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 ROBIN DR400-160 registered F-GYAC on 6 March 2024 at Nantes-Atlantique airport

Time	Around 15:00[1]
Operator	Aéroclub de Loire-Atlantique
Type of flight	Local
Persons on board	Pilot and one passenger
Consequences and damage	None
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.	

Manual rotation of the propeller, unexpected engine start-up, ground run without a pilot

1 HISTORY OF THE GROUND RUN

Note: the following information is principally based on recordings from the security cameras and on statements.

The pilot, accompanied by a passenger, arrived at the flying club for a local flight. He took the aeroplane out of the hangar and placed it at the refuelling point in the parking area. The passenger[2] boarded the aeroplane. After performing the pre-flight inspection, the pilot applied the cold start procedure. He pressed the starter button and the propeller moved a little, but did not turn. The pilot heard a friction noise. He repeated the starting procedure three times, still without success. The pilot indicated that he positioned the battery switch to "OFF" and turned the magneto selector key to a position he thought was "OFF". He did not remove the key from the ignition. He operated the parking brake lever and then went out of the aeroplane to rotate the propeller manually.

The pilot rotated the propeller and, as it passed the compression point, the engine suddenly started. The pilot quickly moved out of the way and saw that the aeroplane was beginning to move forward. He tried to hold the aeroplane by pushing on the left wing with his hand, which caused the aeroplane to spin to the left. The pilot managed to climb onto the left wing and tried to get on board the cabin. The aeroplane then gained speed and ran on the grass strip towards an A320 parked in the commercial aviation parking area. The pilot tried to reach the cabin again, but the movement of the aeroplane on running through the grass strip prevented him from doing so. However, he managed to enter the cockpit partially and, by bending over, pressed the right pedal with his hand to make the aeroplane turn to the right. He finally managed to get on board and regained control of the aeroplane, which he then brought back to the club.

[1] Except where otherwise indicated, the times in this report are in local time.
[2] The passenger had no knowledge of aeronautics or how to fly an aircraft.

