



Serious incident to the CESSNA 172 R
registered **F-HSNO**
on Thursday 7 March 2024
at Courchevel

Time	Around 16:30 ¹
Operator	Alpine Airlines
Type of flight	Sightseeing flight, commercial
Persons on board	Pilot and two passengers
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.	

**Take-off from a runway engaged by a snowplough, during
a sightseeing flight, in the mountains**

1 HISTORY OF THE FLIGHT

Note: the following information is principally based on statements, radio-communication recordings and security camera images.

At 16:15, the driver of the snowplough contacted the AFIS² officer to cross and then descend the runway in order to remove the snow from the runway edges.

Between 16:18 and 16:32, the AFIS officer was in contact with three helicopters (each arriving on the FATO³ of the mountain airfield), a departure and a Civil Defence helicopter in transit.

At 16:32, the pilot of F-HSNO, on the apron situated in front of the fuel pump, contacted the AFIS officer in anticipation of a sightseeing flight with two passengers for a duration of 15 min or so.

He started taxiing to threshold 04 and then called back the AFIS officer at the holding point and reported that he was ready for departure. The AFIS officer asked him to call back once he was lined up on the runway. The AFIS officer was still in contact with the Civil Defence helicopter pilot in order to determine his position and check that his flight path was not in conflict with the take-off path of F-HSNO. The AFIS officer transmitted the position of the helicopter to the pilot of F-HSNO. The latter reported that he was lined up and ready. The AFIS officer provided the wind information and the pilot took off. The aeroplane was at a height of a few metres when it passed next to the snowplough on the left-hand side of the runway, at around 150 m from threshold 22.

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

² The glossary of abbreviations and acronyms frequently used by the BEA can be found on its [web site](#).

³ Final Approach and Take Off area.



Figure 1: photo of take-off of F-HSNO (source: security camera)



Figure 2: photo of take-off of F-HSNO (source: security camera)

2 ADDITIONAL INFORMATION

2.1 Meteorological information

The information provided by Météo-France indicated that at the time of the incident, the sky was clear, visibility was very good, the wind was from 210° at 6 kt and the outside air temperature was 0°C.

2.2 Pilot information

The 23-year-old pilot held an aeroplane Commercial Pilot Licence (CPL (A)) obtained in 2021. He held an access authorisation for Courchevel mountain airfield. He had logged approximately 430 flight hours including 200 hours as pilot-in-command, of which around 30 hours had been flown in the previous 3 months on F-HSNO.

The pilot's statement did not reveal any particular information prior to him passing the snowplough.

2.3 Aerodrome information

2.3.1 General information

Courchevel mountain airfield is a restricted-use aerodrome with one paved runway oriented 22/04 measuring 536 m long; the threshold of runway 22 is situated at 6,371 ft. The profile of the runway is shown below:

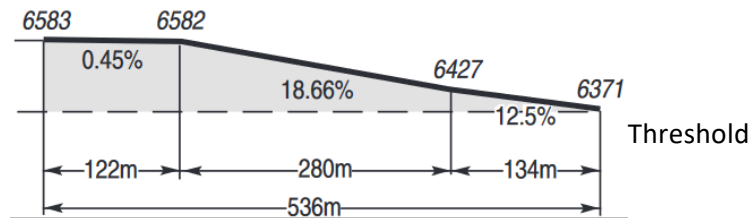


Figure 3: lengthwise profile of runway 04/22 at Courchevel taken from VAC (source: SIA)

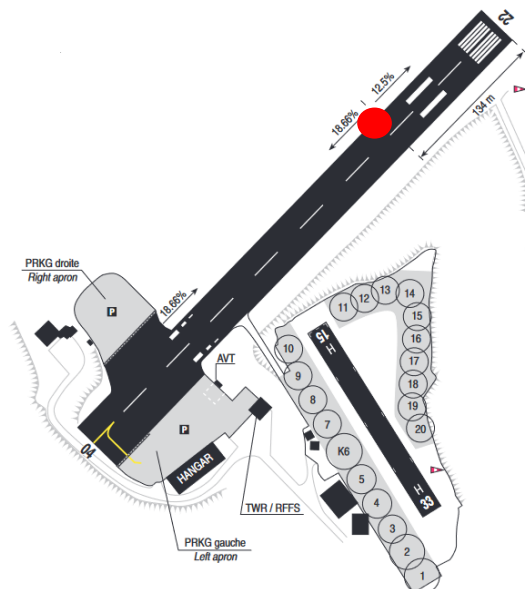


Figure 4: excerpt from Courchevel mountain airfield VAC with the position of the snowplough indicated in red (source: SIA, annotated by the BEA)

The mountain airfield has an AFIS service which was open at the time of the incident.

