

**ACCIDENT**

<b>Aircraft Type and Registration:</b>	Piper PA-28R-201 Cherokee Arrow III, G-HERB	
<b>No &amp; Type of Engines:</b>	1 Lycoming IO-360-C1C6 piston engine	
<b>Year of Manufacture:</b>	1978	
<b>Date &amp; Time (UTC):</b>	9 June 2009 at 1112 hrs	
<b>Location:</b>	Deanland Airfield, East Sussex	
<b>Type of Flight:</b>	Private	
<b>Persons on Board:</b>	Crew - 1	Passengers - None
<b>Injuries:</b>	Crew - None	Passengers - N/A
<b>Nature of Damage:</b>	Damage to the wings, undercarriage, propeller and engine	
<b>Commander's Licence:</b>	Private Pilot's Licence	
<b>Commander's Age:</b>	64 years	
<b>Commander's Flying Experience:</b>	1,038 hours (of which 87 were on type) Last 90 days - 32 hours Last 28 days - 19 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot	

**Synopsis**

The aircraft touched down on the wet grass runway and, as the brakes were applied, entered a skid. The pilot executed a go-around and although the aircraft became airborne it failed to clear a hedge at the upwind end of the runway, striking it with the left wingtip. This caused the aircraft to descend and impact the surface of the field beyond.

The wet runway surface condition degraded the aircraft braking and acceleration performance. This resulted in the aircraft becoming airborne beyond the point at which it could safely clear the hedge.

**History of the flight**

The pilot was flying the aircraft from Rochester Airport to Deanland Airfield, in order to have a transponder fitted. He had operated a Piper Archer into Deanland Airfield on about 30 separate occasions and, more recently, three times in G-HERB.

The transit was uneventful and carried out at an altitude of 1,800 ft. The weather was not good, with light drizzle and broken cloud. Given the calm wind conditions, the pilot elected to make a straight-in approach to Runway 24 at Deanland.

Deanland is an unlicensed airfield with a single runway, orientated 06/24, which is 500 metres in length,

27 metres wide and has a mown grass surface. The airfield elevation is 65 ft AMSL. At the upwind end of Runway 24 is a substantial hedge, several metres high, with a gap created at the threshold of Runway 06.

At about 4 nm on the final approach, cloud obscured the pilot's view of the runway and he executed a go-around climbing to 1,300 ft to avoid noise sensitive areas. After completing a wide circuit he made a second approach. The approach was slightly higher than normal and flown at 85 kt, as opposed to the promulgated speed of 75 kt. As a result, the aircraft touched down some 20 to 30 ft longer than normal.

On touchdown, it was apparent to the pilot that the grass surface was very wet and, in places, almost water logged. When he applied the brakes the aircraft started to skid, so he applied full power, raised the flaps to the takeoff position and executed a go-around. He noticed that the aircraft took slightly longer to rotate than normal, probably due to the 'sticky' surface condition, but at about 420 metres into the runway it started to rotate and became airborne, climbing gradually. The pilot tried to fly through the gap in the hedge at the end of the runway but the left wing tip struck the top of the hedge at a height of about 15 ft, causing the aircraft to yaw to the left. The right wing dropped, struck the ground and the aircraft rotated to the right through approximately 180° before coming to rest facing the threshold of Runway 06.

The pilot isolated the fuel and electrical systems before vacating the aircraft through the normal exit. He was uninjured and there was no fire. Personnel at the airfield were quickly on the scene.

### CAA Safety Sense Leaflet

The Civil Aviation Authority (CAA) General Aviation Safety Sense Leaflet Number 7, entitled *Aeroplane*

*Performance*, contains guidance on the safety factors to apply to the performance information supplied with an aircraft type. This includes, for example, the factors to apply for unusual conditions, such as wet grass. The leaflet also refers to Air Information Circular 127/2006 (Pink 110) which contains more detailed information.

The Safety Sense Leaflet strongly recommends that the appropriate Public Transport factor should be applied for all flights. For takeoff this represents an increase of 33% in the (unfactored) Take-Off Distance Required (TODR), and for landing an increase of 43% in the (unfactored) Landing Distance Required (LDR). This allows for pilot operating technique and any mechanical deterioration of the aircraft.

Runway surface condition has an additional effect on aircraft performance. On wet grass, the LDR increases as a result of the reduced friction available from the surface. TODR will also increase due to the retardation effect created by the length of the grass as well as any soft or waterlogged surface condition. For the landing condition, wet grass up to 20 cm (8 inches) on firm soil may increase the LDR by 35%. Very short, wet grass may be slippery and distances may increase by up to 60%.

### Aircraft performance

The Pilot's Operating Handbook (POH) contains a section on aircraft performance. Graphs are provided from which Landing Distance Required (LDR) from 50 ft and Landing Ground Roll Distance Required (LGRDR) can be determined. Both distances derived are unfactored and are based on specific associated conditions, which are: power off, wing flap 40°, full stall touchdown, maximum braking and a paved, level, dry runway. Any variation from these conditions will have an effect on the distances achieved.

The POH does not provide any factoring information for runway conditions which differ from a level and dry surface. The only reference to surface conditions is made in a statement at the beginning of the Performance section as follows:

*'Effects of conditions not considered on the charts must be evaluated by the pilot, such as the effect of soft or grass runway surface on takeoff or landing performance'.*

The landing weight of G-HERB at Deanland was 1,043 kg which, from the performance graphs, produced a LDR of 434 metres and a LGRDR of 381 metres. Applying the safety factor for wet grass of 35% increases the LDR to 585 metres and the LGRDR to 514 metres. The appropriate Public Transport safety factor would increase these figures by a further 43%. The LDA for the runway at Deanland, as provided on the airfield's own website, is 457 metres.

The effect on aircraft acceleration due to a wet grass surface and any waterlogged areas may be applied and will increase the TODR. Whilst strongly recommended the additional safety factors are for guidance.

### **Analysis**

The pilot considered that the accident occurred due to a combination of factors. He was slightly high on the final approach and 10 kt above the normal approach speed which resulted in a touchdown point further along the runway. The wet grass led to poor braking action which caused the aircraft to skid. Whilst he made an immediate decision to go-around, the retardation effect of the runway surface created a longer than normal takeoff run. As a result, the aircraft failed to clear the hedge with its left wing tip and descended into the field. The performance calculations support this outcome.