AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/9493		
Aircraft registration	**ZS-HII**	**Date of accident**	16 October 2015		**Time of accident**	1100Z	
Type of aircraft	Guimbal Cabri G2 (Helicopter)		**Type of operation**		Part 141 (Training)		
Pilot-in-command licence type	Private		**Age**	28	**Licence valid**	Yes	
Pilot-in-command flying experience	Total flying hours		172,1		Hours on type	102,4	
Last point of departure	Mossel Bay Aerodrome (FAMO), Western Cape						
Next point of intended landing	Mossel Bay Aerodrome (FAMO), Western Cape						
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)							
Farm Drie Fontein near Kleinberg, West of Mossel Bay (GPS position: 34°11.616' South 021°55.910' East)							
Meteorological information	Surface wind: 140°/8-10 kts; Temperature: 18°C; Visibility: +10 km						
Number of people on board	1 + 0	**No. of people injured**	1		**No. of people killed**	0	

Synopsis

The pilot was part of a group of foreign students that were undergoing helicopter pilot training in South Africa. She was engaged in a solo training flight to build flying hours towards her commercial pilot licence when the accident occurred. After being airborne for approximately 30 minutes, she commenced with some hover training. She indicated that she was doing hover turns (spot turns) in an open area on a section of farmland that the aviation training organisation (ATO) utilised with the consent of the farmer. She indicated that she had completed a 360° hover turn to the right (clockwise direction) and was commencing with the same exercise in an anti-clockwise direction. Approximately 30° through the turn, the skid gear made contact with the ground. The helicopter continued to rotate in an anti-clockwise direction and the tail rotor stinger and the lower vertical fin assembly hit the ground, which caused the vertical fin, which included the shrouded fenestron tail rotor assembly, to break off from the composite tail boom structure. The helicopter crashed to the ground approximately 48 m further on after several un-commanded anti-clockwise rotations in the air. The helicopter came to rest on its right side. The pilot sustained a blow to the left side of her head and her right shoulder was injured. She was taken to a private hospital where she received treatment and was discharged later on the same day.

Probable cause

The pilot allowed the lower vertical fin to make contact with the ground during a manoeuvre close to the ground, which caused the vertical fin assembly together with the shrouded tail rotor to break off from the tail boom, resulting in a loss of tail rotor thrust. She was unable to regain control of the helicopter and it crashed. (Poor technique)

ASP date	10 May 2016	Release date	

AIRCRAFT ACCIDENT REPORT

Name of Owner	**:** Starlite Africa Aviation (Pty) Ltd
Name of Operator	**:** Starlite Africa Aviation (Pty) Ltd
Manufacturer	**:** Guimbal Helicopters
Model	**:** Cabri G2
Nationality	**:** South African
Registration Marks	**:** ZS-HII
Place	**:** Farm Drie Fontein, Kleinberg area west of Mossel Bay
Date	**:** 16 October 2015
Time	**:** 1100Z

All times given in this report are Co-ordinated Universal Time (UTC) and will be denoted by (Z). South African Standard Time is UTC plus 2 hours.

Purpose of the Investigation:

In terms of Regulation 12.03.1 of the Civil Aviation Regulations (2011) this report was compiled in the interest of the promotion of aviation safety and the reduction of the risk of aviation accidents or incidents and ***not to establish legal liability****.*

Disclaimer:

This report is produced without prejudice to the rights of the CAA, which are reserved.

1. FACTUAL INFORMATION

1.1 History of flight

1.1.1 The pilot was part of a group of foreign students undergoing helicopter pilot training in South Africa since January 2015. She was engaged in a solo training flight to build hours towards her commercial pilot licence when the accident occurred. After signing the flight authorisation book and performing her pre-flight inspection, she took-off from Mossel Bay aerodrome (FAMO) and flew to the general flying area, an open section of farmland southwest of Mosgas.

1.1.2 According to her statement, once she was in the general flying area she conducted

several tight circuits as well as some quick stop manoeuvres. She then decided to do some hover turns or ‘spot turns’ as referred to by the pilot in her statement. She indicated that she had completed a 360° hover turn to the right and was commencing with the same exercise to the left. Approximately 30° through the turn, the skid gear made contact with the ground. The helicopter continued to rotate in an anti-clockwise direction and the tail rotor stinger and the lower vertical fin assembly hit the ground. This caused the vertical fin assembly with the fenestron tail rotor to break off from the composite tail boom structure. The helicopter crashed nose-down 48 m further after several uncommanded anti-clockwise rotations in the air. The helicopter came to rest on its right-hand side, 180° opposite to the direction of impact. The pilot sustained a blow to the left side of her head and her right shoulder was injured.

