

SHORT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/9481	
Aircraft registration	ZS-OCB	Date of accident	24 September 2015		Time of accident	1430Z
Type of aircraft	AS350B2 (Helicopter)		Type of operation		Private (Part 91)	
Pilot-in-command licence type		Private pilot	Age	67	Licence valid	Yes
Pilot-in-command flying experience		Total flying hours	830.5		Hours on type	259.4
Last point of departure		Grand Central Aerodrome (FAGC), Gauteng Province				
Next point of intended landing		Grand Central Aerodrome (FAGC), Gauteng Province				
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)						
Open field west of Pelindaba (GPS position: 25°48'16.95" South 027°54'02.30" East), elevation 4126 feet						
Meteorological information		Surface wind: 315°/10 knots, Temperature: 25°C, CAVOK.				
Number of people on board	1 + 1	No. of people injured	0	No. of people killed	0	
Synopsis						
<p>The pilot, accompanied by his wife, was engaged in a private flight. Approximately 20 minutes after take-off from FAGC while flying in a westerly direction to the north of Pelindaba at a height of approximately 1 000 feet above ground level (AGL), the pilot activated the air-conditioning unit. Smoke started entering the cockpit/cabin area via the air-conditioning vents. The pilot decided to execute a precautionary landing in an open field he had identified from the air. He entered into auto-rotational flight in order to land as soon as possible. As the helicopter came close to the ground, outside visibility was impaired by the smoke and a hard landing followed, with the tail stinger making contact with the ground first, causing the aft tail boom structure to twist to the left, as viewed from aft, causing the tail rotor blades to make contact with the ground and, one of the blades to separate from the tail rotor hub assembly. It was established that the air-conditioning drive belt had melted and smoke from the belt entered into the cockpit/cabin area. Nobody was injured in the accident. The helicopter sustained substantial structural as well as tail rotor drive train damage. The investigation revealed that the pilot failed to identify the source of the smoke and he did not switch off the air-conditioning. There was nothing wrong with the flight controls, nor the engine. The source of the smoke was the melting of the air-conditioning unit drive belt. The cause of the air-conditioning drive belt melting is undetermined.</p>						
Probable cause						
<p>Hard landing following an autorotation due to obscured vision (smoke in cabin).</p> <p><u>Contributory factor:</u></p> <p>The smoke in the cabin was as a result of the air-conditioning drive belt melting.</p>						
SRP date	12 September 2017		Release date	20 September 2017		

AIRCRAFT ACCIDENT REPORT

Name of Owner : Cochrane Steel Products (Pty) Ltd
Name of Operator : Private (Part 91)
Manufacturer : Eurocopter
Model : AS350B2
Nationality : South African
Registration markings : ZS-OCB
Place : Open field near Pelindaba
Date : 24 September 2015
Time : 1430Z

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) the purpose of investigation of an aircraft accident or incident is to determine, in terms of the provisions of this Part, the facts of an accident or incident in the interest of the promotion of aviation safety and the reduction of the risk of aviation accidents or incidents, and **not to establish blame or liability**.*

Disclaimer:

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1. FACTUAL INFORMATION

1.1 History of flight

1.1.1 The pilot, accompanied by his wife, was engaged in a private flight. Approximately 20 minutes after take-off from Grand Central Aerodrome (FAGC) while flying in a westerly direction to the north of Pelindaba, at a height of approximately 1 000 feet above ground level (AGL) the pilot activated the air-conditioning unit. Smoke started entering the cockpit/cabin area via the air-conditioning vents. The pilot decided to

execute a precautionary landing in an open area he had identified from the air. This he had done without first identifying the source of the smoke and any system failures.

- 1.1.2 He entered into auto-rotational flight in order to land as soon as possible. As the helicopter came close to the ground at a height of approximately 200 feet AGL, the smoke in the cabin increased to such an extent that the pilot had difficulty to maintaining outside visibility. He concluded that the helicopter had begun to yaw to the left and right, and he attempted to control the yaw to the best of his ability, but as the helicopter came in close proximity to the ground, the tail stinger impacted heavily with the ground. When the helicopter came to a halt, the pilot closed the throttle and deactivated the electrical switch and pulled the fuel shut-off lever.
- 1.1.3 The aft tail boom structure was found to have twisted. The tail rotor blades made contact with the ground, with one of the blades separating from the tail rotor hub assembly. It was found that the air-conditioning drive belt had melted and smoke from the belt had entered into the cockpit/cabin area. The drive belt was recovered from the transmission platform. Nobody was injured in the accident, but the helicopter sustained substantial structural as well tail rotor drive train damage.
- 1.1.4 The accident occurred during daylight conditions at a geographical position that was determined to be 25°48'16.95" South 027°54'02.30" East at an elevation of 4126 feet (1258m) above mean sea level (AMSL).



