



Accident to the CIRRUS - SR22 (G2)
registered **N565CK**
on 21 December 2021
at Auxerre

Time	Around 17:55 ¹
Operator	Private
Type of flight	Cross country
Persons on board	Pilot
Consequences and damage	Pilot fatally injured, aeroplane destroyed
This is a courtesy translation by the BEA of the Final Report on the Safety Investigation published in December 2022. As accurate as the translation may be, the original text in French is the work of reference.	

Collision with ground during night flight, fire

1 HISTORY OF THE FLIGHT

Note: the following information is principally based on statements, radio communication recordings and radar data.

The pilot took off from Oyonnax-Arbent aerodrome (Ain) at around 17:00 for a flight bound for Auxerre-Branches aerodrome under a night VFR flight plan.

On approach to Auxerre, the pilot contacted the AFIS officer at 17:49 and reported that he would be arriving in approximately two to three minutes (see Figure 1, point ①). The AFIS officer replied that runway 36² was in use, the wind was from 040° at 6 kts, the QNH was 1022 hPa and visibility was five kilometres. He added that there was some mist, that he had set the runway lights to their maximum brightness and asked the pilot to call back when he was overhead the aerodrome. The pilot read back correctly.

One minute later, the AFIS officer contacted the pilot and specified that his weather information system (information on screen) indicated the presence of mist at 100 ft agl. He added that the sky was not visible and that as it was night, he could not confirm this information from visual observation. The pilot read back.

At 17:53, the AFIS officer asked the pilot if he had sight of the runway, the latter replied that he was overhead the runway. The AFIS officer asked him to call back when he was on the left-hand downwind leg for runway 36. The pilot read back but did not say if he had sight of the runway.

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

² Auxerre-Branches aerodrome (ICAO code: LFLA) is open to public air traffic. It has a paved runway measuring 1,650 x 30 m equipped with a PAPI and runway lights.

When the pilot reported that he was on the downwind leg for runway 36 (see Figure 1, point 2), the AFIS officer asked him if he had sight of the runway. The pilot replied in the affirmative (see Figure 1, point 3). The AFIS officer asked him to call back on final for runway 36. The pilot read back (see Figure 1, point 4). This was the last radio message made by the pilot.

Less than a minute after this last exchange, the AFIS officer asked the pilot if he still had sight of the runway. The pilot did not reply. In the minutes which followed, the AFIS officer tried to contact the pilot multiple times without obtaining any reply.

At 17:56, the AFIS officer called the Seine FIS controller to enquire whether N565CK was still identified on the radar. The controller contacted replied in the negative and the AFIS officer activated the search and rescue operations.

The flight path based on the radar data showed that the aeroplane flew over Auxerre aerodrome at 17:53 at around 2,000 ft QNH (see Figure 1, point 1) and then made a left turn in descent. The last recorded point was at 17:55 when the aeroplane was at 1,175 ft (see Figure 1, point 5).

The aircraft wreckage was found at around two kilometres south-west of the threshold of runway 36.