1.1.3 The pilot indicated that she managed to vacate the wreckage unassisted via the shattered windshield after she had unbuckled herself. She then phoned another member of her course group on her cell phone, who in turn informed the head of training at the ATO. The emergency response plan was activated following the accident notification. When the head of training received the call, another helicopter with a flight instructor on board was in the air. This helicopter was dispatched to the accident scene, where the pilot was uplifted and flown back to their facility at FAMO. The pilot was then taken to a private hospital in Mossel Bay for a medical check-up. She received treatment and was discharged later on the same day.

1.1.4 The accident occurred during daylight conditions at a geographical position that was determined to be 34°11.616’ South 021°55.910’ East at an elevation of 518 feet above mean sea level (AMSL).

1.2 Injuries to persons

Injuries	Pilot	Crew	Pass.	Other
Fatal	–	–	–	–
Serious	–	–	–	–
Minor	1	–	–	–
None	–	–	–	–

1.3 Damage to aircraft

1.3.1 The helicopter was damaged beyond economical repair.

Figure 1. The helicopter at the crash site

1.4 Other damage

1.4.1 There was no other damage. The farmland area where the accident occurred was properly cleaned by the recovery team, and the environment was restored to what it was before the accident. The fuel tank had remained intact and very little fuel was spilt.

1.5 Personnel information

1.5.1 Pilot-in-command (PIC)

Nationality	Kenyan	Gender	Female	Age	28
Licence number	0272513557	Licence type	Private pilot		
Licence valid	Yes	Type endorsed	Yes		
Ratings	None				
Medical expiry date	31 January 2016				
Restrictions	None				
Previous accidents	None				

Flying experience:

Total hours	172.1
Total past 90-days	105.3
Total on type past 90-days	84.2
Total on type	102.4

1.6 Aircraft information

1.6.1 The Guimbal Cabri G2 is a two-seat light helicopter with a three-bladed fully articulated main rotor and a shrouded or fenestron-type tail rotor with seven reinforced plastic-injected blades. It has a skid landing gear and side-by-side seating for two pilots or a pilot and a passenger. It is powered by a 134 kW (180 hp) Lycoming 0-360-J2A piston engine de-rated to a continuous 108 kW (145 hp). It first flew in March 2005 and has a maximum gross weight of 700 kg (1543 lbs). The Cabri airframe is composed of three sections. The first is the main fuselage, including cabin, central structure, baggage and fuel compartments, all made of composite material. The second is the engine section, isolated between the front and aft firewalls. It is made of a steel truss engine mount and composite cowlings. The third section is the aft structure, a composite shell combining the tail boom, the fins and the tail rotor shroud, with the horizontal stabilisers.

Figure 2. The helicopter before the accident

Airframe:

Type	Guimbal Cabri G2	
Serial number	1103	
Manufacturer	Guimbal Helicopters	
Year of manufacture	2015	
Total airframe hours (at time of accident)	80.0	
Last MPI (hours & date)	74.4	14 September 2015
Hours since last MPI	5.6	
C of A (Issue date)	22 September 2015	
C of A (Issue expiry date)	21 September 2016	
C of R (Issue date) (present owner)	9 September 2015	
Operating categories	Standard Part 127	

The helicopter was imported into South Africa from France as new; it was assembled by an aircraft maintenance organisation (AMO) based in Durban. Following the assembly, the AMO also conducted a mandatory periodic inspection (MPI), which was accordingly certified in the airframe and engine logbooks. The helicopter was then ferried from Durban to Mossel Bay where it was utilised for flight training.

On 5 October 2015 a 25-hour engine oil change was carried out, a new oil filter was fitted and the helicopter was released to service. At the time of the accident, the helicopter had accumulated 80 hours since new.

Engine:

Type	Lycoming O-360-J2A
Serial number	L-42601-36E
Hours since new	80.0
Hours since overhaul	T.B.O. not yet reached.

1.6.2 The pilot conducted a weight and balance calculation prior to the flight. The empty weight of the helicopter was 431 kg, the weight of the pilot was 72 kg and the remaining fuel was approximately 50 kg. This totalled to a weight of 553 kg. The maximum gross weight for the helicopter was 700 kg. Attached to this report as Annexure A is a copy of the weight and balance calculation, which was well within the flight envelope of the helicopter.