The operator clears snow from the manoeuvring area during the winter to enable wheeled aircraft to operate throughout the year. This is the only mountain airfield in France concerned by snow clearance operations. The DSAC is not aware of any other mountain airfield in the world that has to clear such high levels of snowfall.

Furthermore, the mountain airfield is not included in the list of aerodromes covered by the “snow plan”⁴ in the AIP France (see paragraph 2.3.2).

⁴ https://www.sia.aviation-civile.gouv.fr/media/store/documents/file/l/f/lf_circ_2024_a_020_fr.pdf.

2.3.2 Regulatory framework

Courchevel mountain airfield is subject to the Order of 28 August 2003, known as CHEA⁵, which does not include any requirements relating to snow clearance.

As Courchevel mountain airfield is not required to have a European airport safety certificate, it is not subject to any specific requirements relating to snow clearance. In particular, the operator is not required to draw up and implement a “snow plan” as provided for in requirement ADR.OPS.B.035 – Operations in winter conditions, of Regulation (EU) No 139/2014⁶. This snow plan sets out snow clearance procedures, including the materials used to treat surfaces, snow clearance equipment, criteria for use of runway, and the publication of certain items of this information in the AIP.

As the mountain airfield does not have IFR procedures, it is not subject to the rules relating to the reporting of runway surface conditions set out in Chapter III of the Order of 9 June 2021⁷ concerning the operator’s assessment and communication of runway surface conditions to air traffic services and via aeronautical information publications.

An ICAO working group is currently thinking about defining specific rules for mountain airfields.

2.4 Operator and AFIS service provider information

The Courchevel town hall is both the aerodrome operator and the AFIS service provider at the Courchevel mountain airfield. The AFIS service is open all day from Wednesday to Sunday from December to April, as well as in July and August.

2.4.1 AFIS officer’s experience and statement

The AFIS officer on duty at the time of the incident held an AFIS officer rating obtained on 25 January 2024, after completing theoretical and local practical training at Courchevel and successively passing theoretical and practical assessments. The latter took place between 20 November 2023 and 23 January 2024, over a total period reduced to two weeks instead of eight, with the agreement of the DSAC, as permitted by Article 11 of the Order of 13 April 2022⁸, given the AFIS officer's experience as a military air traffic controller.

The AFIS officer stated that she had forgotten that the snowplough was on the runway and did not see it when she carried out her usual visual scan before F-HSNO took off, even though it was visible from her position in the tower cab. Her attention was focused on the position of the Civil Defence helicopter in transit, in order to avoid a potential conflict with the aeroplane taking off. She explained that the AFIS service provider had already received a notification from Alpine Airlines about a loss of separation with a helicopter deemed dangerous by the pilot, as well as several other recent notifications. The pressure she felt in this context may, in her opinion, have led her to exercise “hypervigilance” in monitoring the surrounding traffic.

⁵ Order relating to the conditions for certification and operating procedures for aerodromes. ([Version in force on the day of the serious incident](#)).

⁶ Commission regulation of 12 February 2014 laying down requirements and administrative procedures related to aerodromes ([Version in force on the day of the serious incident](#)).

⁷ Order relating to inspections of aerodrome manoeuvring areas, and the assessment and communication of runway surface conditions ([Version in force on the day of the serious incident](#)).

⁸ Order relating to the qualification and training of AFIS personnel ([Version in force on the day of the serious incident](#)).

2.4.2 Snowplough driver's statement

The snowplough driver explained that he had started to clear the runway of snow at the end of the morning but was interrupted due to increased traffic. This left a layer of snow approximately three centimetres thick at the runway edges. Following various comments made by the operator Alpine Airlines since 11 January about the snow clearing, he stated that, in order to be "irreproachable", he took advantage of a quiet period in departures and arrivals on the runway to widen the runway edges and try to make the boundary line on the right-hand and left-hand sides of the runway more visible. After informing the AFIS officer on the radio frequency, he drove down the runway on the right-hand side, clearing snow from the runway boundary line, then drove back up. He stated that he was passively listening to the frequency when F-HSNO took off. He was focused on driving the vehicle and did not hear the aeroplane's departure message, which was partially masked by the noise of his snowplough.

