

## Synopsis

In the course of landing on runway 30 of Győr-Pér airport, the pilot of a C-172RG light aircraft failed to extend the landing gear due to human error and landed gear up on the runway with two passengers on board. No one was injured in the occurrence. The aircraft sustained significant damage and the runway surface was slightly damaged.

The Investigating Committee of Transportation Safety Bureau (hereafter referred to as 'IC') found no grounds to issue a safety recommendation.



Figure 1 – The occurrence aircraft on the runway

## Factual Information

|  |                       |   |                    |                     |                    |
|--|-----------------------|---|--------------------|---------------------|--------------------|
| <b>Occurrence category</b>                   |                       | Serious incident  |                    |                     |                    |
| <b>Date of occurrence</b>                    |                       | 25 June 2021, 17:30LT <sup>1</sup>  |                    |                     |                    |
| <b>Location of occurrence</b>                |                       | Győr-Pér Airport (LHPR)   |                    |                     |                    |
| <b>Aircraft make, model and registration</b> |                       | Cessna 172 RG, HA-PAK   |                    |                     |                    |
| <b>Year of manufacture, serial number</b>    |                       | 1980, 172RG0829   |                    |                     |                    |
| <b>Type and number of engine(s)</b>          |                       | Single, Lycoming O-360  |                    |                     |                    |
| <b>Purpose of flight</b>                     |                       | Non-commercial (private, cross-country)   |                    |                     |                    |
| <b>People</b>                                | <b>Number Injured</b> | <b>Crew</b>   |                    | <b>Passenger</b>    |                    |
|  |                       | 1   |                    | 2                   |                    |
|  |                       | None  |                    | None                |                    |
| <b>Damage to property</b>                    |                       | <b>Aircraft:</b> significantly damaged<br><b>Aerodrome:</b> The rotating propeller blades caused minor pitting damage in the runway surface<br><b>3<sup>rd</sup> party:</b> no damage |                    |                     |                    |
| <b>License and ratings of PIC</b>            |                       | CPL(A) <sup>2</sup> , SEP(Land) <sup>3</sup> , NVFR <sup>4</sup> , TMG <sup>5</sup> , LPE Level 4 <sup>6</sup>  |                    |                     |                    |
| <b>Age and citizenship of PIC</b>            |                       | 47, Hungarian   |                    |                     |                    |
| <b>Flight experience of PIC</b>              | <b>Flight hours</b>   | <b>Total</b>  | <b>On the type</b> | <b>Last 90 days</b> | <b>Last 7 days</b> |
|  |                       | 1043  | N/A                | 31:45               | 06:26              |
| <b>Sources of information</b>                |                       | Event report; accident site investigation; pilot and AFIS <sup>7</sup> personnel accounts, radar and weather data.  |                    |                     |                    |

<sup>1</sup> Local Time

<sup>2</sup> Commercial Pilot Licence (Aeroplane)

<sup>3</sup> Single Engine Piston (Land)

<sup>4</sup> Night Visual Flight Rules rating

<sup>5</sup> Touring Motor Glider

<sup>6</sup> Language Proficiency, Operative Level

<sup>7</sup> Aerodrome Flight Information Service

## Flight History

The pilot concerned flew the aircraft from Bőny airfield to Győr-Pér airport in the early afternoon in order to take on passengers in Győr for a sightseeing flight. In Bőny he did the walkaround checks in the morning, washed and refuelled the aircraft up to 140 litres. He landed in Győr at 3:00 PM and 30 minutes later he took off again for a 35-minute sightseeing flight with two passengers. In about forty-five minutes after landing he took two different passengers for another, 40-minute flight. On return he commenced a straight-in visual approach from the direction of the municipality of Csesznek, from 2500 feet altitude to runway 30. He extended the flaps to 30 degrees, but forgot the landing gear and landed on the tarmac with the gear up. Once the aircraft came to a halt in a 76-metre skid, the pilot initiated flap retraction, which was cut short by loss of power when the pilot turned the master switch off before leaving the aircraft along with the passengers.



Figure 2  
Runway damage

## Occurrence Site and Aircraft Wreckage

The aluminium alloy propeller blades caused minor pitting damage to the runway surface, which the airport personnel subsequently repaired during the airport closure until the next morning hours.

Both propeller blades were damaged beyond repair. The underside antennas and the fuselage skin were also damaged in the skid.

