



Ref: 7855

**SOUTH AFRICAN CIVIL AVIATION AUTHORITY****ACCIDENT REPORT – EXECUTIVE SUMMARY**

<b>Aircraft Registration</b>	ZS-RLP	<b>Date of Accident</b>	9 September 2004	<b>Time of Accident</b>	0800Z
<b>Type of Aircraft</b>	EUROCOPTER EC120B		<b>Type of Operation</b>	Training	
<b>Pilot-in-command Licence Type</b>	Airline Transport	<b>Age</b>	38	<b>Licence Valid</b>	Yes
<b>Pilot-in-command Flying Experience</b>	<b>Total Flying Hours</b>	4 260.0		<b>Hours on Type</b>	109.6
<b>Last point of departure</b>	Virginia Aerodrome (FAVG)				
<b>Next point of intended landing</b>	Helicopter General Flying area near La Mercy Aerodrome (North of Durban)				

**Location of the accident site with reference to easily defined geographical points (GPS readings if possible)**

Helicopter General Flying Area located to the West of La Mercy Aerodrome (open grass land)

<b>Meteorological Information</b>	Surface wind; 270°/12-15kts, Temperature 22°C, Visibility; >10km				
<b>Number of people on board</b>	2 + 0	<b>No. of people injured</b>	0	<b>No. of people killed</b>	0

**Synopsis**

The pilot-in-command was tasked by the Operator, STAR (Specialized Trauma Air Response) to carry out proficiency check rides on their Durban based pilots, flying the EC120 helicopters. On the morning of 9 September 2004 the first line pilot accompanied by the instructor took-off and conducted a number of exercises. The duration of the flight was approximately 45 minutes. After returning to Virginia aerodrome, the second pilot boarded the aircraft (right-hand seat) and they flew to the general flying (GF) area, which was located to the west of La Mercy aerodrome.

According to the instructor pilot the following exercises were performed:

Autorotation from the 90° downwind position to the landing area; Simulated engine failure from the hover; Limited power exercise and hydraulic failure. The last exercise was that of Tail Rotor Control Failure. It was requested that the pilot-flying (PF) took his feet off the rudder/yaw pedals and at the lowest speed he felt that the aircraft to be directionally stable. This was done to demonstrate the amount of yaw the aircraft would encounter for a particular power setting during take-off, and going through transition. The aircraft displayed a left yaw tendency, which was controlled by cyclic input and power management.

The approach for landing was discussed with the pilot anticipating a yaw to the left, as the power demand would increase. The approach was flown into wind, which was from the west. The aircraft was slowed down and was established in the hover. This was followed by a yaw to the left as discussed and anticipated. As the helicopter yawed through approximately 45° the throttle was closed slightly to slow the yaw rate in preparation for touch down. At this stage the yaw rate was still fairly slow. Once through approximately 90° it was decided not to reduce the throttle any further but to abort the exercise as the yaw rate had increased considerably. At this stage right rudder/yaw pedal was applied to address/stop the yaw, but it continue to perpetuate. The pilot advanced the throttle in order to maintain rotor RPM. At this stage the instructor took control of the aircraft. Being through one full rotation (360°) the collective pitch lever was lowered and right pedal application was increased to stop/address the yaw rate. This had no effect whatsoever on the yaw rate and the helicopter continued to accelerate in the yaw. It was decided to close the throttle completely, which had basically no effect on the yaw rate. It was decided to land the helicopter, which continued to yaw to the left by lowering the collective. First impact was with the right aft skid gear assembly, which dug into the soft soil resulting in a rollover to the right. The engine was shut down by the activation of the fuel shut-off lever, thereafter the battery master switch was switched off and both occupants exited the aircraft uninjured through the broken front right-hand windshield.

**Probable Cause**

The crew was unable to recover the aircraft (address the yaw rate) after conducting an unauthorised "emergency exercise/manoeuvre", which allowed the aircraft to accelerate in the yaw and allowed it to become uncontrollable, which rendered ground impact inevitable and a dynamic rollover followed.