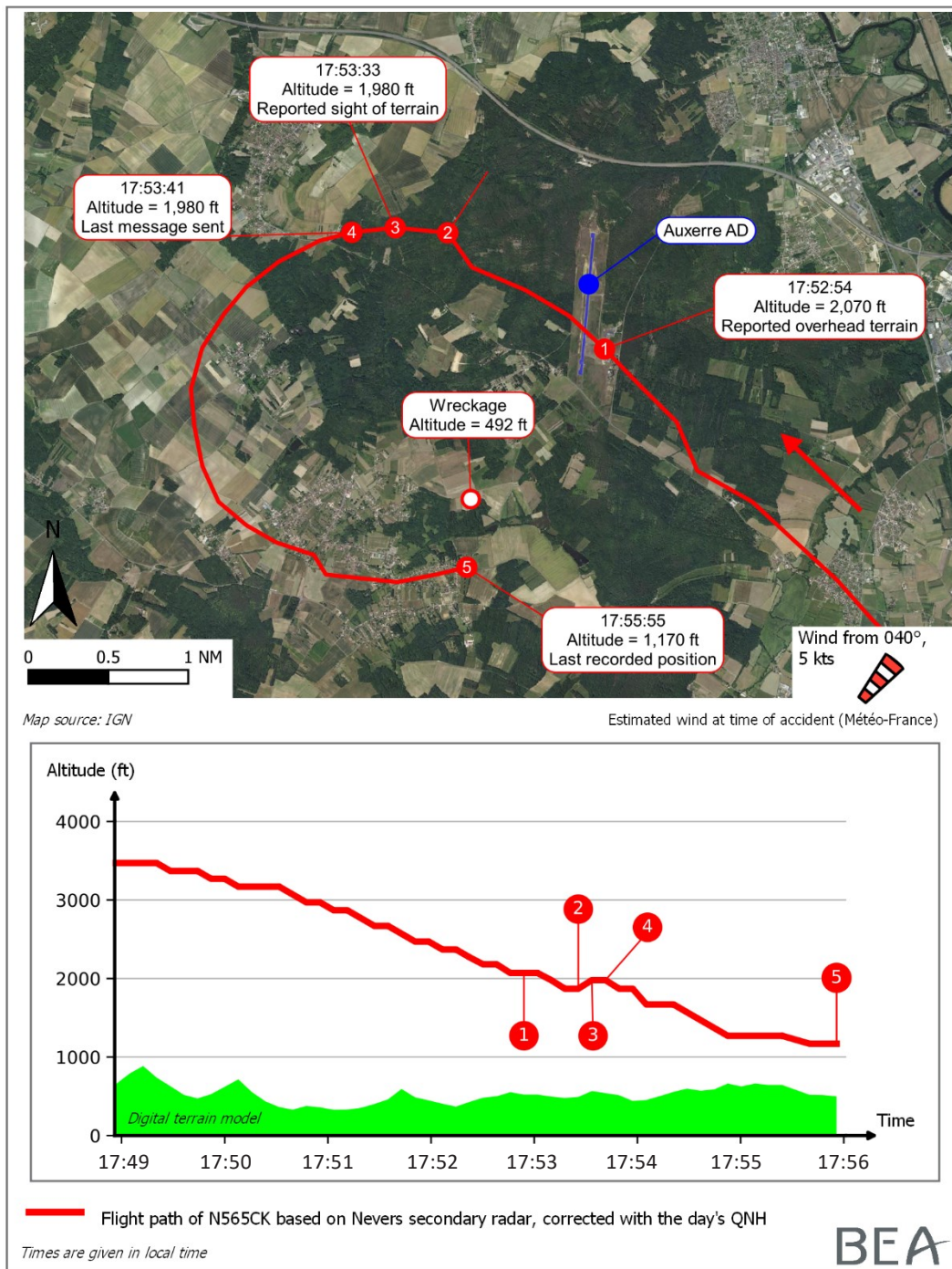


Figure 1: flight path of N565CK

2 ADDITIONAL INFORMATION

2.1 Examination of site and wreckage

The wreckage was situated on both sides of a bank by the edge of a field and a road. There was a group of trees around 20 m tall at the south end of the field. No collision mark with the tops of the trees in this group was observed. The initial point of impact with the ground was situated at around 50 m from the fringe of the trees.



Figure 2: accident site
(source: gendarmery drone, annotated by the BEA)

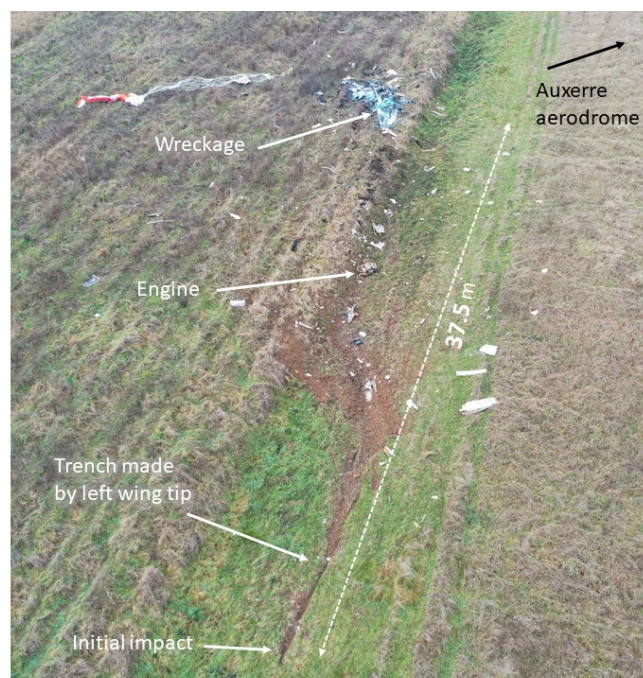


Figure 3: scars on ground at accident site
(source: gendarmery drone, annotated by the BEA)

The scars on the ground, the state of damage and the distribution of the debris indicated that the aeroplane struck the ground with high energy, a high left-roll angle and a low nose-down angle. When the tip of the left wing struck the ground, the aeroplane tipped forward, the engine separated and the aircraft then came to a halt on its back and caught fire.

