

ACCIDENT

Aircraft Type and Registration:	Escapade 912(1), G-CDLE	
No & Type of Engines:	1 Rotax 912-UL piston engine	
Year of Manufacture:	2005	
Date & Time (UTC):	4 April 2009 at 1435 hrs	
Location:	Shobdon Airfield, Herefordshire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - 1
Injuries:	Crew - 1 (Fatal)	Passengers - 1 (Fatal)
Nature of Damage:	Destroyed	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	56 years	
Commander's Flying Experience:	86 hours (of which 77 were on type) Last 90 days - 2 hours Last 28 days - 1 hour	
Information Source:	AAIB Field Investigation	

Synopsis

While positioning to join the visual circuit, G-CDLE took avoiding action on a departing aircraft. G-CDLE subsequently entered a spin from about 500 ft aal and crashed onto land adjacent to the airfield. Both occupants were fatally injured on impact.

The aircraft departed Rodley at 1340 hrs destined for Shobdon Airfield, Herefordshire, where it is believed the occupants planned to take lunch. Shobdon were using Runway 27 where the weather was CAVOK with a surface wind of 270°/15-20 kt.

History of the flight

The aircraft took off from its base at Eastbach Farm Airfield, near Lydbrook, Gloucestershire, at about 1045 hrs with the pilot and a passenger on board. It flew to Over Farm Airstrip, near Gloucester, before landing at Rodley Airstrip, 5 nm south-east of Gloucester, at about 1140 hrs. People who spoke to both occupants at Rodley stated that they "were both their normal selves and were both in good spirits".

The pilot made contact with Shobdon radio at approximately 1400 hrs and told the Flight Information Service Officer (FISO) that he was 3 nm south of the airfield at 1,400 ft aal. When asked by the FISO if he was familiar with the circuit at Shobdon the pilot replied "AFFIRMATIVE" and said he would join the microlight circuit at 1,500 ft. At 1425 hrs the pilot reported "DESCENDING DEAD SIDE", to which the FISO advised "NOT BELOW 1,500 FT DUE TO GLIDING"; this was

acknowledged by the pilot. A visitor to the air traffic control tower brought the FISO's attention to an aircraft in a spiral descent at about 500 ft aal. The FISO saw the spiral descent develop into a nose-low vertical descent before it impacted a field about 150 m north of the runway. There was a post-impact fire.

The AFRS were quickly on scene and extinguished the fire with foam. Paramedics from a visiting Air Ambulance declared both occupants dead at the scene.

Witness accounts

Several witnesses on the ground saw the final moments of the aircraft's flight. They all described seeing the aircraft in a vertical spiral dive/spin. One pilot witness on the ground described seeing the aircraft at "no more than 500 ft and quite slow." Having taken his eyes off the aircraft for a few moments this witness next observed the aircraft's left wing drop, followed by the nose as it entered a vertical dive and went into a spin.

An airborne pilot in another microlight passed adjacent to G-CDLE soon after he had taken off from Shobdon whilst still on the runway centreline, heading west. He stated that he first saw G-CDLE after his passenger brought it to his attention as his aircraft climbed through 400 ft aal. G-CDLE was about 400 m away at his two o'clock position, approximately 50 ft above him and on a conflicting track. He closed the throttle and pushed the control column forward to pass underneath G-CDLE. As he did so, G-CDLE turned sharply to the left and appeared to stall almost immediately. The left wing "dropped sharply" and the aircraft rotated anti-clockwise through about 180° in a near vertical attitude before he lost sight of it. His passenger subsequently reported that the aircraft had crashed adjacent to the airfield near the upwind end of the active runway.

Aircraft details

The Escapade is a three-axis microlight aircraft. Certification flight testing of the Escapade reported that 400-600 ft was required to recover from a one-turn spin or a spiral dive.

An aircraft checklist recovered from the accident site stated that the clean stall speed was 30 mph.

Occupants' details

The pilot's logbook showed that he had previously visited Shobdon on six occasions, the last time being in August 2008. The passenger was an experienced qualified flex-wing microlight pilot.

Medical information

Post mortem reports on both occupants stated that they received severe injuries as a result of a relatively high speed impact. Toxicology revealed no evidence of alcohol or drugs in either occupant.

Airfield details

The following information on Shobdon Airfield is published in the UK Aeronautical Information Publication and pilots' flight guides.

