



RECORD OF MEMORANDUM

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Air Safety Investigator
General Aviation Accident Division

Date: 5/7/2019
Person Contacted: Andy Moorhouse
NTSB Accident Number: GAA19CA226

Narrative:

The following is a synopsis of the information provided by the manufacturer flight instructor in written statement on this date.

Abstract:

An accident occurred at approximately 1530 local time on Friday April 26th at McMinnville Municipal Airport, McMinnville, Oregon. The flight was being conducted as part of a factory Flight Instructor Standardization Course being hosted by Precision Helicopters. The Flight Instructor Standardization Course is run on behalf of Guimbal Helicopters and is intended to develop technical knowledge and introduce Flight Instructors to more advanced maneuvers in the Guimbal Cabri G2 training helicopter. The course typically comprises four hours ground school and 2 hours flight training for each instructor.

Aircraft:

The aircraft involved was a Guimbal Cabri G2 (ICAO designator G2CA) Manufacturer Serial Number 1108, the aircraft registration is N367PA.

The aircraft was manufactured in 2015 and had flown a total time of approximately 1730 hours. The aircraft was in perfect mechanical order with no faults recorded or apparent to the crew. The aircraft had been previously flown at least three times that day.

The pilot weighed approximately 197lbs and the factory instructor approximately 187lbs, the aircraft was carrying approximately 15USG of fuel resulting in an all up mass of approximately 1426lbs compared with a maximum all up weight of 1543lbs (92% of MAUW).

Crew:

The Pilot in Command was Lars Mehllum who's is an FAA Certified Flying Instructor with approximately 500 hours experience on type, he was being supervised by me, Andrew Moorhouse who is an EASA Certified Flying Instructor with total rotorcraft time of approximately 3350 hours and approximately 2000 hours on type.

Meteorology:

The weather conditions were giving a high cloud base at above 3000ft, more than 6NM visibility with light and variable winds of 3-5kts.

Flight Details:

This was the last flight on the last day of what had been a successful training program up until that point. I had conducted 19 x 1-hour training flights over the course of the week and flown over 80 full down autorotation's during that time.

I had previously flown with Lars on Wednesday April 24th at around 16:30 local time and found him to be a competent and professional pilot and instructor.

The training program comprises a basic syllabus to cover various emergency procedures and flight maneuvers, but it is tailored to the individual CFI and once the mandatory maneuvers have been flown there is an opportunity to fly other maneuvers at the request of the CFI.

It was agreed before the flight that Lars would sit in the right-hand seat to give him some more experience of flying maneuvers from the pilot seat rather than the passenger (instructor) seat. We lifted from the Precision Helicopters ramp and taxied to hold at A3 which is located at the western end of Runway 04/22. Our intention was to cross Runway 04/22 and reposition to Taxiway Delta that runs parallel to runway 17/34. On reaching the A3 Hold it was apparent that a Bell 407 was carrying out maneuvers to Runway 17. We did not want to get in the way of the pilots operating the Bell 407 and we were conscious of operating close to their rotor wash, so we elected to operate from Taxiway Alpha which runs parallel to and North of Runway 04/22. We initially air taxied East along Taxiway Alpha to get a closer look at the windsock as it was difficult to ascertain the wind direction and strength. Once in sight of the windsock, we determined that the winds were light and variable. We flew a right-hand pattern at approximately 600ft AGL based on Taxiway Alpha and then made a standard full down autorotation (flown at 50kts) to the taxiway. We then flew 3 more right patterns to Taxiway Alpha with full down autorotation to the taxiway. All were smooth and controlled. On the 4th pattern we were final for Taxiway Alpha when we noticed a Robinson R22 hovering at the Eastern end near to holding point Alpha 1.

We held our height and we checked the windsock again and decided that the wind was slightly favoring Runway 17. We radioed our intention to reposition for an autorotation to Taxiway Delta which is parallel to and West of Runway 17. We carried out 2 full down autorotation to Taxiway Delta with right hand patterns flown over the infield area. Both were 180 degree turns in autorotation from a right hand down wind position, commencing at approximately 600ft AGL.

Both landings were gentle and controlled however the indicated airspeed on the second approach was little low in the turn. I asked Lars to fly a third 180-degree full down autorotation but to focus on maintaining airspeed in the turn.

In the climb out, we noticed that the Bell 407 had moved off Runway 17 so we decided to make an approach to Runway 17 instead of the taxiway to provide us with a safer landing spot. We commenced autorotation at 600ft AGL downwind right hand as we had done previously which meant that we had further to travel to overfly Taxiway Delta and reach Runway 17.

The entry into autorotation was smooth and controlled and I mentioned to Lars that the airspeed was much better at 50kts in the turn. As we rolled out on final, we were lower than normal due to the additional distance flown to reach Runway 17. The rotor RPM was also lower than normal because Lars had raised the collective lever in the turn to prevent the rotor RPM from increasing too much. It was not possible to perform a tight flare before touching down because we were too low and would have damaged the tail. As such we were unable to reduce the run on speed to an acceptable level. We touched down smoothly on the runway centerline and Lars applied left pedal to keep the nose straight. After about 30 yards the helicopter began to turn right and head for the edge of the runway. Although full left pedal was applied the aircraft continued to turn right and ran off the runway at a speed that I would estimate to be 6mph. The right skid dug into the soft earth at the edge of the runway which caused a sharp turn to the right and the aircraft toppled over on to its left side. Lars climbed out of the right-hand door while I turned off all of the electrical switches and the fuel isolation valve before exiting the aircraft by the right hand door.

Conclusion:

The 180 degree turn in autorotation positioned us to the centerline of Runway 17 but at a lower height than was desirable. The low height prevented a normal flare from being performed as the tail would have struck the runway. The normal flare prior to touch down in a full down autorotation will result in a 30 degree nose up attitude, Lars was only able to achieve a 10 degree nose up attitude for fear of damaging the tail. The rotor RPM was lower than is normal at this point in the maneuver.

The flare at the bottom of a full down autorotation is used to achieve 3 objectives:

1. To arrest the rate of descent.
2. To slow down the ground run.
3. To increase the rotor RPM to make a smooth touch down easier.

We had enough height to achieve the first objective but not the second or third. The consequence was a touch down landing with too much ground run speed. The vertical fin was still providing anti-torque thrust at this point which turn the helicopter to the right. The lower than normal rotor RPM meant that we could not counteract the turn to the right with left pedal as we had reduced tail rotor authority. Although full left pedal was applied (and full left cyclic) the aircraft continued to run on to the edge of the runway before toppling over.