

**ACCIDENT**

<b>Aircraft Type and Registration:</b>	Robinson R22 Beta, G-OPAL	
<b>No &amp; Type of Engines:</b>	1 Lycoming O-320-B2C piston engine	
<b>Year of Manufacture:</b>	1986	
<b>Date &amp; Time (UTC):</b>	7 April 2006 at 1240 hrs	
<b>Location:</b>	Wycombe Air Park (Booker), Buckinghamshire	
<b>Type of Flight:</b>	Training	
<b>Persons on Board:</b>	Crew - 2	Passengers - None
<b>Injuries:</b>	Crew - 1 (Minor)	Passengers - N/A
<b>Nature of Damage:</b>	Extensive damage to landing gear, fuselage and main rotor blades	
<b>Commander's Licence:</b>	Commercial Pilot's Licence	
<b>Commander's Age:</b>	40 years	
<b>Commander's Flying Experience:</b>	1,592 hours (of which 1,173 were on type) Last 90 days - 181 hours Last 28 days - 58 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot	

**Synopsis**

An instructor and his student were conducting a basic helicopter training flight when water droplets began to accumulate on the outside of the windscreens in light drizzle. This gradually reduced the pilots' vision through the windscreens and the instructor decided to fly a circuit in an attempt to clear the droplets. During the transition into the circuit the instructor was monitoring the relative position of another aircraft. Whilst doing so he resisted the student's attempts to raise the collective control lever, and he may even have lowered it slightly. This was in order to prevent entry into the 'avoid area' of the height-velocity envelope. The landing gear struck the ground and the helicopter crashed.

**History of the flight**

Prior to the flight, the instructor fully briefed the student on the main exercises to be flown. These included hovering, takeoff and landing, air taxiing and transitions to and from the hover. All of these exercises had been completed during previous flights. It was the student's third training flight with the instructor and his progress had been good.

The weather conditions were good, with a surface wind from 300° at 5-10 kt, intermittent light drizzle and an overcast cloud cover. During start-up, small patches of moisture had developed on the inside of the transparencies towards the edges of the windscreens. The heater/demister was used and the screens were completely clear and dry during the early part of the lesson.

Following the hover-taxi to the airfield helicopter training area the pre-briefed exercises were practiced. The student was progressing well throughout the various exercises when a very light drizzle began, settling very small water droplets on the windscreen, which significantly impaired the pilots' vision through the windscreen. The instructor therefore suggested that they fly a circuit of the airfield in an attempt to clear the droplets: this would also serve as an opportunity to break up the hovering/hover taxiing aspects of the lesson.

As was normal, routine radio calls and clearances were not required for helicopters operating within the airfield helicopter training area. The instructor, who was monitoring the radio, heard another R22 request clearance to cross the active runway to operate within the helicopter training area. The instructor monitored the progress of the other R22 as it manoeuvred ahead of his helicopter. With sufficient clearance from the other helicopter, the student turned into a position that would enable him to transition from the hover to climbing flight. The student commenced a gentle transition whilst the instructor continued to monitor the other helicopter through the moisture contaminated windscreen whilst closely monitoring the flight controls. As the helicopter accelerated it achieved translational lift and began to climb. The instructor resisted the student's attempts to raise the collective control lever in order to prevent entry into the 'avoid area' of the height-velocity envelope. Shortly after, the landing gear struck the ground and the helicopter crashed.

The 'avoid area' defines the combinations of altitude and airspeed from which a helicopter would be unlikely to successfully complete an autorotative landing following an engine failure.

### **Analysis**

During the initial stage of the transition from the hover the moisture on the outside of the windscreen did not disperse. Whilst the other R22 was at no time in conflict with his aircraft, the instructor monitored it closely in order to ensure a suitable takeoff path was achieved. It was whilst monitoring the other R22 that the instructor prevented the student from raising the collective pitch control lever. This was in order to prevent his helicopter climbing into the 'avoid area' of the height-velocity envelope. In doing so, the instructor thought he may have actually lowered the collective control causing the aircraft to descend and the landing gear to contact the ground.

### **Survival aspects**

There was insufficient time for either pilot to transmit a distress call before the impact, and immediately following the accident the instructor shut down the engine and isolated the fuel. Whilst the student remained conscious, he had some difficulty in talking to the instructor. They were unable to contact ATC as the radio was damaged and neither person carried a mobile telephone. After a few minutes the instructor noticed fuel leaking from the fuel tank on the left side of the aircraft. The student had now recovered somewhat and the instructor was able to confirm that neither pilot had sustained any serious injury. Having assisted the student out of the helicopter, they both moved clear of the wreckage and awaited assistance.

It was clear that ATC were not aware of the accident since normal aircraft movements continued. The instructor left the crash site to seek assistance. At about this time, ATC were informed of the accident and they activated the airfield crash alarm. The AFRS attended shortly afterwards and applied foam to the wreckage. The

instructor estimated that some 10 minutes had elapsed since the time of the accident.

ATC were not initially aware of the accident. This was probably because the control tower is soundproofed and therefore the controllers did not hear the impact, and

the location of the accident site made it difficult to see from the tower. As was normal, routine radio calls and clearances were not required for helicopters operating within the airfield helicopter training area and ATC were therefore not expecting any calls from the helicopter.