BEA
Bureau d'Enquêtes et d'Analyses
pour la sécurité de l'aviation civile
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SAFETY INVESTIGATION REPORT

# Serious incident to the GROB - G115 registered F-GGOB on 14 September 2020 at Aubigny-sur-Nère (Cher)

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| **Time** | Around 10:15[1] |
| **Operator** | Aero Pyrénées |
| **Type of flight** | Cross country |
| **Persons on board** | Pilot and one passenger |
| **Consequences and damage** | Aeroplane substantially damaged |
| This is a courtesy translation by the BEA of the Final Report on the Safety Investigation published in September 2022. As accurate as the translation may be, the original text in French is the work of reference | |

# Smell of burning in flight, diversion, engine fire on the ground

## 1 HISTORY OF THE FLIGHT

*Note: the following information is principally based on statements.*

The pilot, accompanied by one passenger, took off from Troyes airport (Aube) for a flight bound for Amboise aerodrome (Indre-et-Loire).

En route and stable at 3,000 ft, the pilot detected a smell of burning which he believed to emanate from the ventilation system. As a result, he decided to abort the flight and diverted to Aubigny-sur-Nère aerodrome. The landing took place without incident.

Once on the ground, after engine shut-down, the pilot no longer detected any unusual smell. He carried out a visual check and the start-up checklist and found no anomalies. Concluding that it was a false alert, he decided that he could resume the flight bound for Amboise and headed towards the refuelling station. He shut down the aeroplane's engine upon reaching the fuel pump.

At the refuelling area, while the pilot and passenger were on board, the pilot noticed flames and white smoke coming from the engine compartment. He then carried out the "fire" emergency procedure and evacuated the aeroplane with the passenger before calling the emergency services. The fire was extinguished before it spread beyond the firewall.

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

# 2 ADDITIONAL INFORMATION

## 2.1 Pilot information

The 33-year-old pilot held a Private Pilot Licence - Aeroplanes (PPL(A)) issued on 18 July 2018 and a single-engine piston (SEP) rating. He had logged 106 flight hours at the time of the occurrence, 30 h of which on the G115.

## 2.2 Meteorological information

At the time of the event, the meteorological conditions were suitable for VFR flight, with a calm wind and no notable cloud cover.

The 10:00 automatic METAR report for Orléans-Saint-Denis de l'Hôtel airport, located about 50 km away, gave the following information:

- wind of 2 kt varying in direction;
- CAVOK;
- temperature 21 °C, dew point temperature 11 °C;
- QNH 1022 hPa.

## 2.3 Examination information

After the event, the aeroplane was conserved in a hangar at Aubigny-sur-Nère aerodrome, where it was examined by the BEA.

During these examinations, it was found that the damage was confined to the engine compartment. The cowlings, the engine itself and the propeller spinner were covered in soot. Some components showed deterioration typical of exposure to excessive temperature. This damage extended across the engine's front and upper parts up to the firewall.

Further examinations of the aeroplane confirmed that the phenomenon which produced the flames and white smoke started at the front of the engine. In this area, the only components of the oil system showing anomalies were the breather pipe and the pressure sensor. The laboratory analyses of the pressure sensor and parts of the engine cowling confirmed the presence of engine oil in combustion residues.

