



Accident to the Schweizer 269C
registered **F-GEXN**
on Friday 12 May 2023
at Saint-Julien-de-Concelles

Time	Around 16:20 ¹
Operator	AIRAGRI
Type of flight	Agricultural flight
Persons on board	Pilot
Consequences and damage	Pilot injured, helicopter destroyed
This is a courtesy translation by the BEA of the Final Report on the Safety Investigation. As accurate as the translation may be, the original text in French is the work of reference.	

Power line strike during aerial work, collision with ground

1 HISTORY OF THE FLIGHT

Note: the following information is principally based on statements.

The pilot, unaccompanied, took off from a private helicopter landing site for flights of around three minutes to spray opaque white paint onto six-meter high polytunnels² (see **Figure 1**).

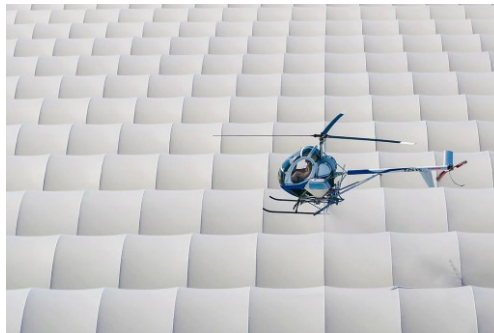


Figure 1: example of F-GEXN whitening polytunnels (Source: AirAgri web site)

After whitening the polytunnels lengthwise (north-west/south-east direction), he continued spraying, flying overhead the tunnels in a south-westerly direction, starting along the edge of a main road bordered by a medium voltage (MV) power line of 20,000 V.

At the end of the first flight overhead the polytunnels, at the beginning of the LH turn for a second pass towards the north-east, the pilot felt the helicopter's left skid catch on something. The helicopter which was at a speed of between 45 and 50 kt, quickly slowed down. The pilot then understood that he had struck the cables of a power line (see **Figure 2**). Two of the three cables of the MV power line broke. The third cable which did not break caused the helicopter to turn over

¹ Except where otherwise indicated, the times in this report are in local time.

² To regulate the intensity of the light and reduce the temperature inside the tunnels.

onto its back. The pilot was unable to stabilise the helicopter which collided inverted, with the ground after the power line in a field of crops. The pilot shut down the engine and exited the helicopter unaided with a few injuries (mainly bruises and pains)