2.4.3 Operations Manual

2.4.3.1 Working methods relating to an engaged runway

At the time of the occurrence, the AFIS service provider had not implemented a means to materialize the presence of a vehicle on the runway, in the work position of the AFIS officer.

2.4.3.2 Snow clearance operations

At the time of the occurrence, the AFIS operator/service provider had not formalised the operating conditions for the winter period, in particular the procedures relating to snow clearance. In February, it had decided to close the runway during snow clearance operations, to keep it closed until these operations were completed, and to inform users of the airfield by publishing a NOTAM. The OM was being updated to incorporate these new instructions. The AFIS officer and the snowplough driver stated that these instructions had been communicated verbally before the occurrence and that, in their opinion, they were not yet applicable.

2.4.4 Measures taken after the occurrence

Following the occurrence, the AFIS service provider took the following immediate measures:

- a permanent directive relating to snow clearance operations was drawn up;
- a permanent directive relating to the display of a red "runway engaged" sign on the AFIS console whenever a vehicle is travelling on the runway or FATO was drawn up;
- a training session for all staff was organized.

The snow clearance directive, which was then incorporated into a new version of the OM on 15 March, provides for the closure of the runway by NOTAM during snow clearance operations. In addition, it states that snow clearance operations consist of clearing snow from the entire length and width of the runway. Once the runway has been cleared and the aprons have been sufficiently cleared, the NOTAM closing the runway is cancelled and replaced by a NOTAM indicating that the runway is contaminated, if necessary, particularly if the runway is not completely black. A runway inspection is carried out before the runway is opened. The runway condition is reported to the pilots along with all the weather parameters⁹. If necessary, the AFIS officer informs the pilot that the runway has just been cleared of snow and invites them to join the runway circuit via point LIMA and to carry out a reconnaissance of the manoeuvring areas. In the event of unexpected aircraft arrivals during snow clearance operations, traffic will be notified that the manoeuvring areas are engaged and the runway closed by NOTAM.

⁹ On radio frequency.

The operator also plans to create an “Aerodrome OM” defining all ground operating procedures (traffic, runway inspections, interventions, etc.).

2.5 Oversight of AFIS service providers and aerodrome operators by the DSAC

2.5.1 General Principles

The DSAC’s mission is to oversee the continuing compliance of AFIS service providers with French and European regulatory requirements relating to the provision of AFIS services.

The work methods of the AFIS service providers are checked when they come under a specific regulatory requirement. For example, although the European regulation¹⁰ stipulates that, “*Flight information service provided to flights shall include [...] the provision of information concerning [...] collision hazards with aircraft, vehicles and persons operating on the manoeuvring area*¹¹”, it does not specify that the service provider must implement a means to materialize that the runway is engaged. The DSAC explained to the BEA that as this practice was separate from any regulatory obligation, it cannot check for its existence during its oversight activity nor can it record any associated non-conformity. Similarly, in the absence of regulatory requirements relating to snow clearance (see paragraph 2.3.2), the DSAC may observe an operator's methods and procedures, but cannot indicate a non-conformity during its oversight or approval missions.

Thus, the DSAC informed the BEA that, in the absence of safety occurrences and regulatory provisions in this area, it has no grounds for questioning the robustness of the means used (in this case, visual observation of the runway and memorisation by the officer of the position of the various vehicles or aircraft in the manoeuvring area and in aerodrome traffic). However, the use of means to indicate runway engagement is an internationally recognised standard practice and, consequently, the officer's visual ability and memorisation do not appear to constitute sufficiently effective barriers to provide a reliable information service. The BEA questions whether it is possible to verify compliance with the regulatory requirement to provide information on the risk of collision without examining the means put in place by the organisation being monitored.

Furthermore, the AFIS service provider, as part of its SMS, had not put in place any measures to prevent the risk of collision with an aircraft or vehicle on the ground.

With regard to the training of AFIS officers, the DSAC checks that the items which, according to French regulations¹², must be covered in both theoretical and practical initial and continuing training, are included in the training plan of the AFIS service provider. Except in special cases, the oversight carried out does not consist of checking the specific content of the training courses: the regulations do not require certification and oversight of companies or organisations offering training to AFIS service providers.

