LIMITED ACCIDENT/INCIDENT INVESTIGATION

Reference Number	CA18/2/3/9944						
Classification	Accident	**Date**	19 January 2021		**Time**	0550Z	
Type of Operation	Agricultural (Part 137)						
Location							
Place of Departure	Ross Air Hangar, Wellington, Western Cape Province		Place of Intended Landing		South Africa, Silverstroom Farm, Wolseley, Western Cape Province		
Place Accident	South Africa, Silverstroom Farm, Wolseley, Western Cape Province						
GPS Co-ordinates	Latitude	33°25'32.80" S	Longitude	019°14'37,62" E	Elevation	932 ft	
Aircraft Information							
Registration	ZS-HUC						
Model/Make	BELL 206 B						
Damage to Aircraft	Destroyed		Total Aircraft Hours	9029.5			
Pilot-in-command							
Licence Type	Commercial Pilot Licence (CPL) Helicopter		Gender	Male	Age	25	
Licence Valid	Yes						
Total Hours on Type	486.8		Total Flying Hours	1360.8			
People On-board	1+0	Injuries	0	Fatalities	1	Other (On Ground)	0

What Happened

On Tuesday 19 January 2021, a pilot on-board a Bell 206B II Jet Ranger helicopter with registration mark ZS-HUC was carrying out crop-spraying (using fruit fly baiting chemical) duties at Silverstroom farm in Wolseley, Western Cape province. The crops that were being sprayed were pear orchards that were due for harvesting in a few weeks. According to the farm owner, the same pilot was flying the same helicopter over another section of the same farm the previous day (18 January 2021), and that operation was carried out uneventfully.

On the day of the accident, the farm owner was located about 650 metres (m) north of the area of operation. He reported that the pilot started the crop-spray operation at about 0400Z. He heard the helicopter stop for a brief period but started flying soon after.

According to the operator, the pilot had stopped at a designated loading area (approximately 2 kilometres west of the accident site) to load the fruit fly baiting chemical used in crop-spraying, as

well as to refuel the helicopter; the time was about 0540Z.

The farm owner further stated that although there was no visual of the helicopter, he heard a loud "popping" sound and the helicopter's engine sound stopped. Soon after, he heard another loud "crash" sound. He then grabbed a fire extinguisher and rushed towards the direction of the "crash" sound where he found the helicopter crashed between pear orchards. No fire erupted after the crash.

It was reported that according to the orientation, location and distribution of the helicopter wreckage, the helicopter collided with the top wire (earth conductor) of the high-tension electrical cables while flying in an easterly direction. The high-tension wires were span across the helicopter's flight path. Later, it was observed that the earth conductor of the high-tension power cable was missing, which resulted in power outage in the neighbouring town (Ceres).