1.7 Meteorological information

1.7.1 An official weather report was obtained from the South African Weather Services (SAWS) as well as information from the pilot's questionnaire and employees of the ATO that responded to the accident by sending out another helicopter. The observations by the pilot and the first responders concurred with the information obtained from SAWS, namely that the wind was from the southeast at approximately 10 knots in clear sky conditions.

Wind direction	140°	Wind speed	8-10 kts	Visibility	+ 10 km
Temperature	18°C	Cloud cover	Nil	Cloud base	Nil
Dew point	11°C				

1.8 Aids to navigation

1.8.1 The helicopter was equipped with standard navigational equipment as required by the regulating authority.

1.9 Communication

1.9.1 The helicopter was equipped with a VHF radio as required by the regulating authority. At the time of the accident, the pilot was flying outside controlled airspace, below the terminal control area (TMA).

1.9.2 The pilot, who was the sole occupant of the helicopter, phoned one of her colleagues via her cell phone from the accident site. The colleague in turn informed the head of training at the ATO, who initiated the emergency response plan.

1.10 Aerodrome information

1.10.1 The accident did not occur at or close to an aerodrome, but on an open section of farmland.

1.11 Flight recorders

1.11.1 The helicopter was not equipped with a flight data recorder (FDR) or a cockpit voice recorder (CVR), nor was it required by the regulations to be fitted to this type of helicopter.

1.12 Wreckage and impact information

1.12.1 The accident occurred on an open piece of farmland. The ground impact markings indicate that the skid gear made contact with the ground. The next ground impact marking was caused by the tail rotor stinger and lower vertical fin following rotation in an anti-clockwise direction, approximately 120° in relation to the impact marks caused by the skid gear. Small fragments of debris from the reinforced-plastic tail rotor blades were found in this area. The inner circumference of the composite shroud structure indicate that blade contact was made during the impact sequence. The deformation of the tail rotor stinger and lower vertical fin confirmed the direction of rotation to be anti-clockwise, as both the stinger and lower composite structure were bent to the left when viewed from aft.

Figure 3. The helicopter as it came to rest

1.12.2 After the initial impacts, the helicopter started to rotate uncontrollably in an anti-clockwise direction in the air and crashed approximately 48 m further on in a steep nose-down attitude. The skid gear and the front cross tube assembly were separated from the fuselage. Main rotor blade impact markings were also visible in the area. All three main rotor blades displayed evidence of the severe deformation associated with an engine delivering power on impact. Such evidence is visible in Figure 5 where the leading edge lead balance weight of one of the blades was tangled around the remaining blade structure. Several fragments of the fibreglass reinforced composite blade material were scattered over the area. The helicopter came to rest on its right-hand side, facing in a southerly direction (200°M), which was opposite to the direction of its first impact with the ground. The cockpit/cabin area remained fairly intact. However, the entire plexiglass windshield was shattered and the lower floor structure and yaw pedals on both sides were distorted when the forward cross-tube assembly and skid gear broke off. The left door was also torn from the cabin structure and was located near the main wreckage. The two high-energy absorbing seats remained intact.

Figure 4. Lower fuselage, indicating the missing forward cross-tube and skid gear assembly

Figure 5. Deformation of leading edge lead balance weights of one of the main rotor blades

Figure 6. The vertical fin assembly and the shrouded tail rotor lying next to the tail boom

