didn't respond quickly enough".*

A post incident inspection of the aircraft determined that both the wheel brakes and nose wheel steering were functioning correctly. The actual wind conditions at the time of the occurrence were reported as calm.

DISCUSSION

On a propellor driven aircraft, when power is applied during the take-off/take-off run, there is a tendency for the aircraft to yaw. The direction of yaw is dependent on the direction of propeller rotation. The propeller rotation will cause a slipstream effect on the tail fin and a torque reaction of pressing one side (wheel) of the aircraft down. For a clockwise rotating propeller (such as EI-MCF), the tendency is for the aircraft to yaw nose left. The slipstream effect pushes the tail fin to the right (when viewed from behind) and the torque reaction compounds this situation due to increased frictional drag on the left (side) wheel. To counteract this left yawing tendency, opposite rudder (right rudder) must be applied. Large rudder movements may be required early in the take-off run or at low ground speeds, but as the airflow over the rudder increases, smaller rudder movements are sufficient to maintain directional control. A gradual application of throttle from idle to full power will reduce the yaw effect.

The absence of any wind or technical failure, coupled with the pilots recall of events, would indicate that directional control was lost as a result of insuffient rudder being applied to counteract the initial left yaw effect during the touch and go take-off run.