¹⁰ Implementing regulation (EU) 2017/373 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight ([version in force on the day of the serious incident](#)).

¹¹ ATS.TR.305 Scope of flight information service.

¹² Order of 13 April 2022 op. cit.

2.5.2 Monitoring snow clearance operations at Courchevel

Following three safety occurrence notifications concerning snow clearance conditions at the mountain airfield and the information provided to users, the DSAC carried out an oversight operation between 11 January 2024 and 14 March 2024 to check:

- the immediate measures taken by the aerodrome operator;
- the adequacy of these measures;
- the effective implementation of these measures;
- all operating procedures at the mountain airfield in winter conditions.

Several discussions and a meeting were organised with the operator/AFIS service provider. In parallel with these discussions, and prior to the serious incident, the AFIS service provider decided to update the operations manual (see paragraph 2.4.3.2).

2.5.3 Measures taken after the occurrence

During its oversight after the occurrence, the DSAC paid particular attention to the management of runway engagement by the AFIS service providers and globally observed the following points:

- the absence of any materialization/representation of runway engagement on the tower cab console;
- the absence of any specific instruction or information in the OM;
- the absence of training for AFIS officers in the use of a means of materializing runway engagement.

As a result, in January 2025, the DSAC issued a Safety Information, [info sécurité No 2025/01](#), to AFIS service providers, to inform them of the risks associated with the failure to materialize runway engagement on the tower cab console. The DSAC indicates that this situation can compromise the safety of air operations, particularly during periods of intense activity or in complex situations requiring increased vigilance. The recommendations provided in the Safety Information are intended to raise awareness among AFIS service providers about best practices for improving the management of runway engagement.

The DSAC specifies in the document that, although these recommendations are by no means mandatory, they represent areas for improvement to enhance the safety of air operations and prevent potential incidents. Following the publication of the Safety Information, the DSAC plans to check that AFIS service providers are aware of this document and what action they have taken, through its oversight activities (the topic has been included in the DSAC's AFIS oversight areas).

3 CONCLUSIONS

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

Scenario

The pilot of the aeroplane took off while a snowplough was clearing snow from the edge of the runway. Given the configuration of the mountain airfield and the slope of the runway, the snowplough was not visible to the pilot from the runway threshold. The AFIS officer's attention was focused on the position of a helicopter in transit in order to avoid a dangerous loss of separation with the aeroplane taking off. The AFIS officer had forgotten about the presence of the snowplough and therefore did not inform the pilot of the aeroplane about the snowplough before he took off. The driver of the snowplough did not hear the take-off announcement on the radio frequency or the noise generated by the aeroplane during take-off.

Contributing factors

The following factors may have contributed to the aeroplane taking off while a snowplough was on the runway:

- traffic management mainly concentrated on the FATO area for approximately 15 minutes before the aeroplane took off, which may have limited the AFIS officer's awareness of the runway's engagement and thus caused her to forget the presence of the snowplough;
- the absence, in the AFIS service provider's work methods, of any materialization of runway engagement, which, without concrete and precise regulatory requirements, was not commented on by the DSAC during its oversight activity.

In the weeks leading up to the occurrence, the AFIS service provider, which also operates the aerodrome, had decided to update its winter operation conditions and snow clearance procedures. In the absence of any formalisation, these new measures were not complied with by staff during the occurrence, which may have contributed to the runway remaining open during snow clearance operations.

Safety lessons

This incident highlights the difficulties that AFIS service providers may encounter in analysing and evaluating their internal procedures and work methods, particularly in the absence of specific regulatory requirements. The size and composition of these structures, which are often small, do not facilitate the taking of an objective view and questioning the internal functioning of the organisation. Furthermore, in the absence of regulatory requirements, the training of officers is not subject to thorough verification and evaluation by the authority, as the organisations that provide training are neither certified nor overseen.

In this context, the sharing of best practices between AFIS service providers, already implemented by some structures, for example through the organisation of feedback meetings, appears to be a lever worth exploring to improve internal functioning and risk management.

Furthermore, an approach based on peer review or cross-analysis of practices, as exists in certain quality procedures and other sectors, could be a complementary avenue to explore.

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