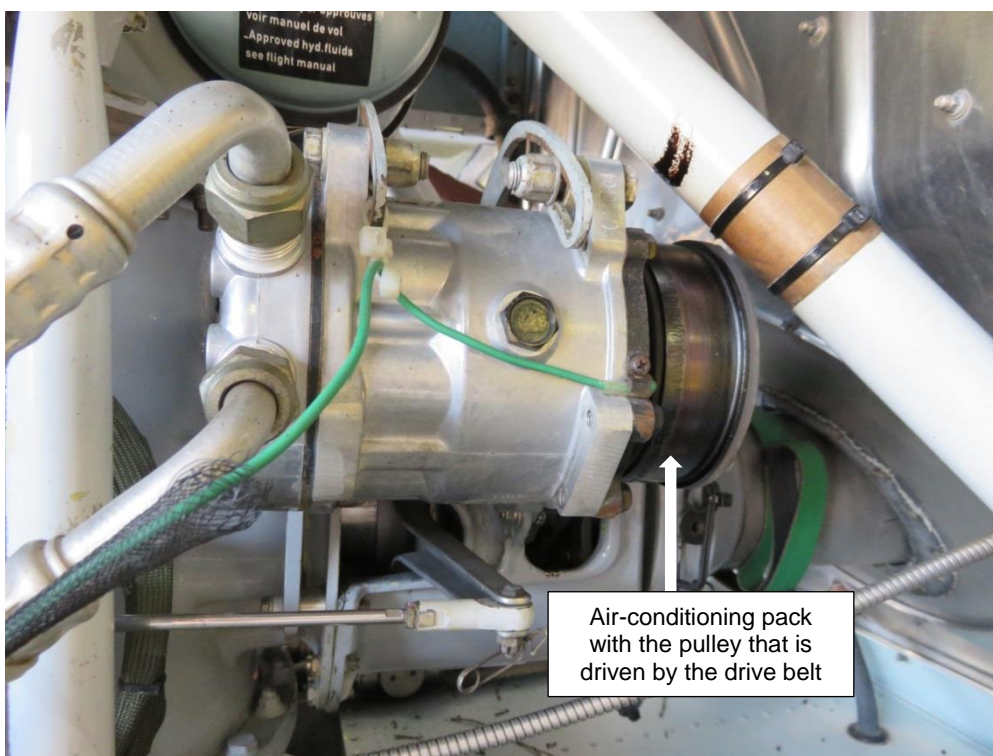
Figure 1: The wreckage as it came to rest



Figure 2: The damage to the tail rotor, with one of the blades broken off



Figure 3: The twist to the aft tail boom structure



Air-conditioning pack with the pulley that is driven by the drive belt

Figure 4: The air-conditioning pack that was driven by a drive belt



Figure 5. The air-conditioning drive belt that was found melted on the transmission platform

Section 3 of the Flight Manual (Emergency Procedures)

Smoke in the cabin

“If source of smoke is identified

- *Shut off the corresponding system.*
- *If necessary, use the fire extinguisher.*
- *Air the cabin by opening:*
 - o *The front ventilator*
 - o *The ventilation ports*
 - o *The bad weather windows”.*

1.2 Investigation revealed the following:

1.2.1 The pilot was in possession of a valid private pilot licence and the helicopter type was endorsed on his licence.

1.2.2 He was engaged in a private flight when the accident occurred.

- 1.2.3 The pilot decided to execute a precautionary landing once the smoke entered the cockpit/cabin area.
- 1.2.4 The pilot did not consult the helicopter flight manual – emergency procedures for smoke in the cabin.
- 1.2.5 The helicopter was in possession of a valid certificate of airworthiness (Standard Part 91).
- 1.2.6 The helicopter was operated within its weight and balance limitations.
- 1.2.7 The helicopter did not have any flight control or engine system failures except for the air-conditioning belt.
- 1.2.8 The pilot executed an autorotation without identifying the source of the smoke or any system failure.
- 1.2.9 The helicopter sustained substantial damage to the tail boom structure and the tail rotor drive train.
- 1.2.10 The pilot experienced obscured vision due to smoke in the cockpit/cabin.
- 1.2.11 The prevailing weather conditions at the time had no influence on the accident.
- 1.2.12 The cause for the melting of the air-conditioning driving belt could not be determined.

2. CONCLUSION

2.1 Probable cause

- 2.1.1 Hard landing following an autorotation due to obscured vision (smoke in cabin).

2.2 Contributory factor:

- 2.2.1 The smoke in the cabin was as a result of air-conditioning drive belt melting.

3. SAFETY RECOMMENDATIONS

- 3.1 Safety Message: Pilots needs to adhere to the procedures issued by the manufacturer, organisation and the regulation as they are issued as a prevention measure for possible accident and incidents.

4. APPENDICES

- 4.1 None.