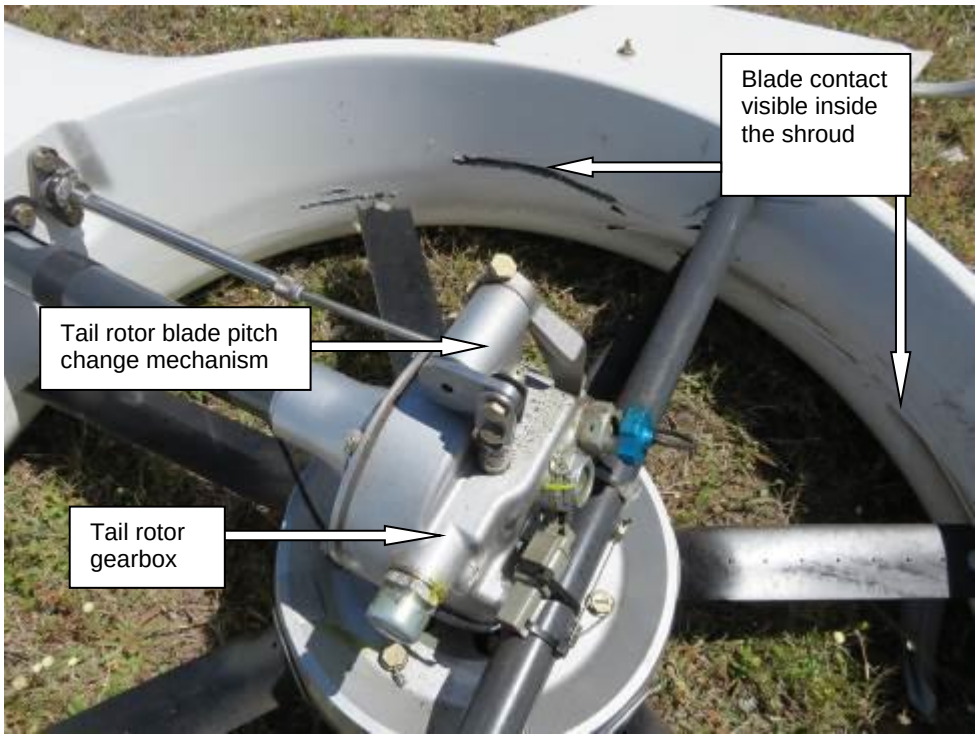

Figure 7. Tail rotor blades (reinforced-plastic) contact point visible inside the shroud

1.12.3 The primary transmission is composed of a pulley directly bolted to the engine output flange with a V-belt transmitting the power to the upper pulley connected through a free-wheel unit as can be seen in Figure 8 to the gearbox input, where the power is transmitted forward to the main gearbox and aft to the tail rotor transmission. The main rotor and the tail rotor drive systems were inspected and the fracture in the tail rotor drive shaft was found to be due to torsional overload. The main rotor drive system was not compromised. The engine did not sustain any damage during the accident sequence.

Figure 8. The drive belt and drive train remained intact

1.12.4 The collective pitch lever was found in the full up position. The cyclic control stick remained intact and the rudder pedals displayed some distortion associated with the helicopter's nose-down crash to the ground. Apart from the vertical fin assembly that fractured from the tail boom structure, it was found that flight control continuity had not been compromised.

Figure 9. The collective pitch lever in the full up position

1.13 Medical and pathological information

1.13.1 Not applicable.

1.14 Fire

1.14.1 There was no pre- or post-impact fire.

1.15 Survival aspects

1.15.1 The un-commanded rotation occurred close to the ground, which was a significant factor of the pilot's survival. Contributing to her survival was the fact that the cockpit/cabin area remained fairly intact apart from the plexiglass windshield that shattered and the lower front floor structure that was disrupted during the impact sequence. The pilot's high-energy absorbent seat and instrument cluster remained intact. She was properly secured by means of the helicopter-equipped four-point safety harness. She was wearing a headset during the flight and suffered a blow to the left side of her head.

1.15.2 The fuel shut-off valve (the red knob located between the two seats) on the firewall was closed by one of the first responders to the accident.

