Statens haverikommission

Serious Incident in the Airspace near Örebro Airport on 11 December 2024

12 December 2025

Interim report
SHK 2025:20e

About the Swedish Accident Investigation Authority

The Swedish Accident Investigation Authority (SHK) investigates accidents and incidents from a safety perspective regardless of whether they occurred on land, at sea or in the air. The authority's accident investigations are intended to disseminate knowledge and provide a basis for actions by authorities, companies, organizations, and individuals that improve safety and reduce the risk of accidents. The activities should also contribute to people feeling secure and having trust in society's institutions and the confidence in transportation systems. The mission also includes assessing the efforts made by the rescue services in connection with an accident. However, the investigations should not assign blame or liability, whether criminally, civilly, or administratively.

The investigations by SHK aim to answer three questions:

- What happened?
- Why did it happen?
- How can a similar accident/incident be avoided in the future?

Investigations of aviation accidents and incidents are primarily regulated by Regulation (EU) No 996/2010 on the investigation and prevention of accidents and incidents in civil aviation and the Act (1990:712) on the investigation of accidents. The investigations are conducted in accordance with Annex 13 of the Chicago Convention.

The report is also available on the Swedish Accident Investigation Authority's website: www.shk.se.

Interim statement

According to Article 16.7 of the EU Regulation, the investigating safety authority shall, on the anniversary of the accident or incident, present a preliminary statement in cases where a final report has not been published after 12 months.

The statement contains in addition to an account of the sequence of events information on the progress of the investigation as well as relevant parts of the factual material collected in the case. The publication of the preliminary statement occurs during a phase in which the investigation has not yet been concluded, and therefore the material presented at this stage may be supplemented, changed, or omitted from the final report.

The preliminary statement has not undergone the referral procedure that precedes the publication of a final report. Consequently, the SHK cannot guarantee that everything presented in this preliminary statement will be included in – or be identical to – the content of the final report on the event that is published at a later date.

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Content

The investigation

SHK was informed on 11 December 2024 that a serious incident involving one aircraft with the registration SE-LGL had occurred in the vicinity of Örebro Airport, Örebro County, on the same day at 15:12 hrs.

The incident has been investigated by SHK represented by Kristina Börjevik Kovaniemi, Chairperson until 1 July 2025 and thereafter Johan Albihn, Mats Trense, Investigator in Charge, Ola Olsson, Technical Investigator and Kristoffer Danèl, Technical Investigator.

An accredited representative from the United States is participating in the investigation.

The investigation is followed the European Aviation Safety Agency (EASA) and the Swedish Transport Agency.

Interim report SHK 2025:20e

Data	
Aircraft	Registration: SE-LGL Model: Cessna 172R Airworthiness: Certificate of Airworthiness and Valid Airworthiness Review Certificate (ARC)1 Owner: Karlskogaflyg Ek Förening
Time of occurrence:	11 December 2024, 15:12 hrs in daylight Note: All times are given in Swedish standard time (UTC2 + 1 hour)
Place	In the vicinity of Örebro Airport, Örebro county, (Position 59.1895 N 014.9560 E)
Type of flight	Private
Weather	According to Metar: wind 210 degrees 3 knots, no significant clouds, temperature/dewpoint -6/-6˚C, QNH[3] 1030 hPa
Persons on board	In total: 1
Injuries	To persons: None Damage to aircraft: None

[1] ARC (Airworthiness Review Certificate).

[2] UTC (Coordinated Universal Time).

[3] QNH (The atmospheric pressure adjusted to the mean sea level).

1. Factual information

1.1 History of the flight

1.1.1 Precondition

Just preceding the serious incident the aircraft had undergone a maintenance action, due to a Service Bulletin (SB), where three flight control servos (pitch, roll, and pitch trim servos) part of the autopilot system were replaced and the software was updated. The replacement was carried out due to a previous incident in the United States involving another aircraft, where the autopilot system had issued incorrect control commands. The manufacturer therefore offered to replace the servos with an updated version free of charge.

The work was performed by the maintenance organization that had originally installed the autopilot system. The tasks included installing the new servos, updating the system's software, and checking the basic settings of the autopilot system.

A pilot from Karlskoga Motorflygklubb planned to fly the aircraft from Örebro Airport to Karlskoga Airport. Before the flight, a GoPro camera was mounted on the window, to the left of the pilot's position, to record the flight. The camera captured the aircraft's instrument panel with all instruments, parts of the control yokes, as well as the surroundings and the horizon. However, the trim wheel and the trim position indicator for the pitch trim system, among other things, were not visible in the footage.

1.1.2 Sequence of events

The preparations for the flight were carried out according to routine, and no technical faults or remarks were identified. The flight began with a take-off in a southerly direction at Örebro Airport, and the pilot immediately set course for Karlskoga Airport.

When the aircraft reached an altitude of 2,126 feet (QNH), the pilot activated the autopilot and selected the mode for the system to control the aircraft based on heading and altitude hold. However, the aircraft was not trimmed to maintain the reference altitude used by the autopilot, which resulted in the aircraft continuing to climb slightly after the autopilot was engaged.

According to flight data, the autopilot initially adjusted the pitch angle by using the pitch servo to move the elevator in order to level off and gradually descend towards the reference altitude set at the time of activation. Shortly thereafter, the autopilot system activated the pitch trim servo to assist the pitch servo by trimming nose down. The pitch trim servo is activated when the force required by the pitch servo to control the elevator exceeds a certain level for a certain period of time. By trimming the aircraft, the force needed by the pitch servo is thus reduced.