*'Circuit directions: Runway 27 – LH [Left Hand];
Runway 09 – RH [Right Hand].*

*Overhead joins: Descend not below 1,500 ft aal
dead side, further descent to circuit height when
south of runway.*

Circuit heights:

*Powered fixed-wing circuits at 1,000 ft QFE to
the south of the villages;*

*Microlight circuits at 500 ft QFE;
Helicopter circuits at 700 ft QFE inside the
normal circuit pattern.'*

A copy of a flight guide for Shobdon Airfield was found on the pilot's knee board.

Engineering

The aircraft wreckage came to rest approximately 150 m north of the Runway 09 threshold.

A substantial post-impact fire had destroyed the fabric covering, the fuel system and most of the combustible components. The tubular aluminium alloy wing spars were partly melted. The firm dry crop surface, coupled with the low mass of most of the aircraft components, resulted in no ground markings of the extremities of the aircraft being identifiable at the impact site.

The left landing gear leg and nose leg had both been displaced substantially to the right by the impact, being positioned beneath the centre fuselage, whilst the right main gear was almost undamaged. The left tail-plane was deflected upwards from a station just outboard of the bracing tube, although it was not in contact with the ground after the aircraft came to rest. The complete wing structure had migrated forward, rotated to the left relative to the fuselage and rotated in a leading-edge, nose-down sense. The leading edge had been crushed, in the plane of the structure, over its entire span, as a result of its ground impact. The displacement of the complete wing structure had resulted in the right Glass Reinforced Plastic (GRP) fuel tank, positioned within the wing structure, coming into forceful contact with the top of the engine cowling. This appeared to have punctured the lower surface of the tank, allowing fuel to spill onto the engine. The fuselage structure below the seats and engine was considerably

crushed. On removal of the aircraft from the site, a slight ground impression was observed below the area previously occupied by the engine and centre fuselage structure.

No evidence was observed of damage or failure within the flying control system which could not be attributed to the effects of impact or fire.

The aircraft was fitted with a three-bladed propeller, each blade having carbon composite skins with a foam core. Two of the blades had failed, but had not separated, close to the roots as a result of backward bending, whilst the third blade had shattered. Areas of carbon composite and fragments of foam were distributed in approximately a straight line at right-angles to the propeller shaft axis.

None of the aircraft's flight instruments were identifiable from the wreckage.

Analysis

Engineering

The general condition of the aircraft was consistent with it having suffered an impact at a high vertical speed whilst banked to the left with low forward speed. The bent state of the left tail-plane, which did not remain in contact with the ground, further indicates a high descent rate. Such an impact results from an aircraft striking the ground whilst in a spin to the left. Past accidents with high wing aircraft having small span and relatively tall landing gears, known to have spun into the ground, have produced a broadly similar impact effect. The relatively low mass of the components of the Escapade aircraft, the limited strength of components such as wing ribs and the firm nature of the ground probably contributed to the almost total absence of ground markings of wing structure. Nonetheless the general condition of the aircraft and crushing of the occupied section indicate a rate of descent which would not be survivable.

The shattered condition of one propeller blade and the linear distribution of blade debris in the plane of the propeller disc can only be explained by the propeller rotating at significant speed as impact occurred. Since this type of geared engine will not continue rotating if power is lost (ie loss of fuel supply or ignition function will cause the unit to cease rotating whilst the aircraft is at any normal flight speed), there is little doubt that some engine power was available at impact.

Conduct of the flight

The pilot transmitted that he was familiar with the circuit at Shobdon and a copy of the airfield information was found in the wreckage. However, dialogue with the AFISO indicates that he was planning to descend below the minimum required 1,500 ft on the dead side. Although he was reminded of the height restriction, the

aircraft was subsequently observed by airborne witnesses at 500 ft aal whilst still on the dead side of the circuit ie north of the runway.

The aircraft subsequently took avoiding action on a departing aircraft which probably led to the loss of control. If G-CDLE had been at or above 1,500 ft aal, there would have been less chance of conflict with departing traffic and also more height available to recover from any loss of control.

The aircraft was described as flying “slowly” by one witness. Although the aircraft’s speed was not recorded, had it been flying close to the stall speed of 30 mph it would have been more susceptible to depart controlled flight through any aggressive manoeuvring.