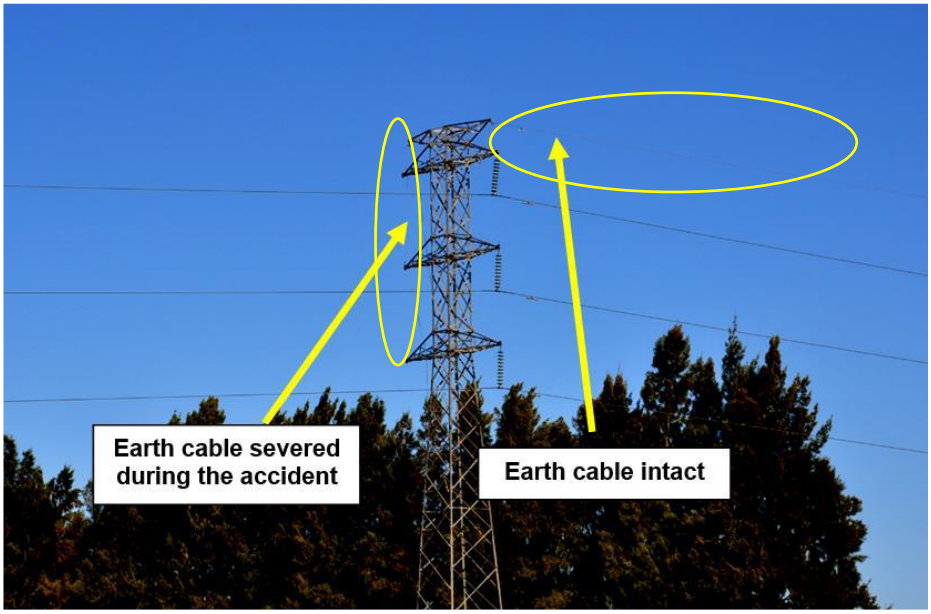

Figure 1: An electrical pylon with the severed earth cable (left), and the undamaged earth cable (right).

Figure 2: Top-left image: The failed earth conductor. Top-right image: The earth conductor found near the trees. Bottom image: The gouge mark made by the earth conductor.

The collision of the helicopter with the earth conductor resulted in tension stress, which caused the wires to break. The “popping” sound heard by the farm owner was most probably the sound of the main rotor blades impacting the left-side of the fuselage, which resulted in the hot section of the engine separating from the fuselage.

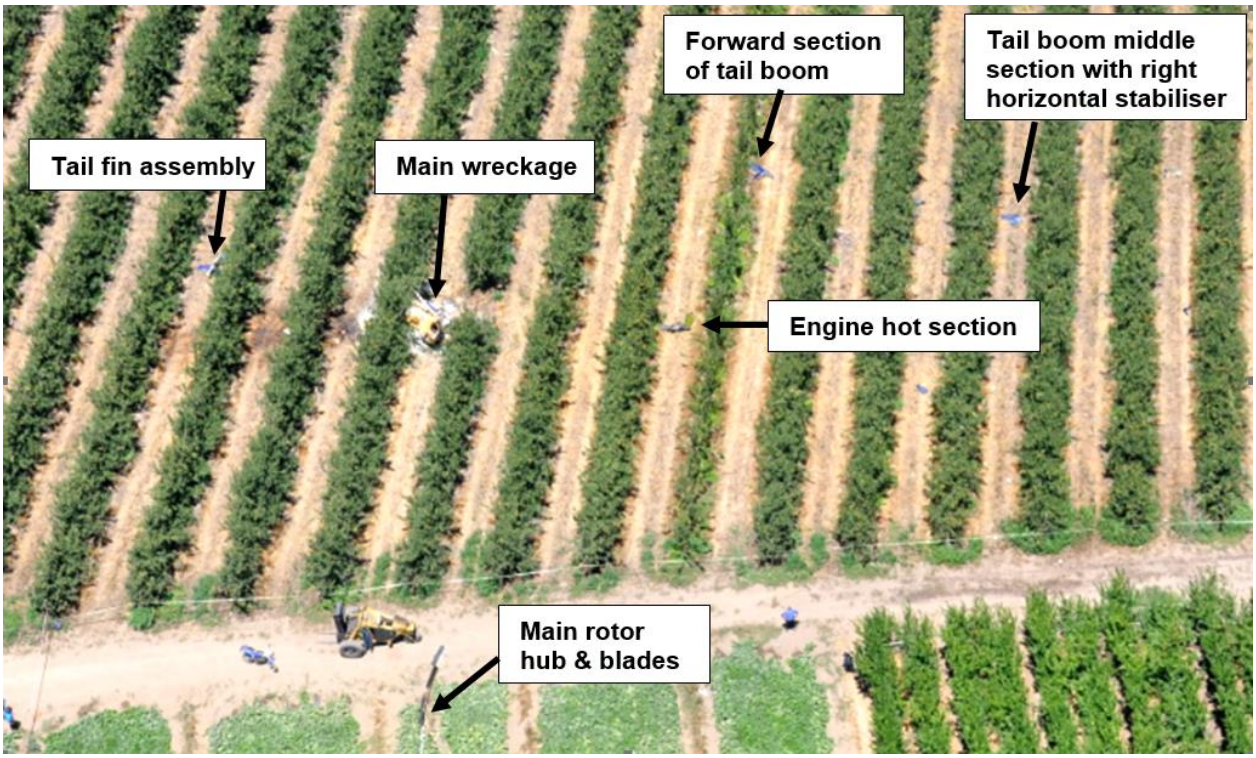

Figure 3: Wreckage distribution of main components.