The continuity of the flight control linkages was checked (rudder, ailerons and elevator). Due to the damage, it was not possible to determine the configuration (position of flaps) of the aeroplane at the time of impact.

2.2 Aircraft information

The pilot was the owner of N565CK which he had acquired at the beginning of 2011. This aeroplane was based at Auxerre Branches aerodrome.

It was equipped with an Avidyne EX500 MFD³ computer. This Electronic Flight Instrument System (EFIS) can be used to display the flight and engine parameters and for navigation purposes. GNSS (latitude, longitude) and engine parameters were recorded every six seconds onto the Compact Flash card inside the MFD.

The analysis of the accident flight data (flight path and engine parameters) did not reveal any technical failure likely to explain the accident.

2.3 Pilot information

The 54-year-old pilot held a Private Pilot Licence - Aeroplanes (PPL(A)) issued on 14 March 2007 and a class 2 medical certificate valid until 19 February 2022. He did not have an instrument rating.

The pilot's logbook indicated that he had logged a total of approximately 330 flight hours, including around 230 hours as pilot-in-command and around 200 hours on type. He had flown around five hours in the previous three months all on N565CK.

He obtained the night flight approval in 2007 after completing five night flight hours including two hours alone on board the aircraft. His logbook did not show additional night flight hours between 2007 and the date of the accident.

The autopsy did not bring to light any element that could have contributed to the accident.

2.4 Night VFR regulations

The regulations (FCL.810⁴) mention that the night flight approval is given after theoretical instruction and the performance of at least five flight hours in the appropriate aircraft category at night, including at least three hours of dual instruction, including at least one hour of cross-country navigation with at least one dual cross-country flight of at least 50 NM and five solo take-offs and five solo full-stop landings. The continuing validity of this approval is not subject to recent experience requirements if the pilot does not transport passengers. In the latter case, pilots may only carry passengers at night if they have carried out in the preceding 90 days at least one take-off, approach and landing at night as pilot flying in an aircraft of the same type or class (or if they hold an Instrument Rating (IR)).

2.5 Meteorological information

The investigation was not able to determine if, during the flight preparation, the pilot had sought and obtained information about the forecast meteorological conditions at the time of his arrival at Auxerre. The 16:00 SIGWX chart showed that Auxerre was at the north edge of an area of low clouds, mist and fog (see Figure 4, point ●.)

³ Multi-Function Display.

⁴ Commission regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew ([Version in force on the day of the accident](#)).

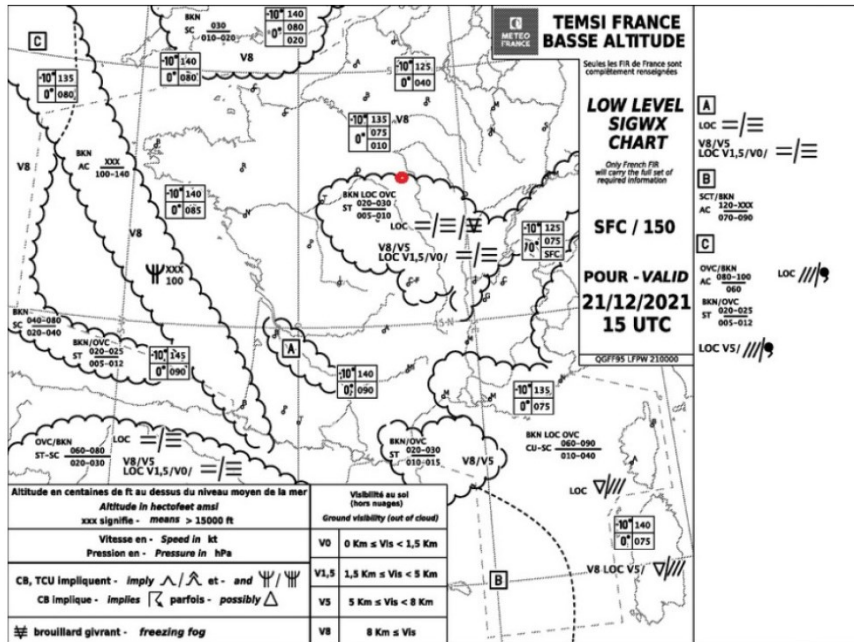


Figure 4: 16:00 Low Level SIGWX chart (source: Météo-France)

The Météo-France analysis indicated that in the area of and at the time of the accident, the conditions were conducive to the formation of mist and fog due to the presence of a very moist air mass and light wind. Sunset was at 16:52. The night was dark due to there being no moon and the presence of mist and fog.