## Pilot

The pilot was properly licenced, rated and experienced to operate the occurrence aircraft model. He claimed to have been rested and fit to fly and gave no account of adverse circumstances before the flight. He was experienced in flying retractable gear aircraft. During the period preceding the occurrence he alternately flew his own, fixed-gear aircraft and the occurrence aircraft, which is a retractable gear model. As he recalls, he has never used printed checklists and has always relied on drills and experience concerning check items in flying the aircraft. He revealed that in his personal routine flying retractable gear aircraft, he associated turning base with a cue to remind him to extend the gears. He also mentioned that he was keeping his passengers informed, talking them through what was happening throughout the entire flight, including the approach.

## Aircraft

The aircraft was airworthy, properly maintained and suitable for the planned flight both from technical and legal aspects, with all mandatory equipment and valid documentation on board. Loading and centre-of-gravity limits were observed and on-board fuel was sufficient for the planned flight.

## Malfunctioning Equipment

There was no information of any malfunction in connection with the occurrence either in aircraft equipment or airport facilities.

## Weather and Visibility

The occurrence took place at daytime, in good visibility; wind was moderate (28 km/h), north-westerly, with a slight right crosswind component for landing. The sun was still relatively high behind the aircraft with no significant cloud coverage. The following aerodrome meteorological reports were valid between 16:45 and 17:45.

LHPR 251445Z AUTO 33013KT 290V360 CAVOK 29/15 Q1014 NOSIG

LHPR 251515Z AUTO 33015KT CAVOK 28/15 Q1013 NOSIG

LHPR 251545Z AUTO 32016KT CAVOK 27/14 Q1014 NOSIG

The squall line passing from the northwest reached the airport at 21:45.

## Aerodrome

The occurrence landing at Győr-Pér International Airport was on the larger, 2030 by 30 m, 12/30 asphalt surface runway equipped with ILS<sup>8</sup> and PAPI<sup>9</sup>. Aerodrome features had no effect on the occurrence.

## Flight Data Recorders

As the use of flight data recorders was not mandatory for the flight involved in the occurrence; the aircraft was not equipped with such equipment.

## Analysis

Transportation, whether pedestrian traffic or vehicle transport, by default implies certain exposure to hazards for everyone involved. As this is particularly valid for air transport, aircraft pilots need to be trained to manage these hazards. To optimize safety, the use of printed checklists is common practice for pilots in commercial aviation, as well as in general aviation involving more complex aircraft. This practice ensures that no item in the to-do list gets omitted or overlooked, thus reducing the chance of human errors, which are otherwise prone to occur with the increase of aircraft and/or flight task complexity. There are no universally established standards to draw the line in aircraft complexity where flight safety cannot be guaranteed without the use of printed checklists. According to general flight training practices, flight academies and ATO's in commercial pilot training train their student pilots to use printed checklists right from the start, irrespective of aircraft complexity. By contrast, in non-commercial pilot training the use of printed checklists are often substituted by learned drills, quite justified by the simplicity of entry-level aircraft used in such training and the limited amount of tasks associated with general aviation. This practice works quite well for GA pilots up to the point where they start flying several different models simultaneously, often of different levels of complexity. At this point the risk of human errors increases significantly. Combined with complex situations such as pilot distraction, adverse weather, dense traffic or a system malfunction, the risk of human errors multiplies. This poses an increased safety hazard, especially in a critical phase of flight where high levels of pilot concentration are essential.

Current flight training practice is yet to provide answers in addressing human factor issues to reduce these hazards, either by making the use of written checklists mandatory, regardless of aircraft model and complexity, or introducing other measures. GA pilots therefore, especially those that simultaneously fly models of different complexity without using printed checklists, need to maintain a much higher level of awareness concerning the elevated safety risks associated with the difference of drills required in different aircraft. Before-landing drills represent a particularly sensitive area, because the most widespread models used in entry level general aviation are often fixed gear, fixed propeller aircraft with a really basic before-landing to-do list of just a few items, where the use of a written checklist, rather than doing the drill, does not seem justified. More often than not, landing in these models does not require pilots to manage fuel tanks and associated fuel pumps, landing gear or propeller pitch – in most cases not even fuel mixture, as low level flights are every so often done with the mixture in 'full rich'. Pilots just set the flaps for landing and adjust the throttle – even forgetting the carb heat does not necessarily invoke dire consequences. In the formative period of flight training it is rather easy for novice pilots to get accustomed to not having to use a written landing checklist. In fact, current legislation – and most of the time therefore, aircraft operators – do not mandate the use of printed checklists. If a pilot, when starting to fly a more complex aircraft, decides to continue using drills, rather than written checklists, will deliberately give up important protective safety functions in the way of a potential incident. Any additional complications during landing, as mentioned before, will further erode safety.