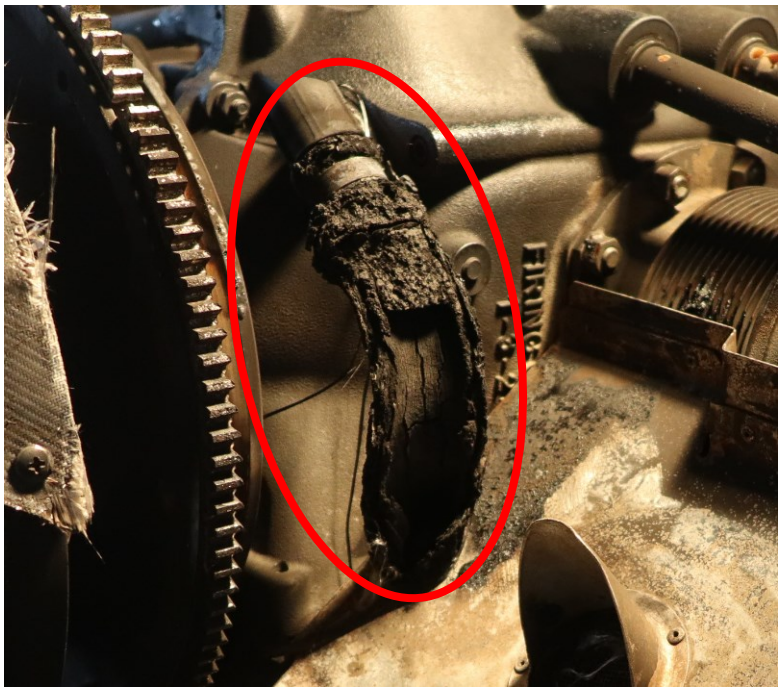

*Figure 1: oil breather hose (Source: BEA)*

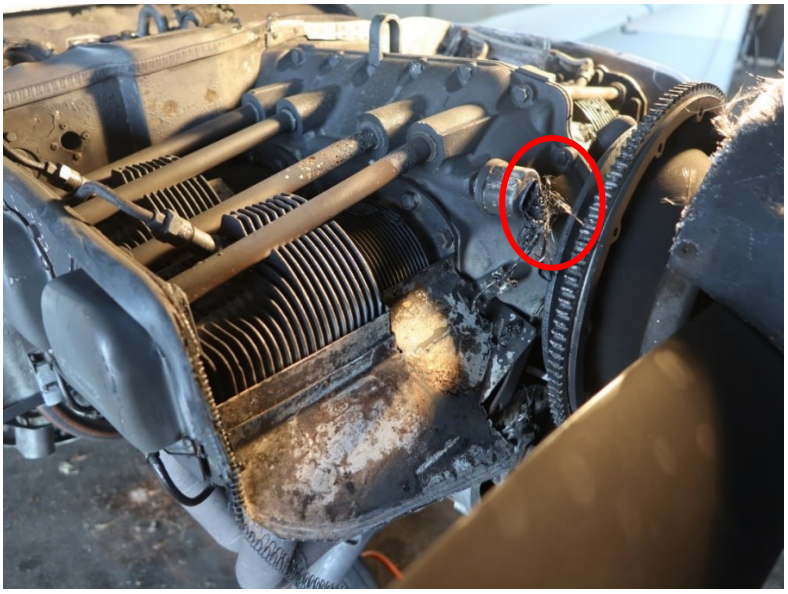

*Figure 2: oil pressure sensor (Source: BEA)*

There was no damage to the fuel system.

It seems that the combustible material which contributed to the fire was engine oil. However, the exact cause of the failure could not be explained.

## 3 CONCLUSIONS

*The conclusions are solely based on the information which came to the knowledge of the BEA during the investigation. They are not intended to apportion blame or liability.*

### Scenario

It is likely that oil began to leak onto hot parts of the engine during the flight, thereby producing the smell detected by the pilot. The latter took the decision to abort the flight and to land as soon as possible at an accessible aerodrome.

However, he did not perform a troubleshooting procedure once on the ground, considering that the visual examination and start-up checklist were sufficient to ensure that the engine was operating correctly. This led him to erroneously conclude this was a false alert.

The fire, which was caused by escaping engine oil, occurred while the aeroplane was stationary at the refuelling area, preparing for a new take-off, even though the failure had not been detected.

The investigation was unable to determine with certainty the failure that allowed the oil to escape.

By intentionally choosing to abort the flight, the pilot probably prevented a more critical situation from arising in flight and limited the consequences of the failure.