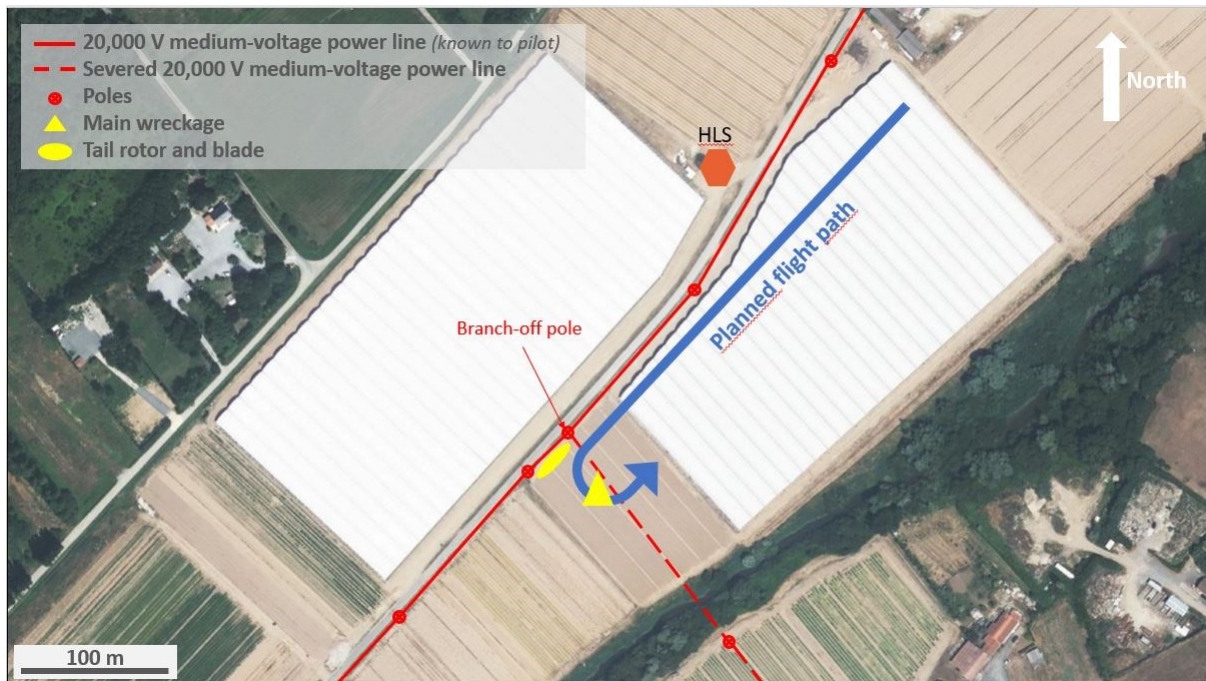


Figure 2: presumed flight path of helicopter (Source: Géoportail, annotations BEA)

2 ADDITIONAL INFORMATION

2.1 Site and wreckage information

The wreckage was lying on its back at around 50 m from the edge of the road (see **Figure 2**) and 15 m after the power line that had been struck (at 45 m from the polytunnel that was to be sprayed). The helicopter was destroyed (see **Figure 3**). All of the damage observed was the result of the helicopter striking the MV power line cables and the collision with the ground.



Figure 3: main wreckage (Source: BEA)

One of the three blades of the main rotor had penetrated the canopy and the cockpit on the LH, passenger's seat side. The tail rotor and a second blade from the main rotor was found near a pole belonging to the part of the MV power line running alongside the road next to the polytunnel to be sprayed white (south-west/north east).

One of the poles of this power line, situated at around 30 m from the polytunnel, at the edge of the road, is the branch-off of the MV power line severed by the helicopter (see **Figure 4**). Another pole located at around 150 m south-east from the branch-off pole, behind a row of trees by the side of Boire de la Roche water course, carries the three cables of this power line (see **Figure 2**). Consequently, this power line is nearly parallel to the polytunnels at a distance of around 30 m from them. The left skid of the helicopter struck the power line cables at a height of around 7 m and a distance of around 6 m from the lowest point of the span. Two cables were severed³.



Figure 4: branch-off pole and severed cables (Source: BEA)

2.2 Pilot information

The 35-year-old pilot held a commercial pilot licence for helicopters (CPL(H)) obtained in November 2011, an aeroplane private pilot licence (PPL(A)) obtained in August 2011 and a glider pilot licence (SPL) obtained in January 2006. The type rating for the Schweizer 269C, which he obtained in July 2013, was valid as was his class 1 medical certificate.

A former ALAT⁴ helicopter pilot, he had logged at the time of the accident, around 1,800 helicopter flight hours, two thirds of which he stated were low-level flights. He was also the accountable manager of AIR AGRI since April 2023. He had totalled around 150 flight hours in agricultural work by helicopter. On 12 May, he flew 4 h 20 min up until the accident flight, for 83 white paint spraying rotations. The day before the accident, the pilot flew 5 h 30 min for 86 rotations.

The pilot indicated that he had already carried out work on the polytunnels the month previously. He specified that he did not carry out a reconnaissance flight that day which would have enabled him to identify and recall the hazards around the polytunnels to be sprayed. He explained that he knew of both the MV power line running along the side of the polytunnels and also of the MV power line from the branch-off pole that he struck. He indicated that he had forgotten about this power line. He specified that the low-height converging path left him no safety margin. He added that he was in the habit of flying on parallel or divergent paths to power lines to avoid any collision risk. He explained that it was difficult, even impossible, for him to detect the power line cables not only because the sun was facing him on the flight path that was being followed but also because the height of the helicopter meant that the cables were in the bottom of his field of vision with a field

³ Around 2,300 people were affected.