Each of these factors discussed so far was present in the occurrence at hand. The pilot used drills instead of written checklists while simultaneously flying various models of different complexity and he created a distraction for himself by continuously entertaining his passengers during a critical flight phase. In addition, he came in straight, thus missing the cue to extend the gears, which he in his mental model – rather controversially – had associated with turning final.

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<sup>8</sup> *Instrument Landing System: a radio wave ground based transmitter and on-board receiver guidance system to assist pilots with landing by enabling safe approach even in reduced visibility conditions.*


<sup>9</sup> *Precision Approach Path Indicator: a lighting system that visually informs the pilot on the vertical position (higher, lower or correct) of their aircraft relative to the correct final approach path in adequate visibility conditions.*

## Conclusions

As ever so often the case, several contributing factors influenced the course of occurrence events this time as well. The pilot was simultaneously flying, most of the time, fixed gear and occasionally, retractable gear aircraft. The hazards this kind of operation involves (as discussed above) could have considerably been reduced by using a printed checklist, but the pilot had relinquished this benefit to mitigate risks associated with frequent changing of aircraft type. For the sake of fairness, it needs to be emphasized that legislation in effect at the time did not mandate the use of written checklists. However, choosing not to benefit from this advantage, the pilot had considerably restricted his situational awareness, which, on account of a straight-in approach, was further reduced by missing his own cue to extend the gears. Again, running a checklist would have saved him the adverse effects of this controversial routine.

Yet another contributing factor was the pilot's unnecessary and unbecoming entertaining of his passengers in a critical flight phase, which broke his concentration in his pilot duties so he forgot the gears, encumbered his attention and saturated his mental capacity to the point of effectively preventing him from recognizing the missed gear extension.

As the cause of incident was identified as a chain of human errors, the IC found no grounds to issue a safety recommendation.

  
József Mezei  
Investigator-in-Charge

  
Akos Hanczár  
IC Member

The sole objective of a safety investigation is to reveal the causes and circumstances of aviation accidents or incidents and to initiate the necessary safety measures and make recommendations in order to prevent similar cases in the future. It is not the purpose of the investigation to apportion blame or liability.

### General information

**This investigation is being carried out by Transportation Safety Bureau on the basis of the following legislation.**

- Regulation (EU) No 996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation and repealing Directive 94/56/EC,
- Act XCVII of 1995 on aviation,
- Annex 13 identified in the Appendix of Act XLVI. of 2007 on the declaration of the annexes to the Convention on International Civil Aviation signed in Chicago on 7<sup>th</sup> December 1944,
- Act CLXXXIV of 2005 on the safety investigation of aviation, railway and marine accidents and incidents (hereinafter referred to as Kbvt.),
- NFM <sup>10</sup> Regulation 70/2015 (XII.1) on safety investigation of aviation accidents and incidents, as well as on detailed investigation for operators,

In absence of other relevant regulation in the Kbvt., in accordance with Act CL of 2016 on General Public Administration Procedures.

The competence of the Transportation Safety Bureau of Hungary is based on Government Regulation № 230/2016. (VII.29.) on the assignment of a transportation safety body and on the dissolution of Transportation Safety Bureau with legal succession.

#### **Pursuant to the aforesaid legislation,**

- Transportation Safety Bureau of Hungary shall investigate aviation accidents and serious incidents.
- Transportation Safety Bureau of Hungary may investigate aviation and incidents which – in its judgement – could have led to accidents of more severe consequences in different circumstances.
- Transportation Safety Bureau of Hungary is independent of any person or entity which may have interests conflicting with the tasks of the investigating body.
- In addition to the aforementioned legislation, the ICAO Doc 9756 and the ICAO DOC 6920 Manual of Aircraft Accident Investigation are also applicable.
- This Report shall not be binding, nor shall an appeal be lodged against it.
- The original of this report was written in the Hungarian language.

Members of the IC have been in no conflict of interest. The persons participating in the safety investigation did not act as experts in other procedures concerning the same case and shall not do so in the future.

The IC shall retain all data having come to their knowledge in the course of the safety investigation. Furthermore, the IC shall not be obliged to make the data – regarding which the owner of the data could have refused its disclosure pursuant to the relevant act – available for other authorities.

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Transportation Safety Bureau, Ministry for Innovation and Technology  
2/A. Kőér str. Budapest H-1103, Hungary  
[www.kbsz.hu](http://www.kbsz.hu)  
kbszrepules@itm.gov.hu

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#### **Translation**

The present document is a translation from Hungarian. Although efforts have been made to provide a translation as accurate as possible, discrepancies may occur. In such eventuality, the Hungarian version shall prevail.