Footage from the GoPro camera shows that 16 seconds after the autopilot was engaged, a yellow warning light illuminated on the pilot's flight instrument. The aircraft gradually increased its pitch angle and began to climb slowly, while the force required to follow the pitch trim servo command continuously increased according to the flight data. The pitch trim servo, which was already active, remained engaged and continuously commanded nose-down trim.

Six seconds after the warning light illuminated, the control yoke moved rapidly forward, and shortly thereafter the pilot gripped the yoke first with the right hand, then with the left. A few seconds later, the pitch angle increased rapidly, and according to flight data, the pilot disengaged the autopilot system.

Despite this, the aircraft continued to increase its pitch angle to 56 degrees, and the indicated airspeed decreased to 26 knots, causing the aircraft to stall. During the following 48 seconds, the flight was uncontrolled, and the pilot attempted to regain control. Repeated variations in pitch angles between -51 and 49 degrees and bank angles between -9 and -121 degrees occurred.

During interviews with the pilot, it emerged that he believed the autopilot remained engaged throughout the period the aircraft was in an uncontrolled state. The pilot felt that he had to work against the system and use considerable force to make control inputs. Much of his focus was devoted to trying to deactivate the autopilot. Eventually, the pilot pulled the circuit breaker for the autopilot system, and at that point, he felt that he regained control of the aircraft. Thereafter, according to the pilot, no further trimming was required for the aircraft to be flown without significant effort. A normal landing was then carried out at Örebro Airport.

After the incident, the aircraft was stored in the maintenance organization's facilities for further examination. At the end of February, the aircraft returned to the flying club for operation, but with the autopilot system deactivated.

1.2 Injuries to persons

None.

1.3 Damage to aircraft

No damaged.

1.4 Other damage

None.

1.5 Pilot information

The pilot, 57 years old, held a CPL(A) with valid operational and medical certification. At the time of the incident, he had a total flight time of 609 hours, the majority of which were on this type.

1.6 Aircraft information

The aircraft, a Cessna 172R, is a four-seat, high-wing, single-engine airplane. It is just over eight meters long and has a wingspan of eleven metres.

1.6.1 The aircraft

The aircraft had a Certificate of Airworthiness and a valid ARC. There were no deferred defects.

1.6.2 Autopilot system

The aircraft was equipped with a Garmin GFC 500 autopilot system, which included two electronic flight instruments of the GI 275 model, a control panel of the GMC 507 type, and three servos of the GSA 28 model that controlled the elevator, ailerons, and elevator trim system. The system is also equipped with an Electronic Stability Protection (ESP), which is a safety feature designed to keep the aircraft within safe flight parameters. The ESP remains active even when the autopilot is disengaged.

1.7 Meteorological information

According to Metar: Wind 210 degrees 3 knots, visibility > 10 kilometres, no significant clouds, temperature/dewpoint -6/-6°C, QNH 1030hPa.

1.8 Aids to navigation

The aircraft was equipped with a Garmin GTN 650 navigation unit.

1.9 Communications

Not applicable.

1.10 Aerodrome information

Not applicable.

1.11 Flight recorders

No fixed flight data or voice recorder was installed in the aircraft, nor was such equipment required for this type of aircraft.

The SHK has obtained and extracted recorded data from the installed Garmin GI-275 and GTN-650 units.

1.12 Site of occurrence

In the vicinity of Örebro Airport.

1.13 Medical and pathological information

Nothing has emerged to indicate that the pilots' mental or physical condition was impaired before or during the flight.

1.14 Fire

No fire occurred.

1.15 Survival aspects

Not applicable.

1.16 Actions Taken

On December 12 2024, one day after the incident, the SHK interviewed the pilot. The following day, interviews were conducted with personnel from the maintenance organization, with the pilot also participating to some extent. The aircraft was examined, and data logs from the autopilot system were saved for further analysis.

On 17 December 2024, the SHK notified the relevant parties and sent out notifications.

The SHK initially contacted Garmin Europe to obtain information and, after the NTSB (National Transportation Safety Board) had been appointed as an accredited representative, was able to request additional information and facts about the autopilot system from the manufacturer.

The SHK has conducted three separate examinations of the aircraft and the autopilot system. The investigations have included technical inspections, functional tests of the system, and other tests.

A reference flight was conducted with an aircraft of the same type, equipped with the same autopilot system (GFC-500).

After the incident, interviews and communication with the involved parties have taken place on several occasions.

On 29 August 2025, the pitch trim servo was replaced with a new servo provided by the manufacturer. The physical replacement was carried out by the maintenance organization, while an authorized Garmin dealer installed the necessary software. After this replacement, the autopilot was reactivated and has since functioned normally.

On 16 October 2025, the manufacturer performed tests on the previous pitch trim servo. A report on the test results was received by the SHK on 5 November 2025. Neither the SHK nor the NTSB were allowed to participate in these tests. According to the manufacturer, the test results were normal and without remark.

2. Timeline

In order to fully determine the sequence of events and the causes of the incident, certain facts are still missing. With the information currently available, it is not possible to establish with certainty whether the event was caused by factors related to the autopilot system, the maintenance action performed on the aircraft, the pilot's actions, aircraft-specific factors, or a combination of these. There are several possible scenarios that may have occurred, but without sufficient knowledge of the design and function, as well as other detailed information from the manufacturer of the autopilot system, the causal sequence cannot be fully determined. During the investigation, SHK has sought information from the manufacturer, but some information is still lacking. The autopilot system also contains log files that are locked and to which SHK has not yet been granted access. However, the manufacturer has stated that they will respond to the questions that are crucial for understanding the system and interpreting the available information.

SHK is therefore continuing its work with some additional fact-finding and further analysis to clarify the causes of the incident.

The final report is expected to be published in 2026.

On behalf of the Swedish Accident Investigation Authority

Johan Albihn Mats Trense