The weather station at Auxerre aerodrome (altitude of 520 ft) recorded the following data:

date UTC	T (°C)	TD (°C)	FF (kt)	DD (°)	FXI (kt)	U (%)	NBAS (octas)	B1 (m)	VV (m)	date UTC
21/12/2021 17h	-1.7	-2.0	5.2	40	9.7	98	9	<30	649	21/12/2021 17h
21/12/2021 16h	-0.4	-1.7	3.9	30	5.8	91	0	>7 800	14 601	21/12/2021 16h

Légende :

- T = Température (°C)
- TD = Température du point de rosée (°C)
- FF = vitesse du vent moyen au sol (kt)
- DD = direction d'où vient le vent
- FXI = rafale au sol (kt)
- U = humidité (%)
- NBAS = nébulosité des nuages les plus bas
- B1 = base des nuages les plus bas
- VV = visibilité

Figure 5: data recorded by Météo-France weather station at Auxerre aerodrome between 17:00 and 18:00 (source: Météo-France)

This data shows that the weather conditions were degraded between 17:00 and 18:00 due to the formation of fog. The data NBAS (lowest cloud cover) = 9 in the table above means that the sky was not visible. The table below indicates the minimum visibility measured over ten sliding minutes.

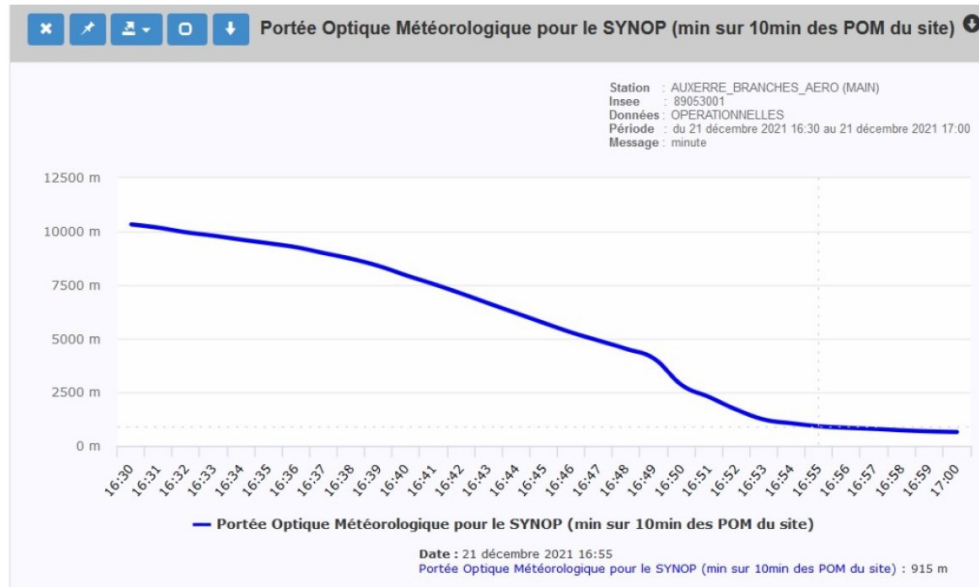


Figure 6: data recorded by Météo-France weather station at Auxerre aerodrome between 17:00 and 18:00 (source: Météo-France)

At 17:49 when the pilot made first contact, the indicated visibility was around five kilometres. At 17:55, the time of the accident, the minimum visibility measured over ten minutes was around 900 m.

Météo-France produced an analysis chart of the risk of fog or mist. At 17:00, this risk was considered to be zero and at 18:00, to be high.

2.6 Statements

2.6.1 AFIS officer

The AFIS officer indicated that the AFIS service was closed from 17:30. However, that day he decided to extend his duty time to wait for the arrival of the pilot of N565CK. The latter had in fact contacted him shortly before 16:00 to ask whether it was mandatory to file a night flight plan. The AFIS officer had replied in the affirmative as he was going to land at night. The AFIS officer specified that he had the feeling that the pilot was a little “lost” and that he did not quite know how to manage this night flight. The pilot called him back later to explain that he did not know how to file his flight plan as he was unable to contact the Regional Flight Information and Assistance office (BRIA) at Le Bourget⁵. The AFIS officer told him that flight plans had to be filed by contacting the National Flight Information and Assistance office (BNIA) at Bordeaux.