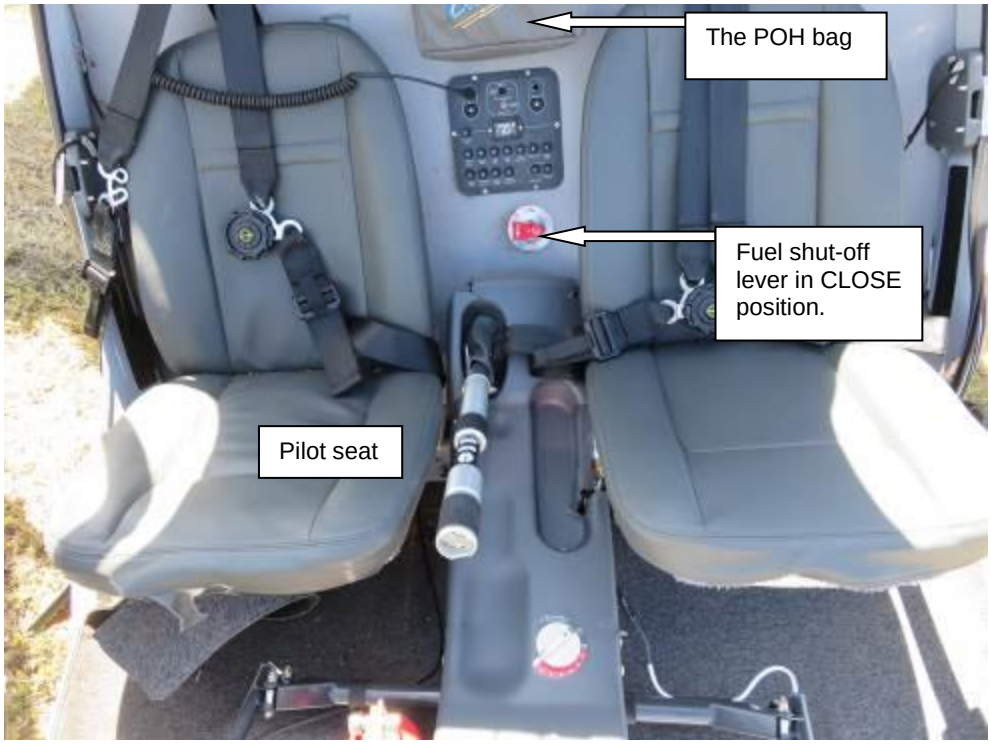

Figure 10. A view of the cockpit/cabin, where the seats absorbed the impact forces

1.15.3 The helicopter was fitted with an emergency locating transmitter (ELT) that was located in the main baggage compartment. The unit was found to be properly secured and undamaged. The unit was armed during the flight and was switched off after the accident.

Figure 11. The ELT, positioned in the main baggage compartment

1.15.4 In the cabin, located between the two seats, the helicopter manufacturer had installed a bag to stow the pilot's operating handbook (POH). The location of the bag allowed the pilot to have easy/quick access to the POH during flight. However, it was found that the bag was secured to the firewall at the top only, as can be seen in Figure 12. This acts as a pivot point, which allows the bag to swivel and possibly cause injury. The pilot in this accident suffered from a blow to the left side of her head. She was not wearing a flying helmet but was flying with a headset.

Figure 12. The position and attachment of the POH bag

1.15.5 The portable in-cabin fire extinguisher was found to be located behind the pilot's left leg, when she was seated in the right-hand seat. The unit was attached to the side of the instrument cluster/centre console by a bracket, as can be seen in Figure 13. In this accident, the fire extinguisher remained secured. The location of the fire extinguisher as mounted was found to pose a serious safety risk. It has the potential to cause serious bodily harm or even death during an accident sequence, should it be dislodged from the bracket. During a visit to the ATO hangar by the Investigator-in-charge (IIC), he inspected several similar types of helicopters parked in the hangar and it was found that all of them was fitted with a portable in-cabin fire extinguisher mounted at exactly the same location as that of the crashed helicopter.

Figure 13. A view of the portable in-cabin fire extinguisher (accident helicopter)

Figure 14. The portable in-cabin fire extinguisher (serviceable helicopter)

1.16 Tests and research

1.16.1 None considered necessary.

1.17 Organisational and management information

1.17.1 The ATO was in possession of a valid aviation training approval certificate number CAA/0202, which was issued by the regulating authority on 27 August 2015 with an expiry date of 30 June 2016. The helicopter in question was duly authorised for training on the ATO certificate.

1.17.2 The pilot had signed the flight authorisation book prior to the flight. Her entry in the authorisation book indicated that she intended to concentrate on exercises 19 to 21 according to the Ab Initio Helicopter Training Exercises list. A summary of the three exercises are tabled below:

Number	Exercise
19	Steep turns
20	Tight circuits
21	Quick stops

1.17.3 The AMO that certified the last maintenance on the helicopter prior to the accident was in possession of a valid AMO approval certificate number 824. The helicopter had acquired 80 hours since new when the accident occurred.

1.18 Additional information

1.18.1 Emergency procedures

Source: Pilot's Operating Handbook/Flight Manual, Section 3

Tail rotor failure

"It could consist either in a tail rotor transmission failure, or in a tail rotor loss. This failure can be detected by sudden yaw acceleration – nose to the left – and/or totally ineffective pedals.