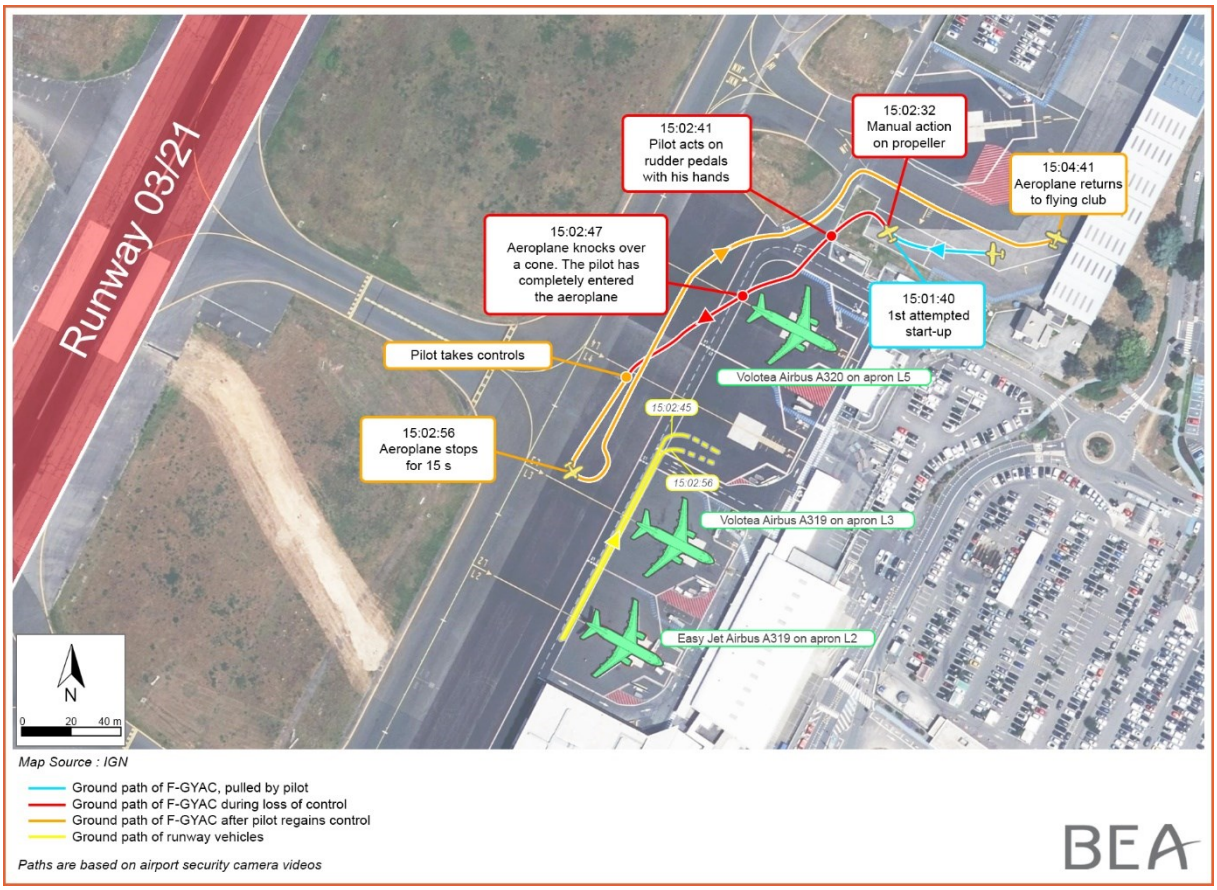

Figure 1: ground run of F-GYAC (Source: BEA)

2 ADDITIONAL INFORMATION

2.1 Pilot information

The 55-year-old pilot held a Private Pilot Licence - Aeroplanes (PPL(A)) issued on 25 January 2016. He had logged approximately 200 flight hours, 3 hours and 40 minutes of which on type in the previous three months. He regularly flew F-GYAC.

2.2 Aeroplane information

The aeroplane is a DR400 equipped with a 160 hp Lycoming engine.

The day before the event, a maintenance operation lasting around 20 min was carried out on the electrical system of the aeroplane's anti-collision lights. At the end of the operation, the battery was tested by the mechanic. It delivered a voltage of 11.6 V.

After the incident, the aeroplane was fully checked by the maintenance team. No anomaly was found. The battery voltage was measured at 8 V approximately, with four attempts to start the engine causing the battery voltage to drop. The magneto selector was also operational. This selector is used to ground or unground the magnetos that equip the engine. When the magneto is grounded, it is not active. The selector has four possible positions:

- OFF: Both magnetos are grounded. No magneto is active.
- R: The left magneto is grounded. Only the right magneto is active.
- L: The right magneto is grounded. Only the left magneto is active.
- BOTH: No magneto is grounded. Both magnetos are active.

The aeroplane is equipped with a rudder pedal system. It also has a parking brake to maintain pressure in the master cylinders and lock the wheels. The flight manual indicates that once the aeroplane has come to a stop, the pilot must press and hold the brake pedals, then pull the brake handle and release the pedals. The parking brake is then applied. The brake is released by simply pushing back the parking brake lever.

3 CONCLUSIONS

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

Scenario

Successive use of the starter, without actually starting up, caused the battery voltage to drop sharply. Normal starting using the starter thus became increasingly uncertain. The pilot decided to exit the aeroplane, without an appropriate checklist or any special procedures in this unusual situation.

Before getting out of the aeroplane to examine the propeller, the pilot did not fully apply the parking brake. Moreover, he did not remove the keys from the magneto selector. The throttle control was not in the idle position. The mixture control was in the “full rich” position.

When the pilot rotated the propeller by hand and passed the compression point, the engine suddenly started and the aeroplane began to move forward.

The pilot first tried to stop the aeroplane, without success, then he managed, with difficulty, to climb onto the wing and use his hand to operate the rudder pedal to change the DR400’s trajectory and avoid collision with an A320 in the parking area. Finally, he managed to enter the aeroplane and regain control of it.

Contributing factors

The non-application of the “engine shut-down” checklist contributed to the unexpected starting of the engine and the running of the aeroplane without a pilot at the controls.

Safety lessons

Pilots are trained in the procedure for shutting down the engine at the end of a flight, once they have reached the parking area. They use the aeroplane's checklist to check the actions to be taken. However, in certain unexpected situations during which an event requires pilots to get out of the aeroplane to carry out an external visual check, the pilots generally do not think to go through the "engine shut-down" checklist, which would help ensure they are safe while walking around the aeroplane.