The AFIS officer specified that he was worried as he considered that this pilot could encounter difficulties during this night landing. He explained that his concern was based on the difficulties that this pilot had encountered two days before. On 19 December 2021, the pilot had flown a round trip to Courchevel in the day. During the return flight, the weather conditions at Auxerre were similar to those of the day of the accident (presence of mist and fog). The AFIS officer specified that the pilot had tried to land without success seven times and that fearing that there would be an

⁵ It was no longer possible to file flight plans with the Le Bourget BRIA by telephone.

accident, he had advised him to divert. The pilot had then diverted to Oyonnax and returned to Auxerre by taxi.

2.6.2 Instructor pilot

In order to pick up N565CK which was still at Oyonnax, the pilot had reserved a dual flight with an instructor with the Annecy flying club. The flight from Auxerre to Oyonnax was scheduled for 21 December (day of the accident).

The instructor explained that he was in the right seat on departure from Auxerre and that the owner of N565CK, in the left seat, was the pilot flying for the Auxerre to Oyonnax flight. A student was sat in the rear and was to take the controls for the return flight to Annecy after setting down the owner of N565CK at Oyonnax.

The instructor explained that the flight had gone smoothly. During the approach to Oyonnax, he asked the student to prepare the return flight to Annecy and to file a night flight plan.

He specified that it seemed to him that the pilot of N565CK then realised that he was also going to have to carry out a night flight and file a night VFR flight plan to return to Auxerre. He added that this seemed to worry him a lot and that as soon as they arrived in the parking area, the pilot of N565CK left the aeroplane and dashed over to N565CK.

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

The various statements seem to show that the pilot had not really been fully aware that he was going to have to carry out a night VFR flight to Auxerre. His logbook indicated that he had not carried out a night flight for 14 years and that his experience was limited to five night flight hours carried out in 2007 as part of his training to obtain the approval to carry out this type of flight.

Between the departure from Oyonnax at 17:00 and the arrival at Auxerre at around 18:00, the weather conditions had degraded due to the formation of fog, limiting visibility to 900 m locally.

The radar flight path and the pilot's exchanges with the AFIS officer showed that the pilot probably lost the external visual references between the left-hand downwind leg and the final for runway 36. In a left-hand turn on a flight path that initially converged with the final for runway 36, the aeroplane collided with the ground.

Contributing factors

The following factors may have contributed to the accident:

- the pilot's small amount of total experience and the absence of recent experience in night VFR flights, in particular in very dark and fog conditions;
- the pilot's probable determination to return his aeroplane to Auxerre that evening after having already diverted two days before and having travelled to Oyonnax for this purpose.

Safety lessons

In 2008, the Aeronautical Training Operations Department (SEFA) published the Night VFR instructor's guide. This document is no longer available but its content was largely included in the guide, "[Le VFR de nuit en hélicoptère](#)"⁶ published by the French civil aviation safety directorate (DSAC).

This guide includes chapters which could advantageously be used by all light aviation pilots carrying out night VFR flights. In particular, the chapter on night-time meteorology mentions that fog is more frequent at night than during the day and is more difficult to detect at night. If the difference between the air temperature and the dew point temperature is less than 2°C, there is a risk of fog forming within an hour. In flight, when fog forms or mist sets in, a halo appears around brightly lit cities. While the horizontal visibility may be excellent high up, the vertical visibility will deteriorate, and at lower altitudes the horizontal visibility may become almost zero, making landing impossible.

On a dark night and in the presence of fog, it is very difficult to distinguish the terrain and to use external references. Instrument references are the primary means of controlling aircraft attitudes. Flying by instruments cannot be improvised. In addition to the individual's physiological limitations, the ability to fly by instruments requires a conscientious acquisition of skills and regular training in the technique of blind flight.

The BEA has regularly observed that the obstinacy of pilots in undertaking or continuing a flight in adverse weather conditions was the cause of numerous accidents with often dramatic consequences. When confronted with adverse weather conditions for the continuation of the flight, a diversion or even a precautionary landing are alternatives which generally lead to a positive outcome. However, each pilot must be aware of the difficulties that may exist in considering such alternatives when the situation has already deteriorated: stress, fatigue or the pilot's preoccupations (in particular his motivations or constraints) are all factors which can affect the pilot's capacity of discernment and the accuracy of his actions.

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

⁶ Night VFR flight by helicopter (available in French)