Caution: *Nose to the right: probable engine failure*
Nose to the left: probable tail rotor failure

Hover IGE:

1. ***LAND IMMEDIATELY,***
2. *Reduce throttle in order to reduce left yaw rate,*
3. *Cushion contact with the ground by applying collective pitch up to high stop if necessary.*

Other flight cases:

1. *Switch governor OFF,*
2. *Adjust power to maintain 70 to 80 IAS,*
3. *Reach an appropriate surface for an autorotation running landing,*
4. *Carry out a full autorotation landing. Reduce airspeed as late as you can. Land with as much airspeed as the surface permits. Use small power inputs to correct yaw.*

Yaw control failure

Hovering IGE:

1. ***LAND IMMEDIATELY,***
2. *Lower the collective slowly enough to land smoothly, while rolling-off throttle to reduce yawing nose to the right.*

Other flight cases:

1. ***LAND AS SOON AS POSSIBLE,***
2. *Adjust IAS to 70 - 80 kt IAS,*
3. *Adjust power to minimize sideslip and keep nose to the right,*
4. *Reach an appropriate surface for running landing. Carry out a cautious landing.* ***Reduce airspeed as late as you can.*** *Land with as much airspeed as the surface permits. Use small power inputs to correct yaw.*
   Note: *Prefer wind from the right."*

1.19 Useful or effective investigation techniques

1.19.1 No new methods were applied.

2. ANALYSIS

2.1 Man (Pilot)

The pilot was the holder of a valid private pilot licence (helicopter). She had enrolled in a full-time pilot training programme in January 2015 with the aim of obtaining her commercial helicopter pilot licence. The accident occurred while she was on a solo training flight in the general flying area conducting several flight-training exercises as entered in the flight authorisation book. She also opted to perform some hover turns, or as she referred to them, 'spot turns'. These were not part of the exercises she had entered in the authorisation book but opted to do at the time.

The terrain she had selected to practise these hover turns was flat; there were no hidden obstacles that restricted her in the execution of the manoeuvres. The prevailing wind was from the southeast, between 8 to 10 knots at the time. Having just executed an uneventful clockwise hover turn, she proceeded to perform an anti-clockwise hover turn. The pilot allowed the skid gear to made contact with the hard ground. Following skid gear contact with the ground, the helicopter continued to yaw and the tail rotor stinger and lower vertical fin impacted with the ground. This could have been due to aft cyclic input by the pilot in an attempt to rectify the initial ground contact by the skid gear.

The deformation of the vertical fin during ground contact had a secondary effect, which fractured the vertical fin assembly together with the shrouded tail rotor where it joins with the tail boom structure. It further caused the tail rotor drive shaft to shear, resulting in a complete loss of tail rotor thrust, which caused an immediate yaw/rotation in an anti-clockwise direction. The situation was aggravated by the pilot when she increased the collective pitch lever, instead of lowering it and closing the throttle to reduce the torque effect. During this period, the helicopter rotated in an anti-clockwise direction several times before it crashed and came to rest on its right-hand side.

Initial ground contact was induced by a control input the pilot made at the time, although the wind was between 8 to 10 knots. The pilot should have anticipated a

possible reaction from the wind as she continue with the hover turn. Executing such a manoeuvre in close proximity to the ground (less than 1 m {3 feet} skid height from the ground), would have increased the risk of ground contact considerably, especially in gusty wind conditions. With the hover turn in a clockwise direction being uneventful the effect of the wind on the controllability of the helicopter was not considered to be that significant. However, a sudden gust of wind could not be excluded as such a phenomena could have caught the pilot off guard.

2.2 Machine (Helicopter)

The helicopter had flown a total of 80 hours since new when the accident occurred. The on-site investigation revealed that flight control continuity was not compromised and all failures were associated with impact damage. It was evident that the engine was delivering power. The composite structure where the tail boom and vertical fin joins fractured when the vertical fin made contact with the ground, resulted in a loss of tail rotor thrust as the tail rotor drive shaft also sheared in torsional overload as a result of the ground contact. From this point, the helicopter started to rotate in an anti-clockwise direction.

Available evidence indicated that there were no mechanical defects with the helicopter at the time that could have contributed or have caused this accident. All failures were related to the impact and post-impact. The integrity of the helicopter and its associated systems could therefore be eliminated as having any bearing on the accident.

2.3 Mission

The flight was nothing out of the norm. The pilot was familiar with the exercises she intended to conduct, including the hover turns (spot turns). The clockwise hover turn was uneventful; hence she proceeded with the anti-clockwise turn.