The distribution of the wreckage is indicative of loss of control, which resulted in in-flight break-up following the main rotor impact with the fuselage and engine. This led to the helicopter’s debris being scattered in a diameter of about 80 metres (m) around the main wreckage.

The pilot was familiar with the area of operation and had flown three times on the same farm prior to the accident flight. The pilot flew 4.7 hours of crop-spray operations on the same farm a day before the accident flight. According to the pilot logbook flying hours, the pilot did not exceed the regulatory maximum flight and duty times for a single pilot operation as stipulated in technical standards Part 127.02.12 of the SA-CATS 2011 as amended. Therefore, it is unlikely that the pilot was fatigued at the time of accident.

On-site investigation revealed that the helicopter collided with the top earth conductor of the high-tension electrical cables before crashing. Damage observed on the wreckage indicated that the helicopter was caught on its right skid by the cable, which was exhibited by the metallic striation marks, indicative of a wire strike on the upper surface of the skid’s front section. It is likely that the helicopter anchored on the right skid and rolled to the right, thus, the pilot moved the stick abruptly to the left. This resulted in the main rotor disk being disturbed, reaching its tether blocks and cutting the tail boom. As the main rotor was getting damaged, it severed the hot section of the engine.

Figure 4: Top image: The left skid attached to the main wreckage. Bottom image: The front section of the right skid showing striation marks.

There were no pre-existing mechanical faults with either the engine, airframe, main rotor or tail rotor systems recorded in the flight folio and defect logs that could have contributed to the accident. Additionally, there were no snags recorded in the defect logs with either the navigational or communication systems prior to the accident flight.

The inspection of the engine on site indicated that it was running at the time of impact. This is indicated by the rotary marks in the power turbine disk area and the broken blades in the direction of rotation. The engine exhaust duct was located forward of the engine position and was damaged.

Figure 5: Damaged engine assembly.

The investigation revealed that the helicopter impacted the high-tension wires (the earth conductor) during the crop-spraying operation, resulting in loss of control of the helicopter and the subsequent crash. The pilot was fatally injured during the accident.

Safety Action/s

None.

Safety Message and/or Safety Recommendation/s

Safety message: Pilots engaged in aerial work (crop spraying, game calling, etc.) are advised to always familiarise themselves with the areas of operation, with emphasis on hazards as well as considering changes in the environment (the position of the sun especially in the early morning hours or at dusk) surrounding obstacles and hazards prior to engaging in aerial operations.

Purpose of the Investigation

In terms of Regulation 12.03.1 of the Civil Aviation Regulations (CAR) 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 apportion blame or liability****.*

About this Report

Decisions regarding whether to investigate, and the scope of an investigation are based on many factors, including the level of safety benefit likely to be obtained from an investigation. For this occurrence, no investigation has been conducted, and the Accident and Incident Investigations Division (AIID) has relied on the information submitted by the affected person/s and organisation/s to compile this brief report. The report has been compiled using information supplied in the initial notification, as well as follow-up information to bring awareness of potential safety issues to the industry in respect of this occurrence, as well as possible safety action/s that the industry might want to consider in preventing a recurrence of a similar accident.

This report provides an opportunity to share safety message/s in the absence of an investigation. *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.*
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This report is issued by:

Accident and Incident Investigations Division
South African Civil Aviation Authority
Republic of South Africa