⁴ *Aviation légère de l'Armée de terre* (French Army Light Aviation).

of leaks below providing poor contrast. The pilot was wearing sunglasses during the flight. The pilot added that he had sprayed the white paint at a height of between two and five metres above the polytunnels.

The pilot explained that he took the brace position and protected his face when the helicopter turned over onto its back.

The pilot indicated that he had taken actions after the accident:

- systematic reconnaissance of the work sites;
- slower speeds for work at low height;
- regular breaks to limit the effects of routine and tiredness.

2.3 Operator information

AIRAGRI is a specialised operator approved by the French civil aviation safety directorate (DSAC). It has four Schweizer 269Cs for different types of operations including aerial photography and agricultural work.

In order to meet the requirements of regulation (EU) No 965/2012, known as Air Ops⁵, AIRAGRI had drawn up a risk assessment and standard operating procedures (SOP) which took into consideration the nature and complexity of the activities, the environmental conditions and the geographic work zones.

In particular, the SOPs specify the following elements:

- before each flight, the pilot-in-command must obtain information about obstacles and hazards in the various areas comprising the parcels of land to be treated, the landing areas and the helicopter refuelling and loading areas;
- power lines are the biggest hazard. It is difficult to judge their height and distance. The most dangerous are the medium and low voltage lines, whose cables are often very low and with pylons sometimes hidden from view. It is advisable for pilots to be warned of these, but this does not preclude a prior systematic reconnaissance of each parcel of land or flight zone before making the decision to fly low.

2.4 Meteorological information

The estimated meteorological conditions at the accident site at around 16:20, based on the automatic weather station at Nantes-Atlantique airport and the satellite, radar and lightening images were the following:

- wind from 350 of 8 kt with gusts of 15 kt;
- visibility greater than 10 km;
- cumulus cloud cover of 3 to 4/8 at around 5,000 ft with altocumulus cloud cover of 3 to 5/8 at around 8,500 ft;
- temperature 19°C and dew point temperature 9°C;
- QNH 1018.

⁵ Commission Regulation of 5 October 2012 laying down technical requirements and administrative procedures related to air operations, requirement SPO.OP.230 ([Version in force on the day of the accident](#))

At the time of the accident and at the accident site, the position of the sun was:

- azimuth of 235°;
- height above horizon of around 50°.

3 CONCLUSIONS

The conclusions are solely based on the information which came to the knowledge of the BEA during the investigation.

Scenario

The pilot had to spray white opaque paint on some polytunnels. He was acquainted with the site and its surroundings as he had worked there a month earlier. Before starting the rotations, he did not carry out a reconnaissance flight. The flight path at a height of less than ten metres, overhead the polytunnels, followed a MV power line which the pilot knew about before starting the flights.

When the pilot had come to the end of a polytunnel and started his turn for a new spraying operation, still at low height, the helicopter's left skid came into contact with the MV power line cables which the pilot had forgotten about. In addition to this, the pole which was carrying the three cables of this power line was on the pilot's LH side, it was also probable that it was outside his field of vision.

Visually hampered by the position of the sun facing him on his flight path and there being no marked contrast between the cables, the field of crops and the horizon line, it was made more difficult for the pilot to detect the power line cables that he struck.

Contributing factors

The following factors may have contributed to the power line strike:

- no prior reconnaissance before starting the polytunnel paint spraying which meant that the pilot did not adapt his flight paths based on the identification or recollection of the hazards present in the vicinity of the work site (obstacles and power lines for example, but also position of sun);
- relative confidence, which can be explained by the pilot's experience of low-level flying and by the routine that may have developed as a result of the repetitiveness and short time of each rotation.

The BEA investigations are conducted with the sole objective of improving aviation safety and are not intended to apportion blame or liabilities.