2.4 Environment

Fine weather conditions prevailed at the time with the wind reported to be from the southeast at between 8 to 10 knots. The pilot completed the first hover turn in a clockwise direction successfully. The wind conditions were similar when she commenced with the anti-clockwise turn.

2.5 Survivability

The accident was survivable. It is believed that the blow to the left side of the pilot's head was caused by the POH bag between the two seats that struck her during the un-commanded rotation of the helicopter or during the impact sequence, as she was not wearing a flying helmet. The portable in-cabin fire extinguisher remained secured to its bracket attachment located behind the pilot's left leg. The location of the unit was found to pose a potential safety risk; should the unit became dislodged during flight, for whatever reason, or during an accident sequence, it has the potential to interfere with the controls of the helicopter and can cause serious bodily harm.

3. CONCLUSION

3.1 Findings

3.1.1 The pilot was the holder of a valid private pilot licence and had the helicopter type endorsed on her licence and in her logbook.

3.1.2 The pilot was the holder of a valid aviation medical certificate that was issued by a CAA-approved medical examiner.

3.1.3 The pilot was familiar with the exercises that she entered into the flight authorisation book. Hover turns or 'spot turns' were not part of the exercises that she entered into the flight authorisation book prior to the flight but afterwards opted to do.

3.1.4 The pilot had accumulated 102.4 hours on the helicopter type when the accident occurred (this included dual as well as solo hours).

3.1.5 The pilot was not wearing a flying helmet and suffered from a blow to the left side of her head.

3.1.6 The helicopter was in possession of a valid Certificate of Airworthiness and had flown 80 hours since new.

3.1.7 The helicopter was operated within the allowable weight and balance limitations.

3.1.8 During the on-site investigation it was established that flight control continuity was not compromised. All failures were associated with impact damage.

3.1.9 The ATO was in possession of a valid approval certificate.

3.1.10 The training flight was accordingly authorised and all the necessary documentation was signed prior to the flight.

3.1.11 Fine weather conditions prevailed at the time of the accident with the wind reported to be from the southeast at between 8 to 10 knots.

3.1.12 The accident was survivable, from an cockpit environment two safety concerns were highlighted, that being the POH bag not properly secured and the position/location of the fire extinguisher.

3.2 Probable cause:

3.2.1 The pilot allowed the lower vertical fin to make contact with the ground during a manoeuvre close to the ground, which caused the vertical fin assembly and shrouded tail rotor to fracture from the tail boom, resulting in a loss of tail rotor thrust. She was unable to regain control of the helicopter and it crashed.

3.3 Contributory factor:

3.3.1 The pilot performed a manoeuvre in close proximity to the ground, leaving her with very little margin for error.

3.3.2 The pilot increased the collective pitch lever when the lower vertical fin made contact with the ground, tail rotor drive continuity was compromised as a result, which aggravated the un-commanded rotation followed by a loss of control.

4. SAFETY RECOMMENDATIONS

4.1 It is recommended to the ATO that the pilot be subjected to a dual evaluation flight(s) with an flight instructor before she continue with her solo flying. During this period she should be subjected to a proper evaluation with special emphasis on the exercises she outlined in her statement and entered in the author book prior to the

flight.

*NOTE: This safety recommendation was endorsed by the ATO by the time this report was concluded. The pilot flew several dual flights with a flight instructor where after she was sent solo again. Her progress was found to be satisfactorily.

4.2 In the interest of aviation safety it is recommended to the Director of Civil Aviation (DCA) to consider making the wear of approved flying helmets compulsory to all pilots flying helicopters in South Africa, including student pilots undergoing training. Wearing a helmet when flying a helicopter is a worldwide safety norm, it is especially prominent in military as well as crime prevention related operations.

4.3 It is recommended to the ATO as well as the helicopter manufacturer that the POH bag on the aft cockpit/cabin wall, located between the two seats, be properly secured. The investigation found that the POH bag was only secured on the top section and not on the bottom, which allowed the bag to swing from side to side, and could lead to injury, as was suspected to have happened in this accident (blow to the left side of the pilot head).

4.4 It is recommended to the Director of Civil Aviation in conjunction with Certification and Airworthiness Divisions that the portable fire extinguisher currently located next to the pilot seat (right-hand side) be re-positioning within the cockpit/cabin area. The current location of the unit poses a safety risk to the pilot/occupants during an accident. The writer is well aware of the fact that the cockpit/cabin area does not allow many options but has nevertheless found the status quo to be unsafe.

5. APPENDICES

5.1 None