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The Commission does not apportion blame or liability. The investigation is independent and separate from any judicial and administrative proceedings.

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FINAL REPORT

of the

State Commission on Aircraft Accidents Investigation

of August 20, 2024

on the investigation of a **serious incident**

2023-0003

OCCURRENCE NUMBER

Tecnam P2008-JC, SP-WBA

8 February, 2023; Aerodrome Rzeszów – Jasionka (EPRZ)

LOC-I: Loss of control – in flight

ARC: Abnormal runway contact

RE: Runway excursion

The final report was issued on the basis of information known to the Commission on the day it was issued.

The final report presents the circumstances of the aviation occurrence, its causes and/or contributing factors, and safety recommendations, if any have been issued.



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1. The course of the occurrence

On 8 February 8, 2023, at 10:09¹, a pilot – holder of PPL(A) took off from Rzeszow-Jasionka aerodrome (EPRZ) in a Tecnam P2008-JC airplane, SP-WBA registration marks (hereinafter referred to as "Tecnam"). The route flight proceeded normally. Upon returning from the route, the pilot approached the CTR EPRZ from the west.

At the time, air traffic at the EPRZ aerodrome was operating under both IFR² and VFR³ regulations experiencing dense traffic. Airplanes in VFR traffic were expected to approach the aerodrome at holding points defined by the ATC⁴ of the EPRZ TWR⁵. At 11:35, the pilot of the Tecnam was instructed by the ATC to wait in the vicinity of WHISKEY point, at an altitude of 2000 ft AMSL⁶. The pilot reached WHISKEY point at 11:39. At 11:45, the ATC cleared the airplane to move to the YANKEE point, where the pilot was instructed to continue holding at 2000 ft AMSL. At 11:51, the pilot reported inbound to YANKEE point and his intention to perform a RWY⁷ 09 touch & go, followed by a traffic pattern and full stop-landing. At 12:06, the ATC cleared the Tecnam airplane to join right-hand traffic pattern to RWY 09. At 12:08, the pilot reported joining the traffic pattern in the third turn and his intention to make a full-stop landing. The ATC provided the pilot with the information about the wind on the runway axis, from a 090° direction at a speed of 10 kt, and cleared the airplane for landing. When configuring the aircraft for landing, the pilot extended flaps to the TAKEOFF position, and on the final to RWY 09 he changed their setting to the LANDING position.

In the opinion of Tecnam pilot, the approach was executed above the descent path to overshoot landing in order to reduce taxiing time. Aware of another airplane close behind, the pilot intended to vacate RWY as quickly as possible. However, the flare was executed too high and at too low a speed and the pilot did not correct these errors. At 12:12, the aircraft stalled, tilting to the left and touched the RWY with wingtip, resulting in a veer off the RWY about 45° to the left. After the touchdown, the pilot increased the engine rpm.

The airplane veered off into the grass in the vicinity of RWY intersection with TWY BRAVO, and then, for a distance of about 700 m, moved along a gentle curve towards the east. Finally, it rejoined the RWY in the area of the intersection with TWY CHARLIE 1.

¹ The times in the report are given in LMT as 24-hour time. On the day of the occurrence LMT=UTC+1 h.

² Instrument flight rules.

³ Visual flight rules.

⁴ Air Traffic Controller.

⁵ Tower.

⁶ Above mean sea level.

⁷ Runway.

The landing was observed by ATC who notified the ADO⁸ and RFFS⁹ immediately. At 12:12, RFFS forces and resources reported on TWY¹⁰ CHARLIE 1 before the RWY.



Fig. 1. Tecnam airplane aircraft before touching down on RWY 09 of EPRZ
[source: CCTV camera of Rzeszow-Jasionka aerodrome]

On the request of ATC, the pilot reported no findings on the aircraft and requested taxiing to the threshold of RWY 09. Since he vacated the RWY via TWY GOLF, he taxied to the apron in front of the operator's hangar, switching off the engine.

ATC shut down the RWY, also informing RFFS and ADO about the lack of casualties. ADO performed a RWY inspection, finding no damage to the infrastructure nor the presence of FOD¹¹. At 12:19 p.m., the ADO reported to the TWR to resume operations on the RWY. Then, the ADO visited the Tecnam's pilot. The pilot advised against paramedics' assistance. At 12:20, the ATC resumed operations on RWY 09. The RFFS left the maneuvering area.

The northernmost mark left by the affected aircraft was found about 100 m from the RWY centerline. In the vicinity of TWY BRAVO, the ADO identified two scratches on the RWY surface.

During EPRZ inactivity, 6 aircraft were in holding over the aerodrome.

⁸ Airport operations duty officer.

⁹ Rescue and firefighting service.

¹⁰ Taxiway.

¹¹ Foreign Object Debris.

2. Relevant information

2.1. Weather conditions

VMC¹² conditions prevailed in the vicinity of EPRZ aerodrome.

While landing, the 10 kt East wind was blowing, along RWY 09 at. Both direction and wind speed were within the limits for Tecnam, so the weather conditions should be considered favorable for the safe operation for this aircraft type. In particular, a weak headwind would reduce the touchdown speed and shorten its roll.

The positioning of the RWY 09 and relative lack of obstacles disrupting the airflow in the vicinity of the maneuvering area should be considered as an advantage for demanding landings.

2.2. Air traffic control

The ATC on EPRZ TWR provided an aerodrome and approach control service under mixed IFR/VFR traffic. The traffic should be considered dense but not overly complicated.

Upon noticing that the Tecnam veered off the RWY, the TWR initiated a rescue operation.

During the landing, the Tecnam stayed off the RWY for several seconds. Then the aircraft returned to RWY 09 and taxied to its threshold. The airplane vacated RWY 09 and taxied via TWY GOLF to the apron. ATC was observing this dynamically developing situation. After the aircraft returned to the RWY, ATC asked the pilot if everything was OK with the airplane, and then approved taxiing to the threshold of RWY 09. This situation is to be considered unusual. Once an airplane veers off the RWY, it generally comes to rest due to the possibility of damage, ground entrapment or safety requirements related to FOD left on the RWY.

2.3. Crew qualifications

The Tecnam pilot was a holder of PPL(A). The pilot declared his flying experience of 120 h, exclusively on the type of airplane in which the occurrence happened. The incident flight was performed when the involved pilot had nearly 3-month break in flying. This should be considered as significant due to the reduced pilot's experience and caused regression in piloting skills as well as in landing. Planning a landing under favorable meteorological and traffic conditions at a controlled aerodrome should not cause any difficulties. Keeping the airplane on final and then on the runway during the roll-out is not a demanding activity. No aircraft malfunctions have been excluded. Also, the geometry of RWY at EPRZ - 3200 x 45 m seems to be favorable for any light aircraft. Poor braking action (slippery RWY) has also been excluded. The asphalt-concrete pavement was clear of snow and ice, and braking coefficients were good.

¹² Visual Meteorological Conditions.

2.4. Landing

The loss of lateral control during flare, combined with a speed decreasing to the stall (V_{so}^{13}), resulted in directional balance disturbance. This pilot fault was due to improper selection (or lack of selection) of a specific touchdown point, as well as pilot's intention to flare up to RWY and TWY cross. It is likely that the pilot was focused on observing the forward-shifted touchdown zone and did not pay attention to the high flare above the RWY and dropping speed. The pilot explained the flaps were fully released. In such a case, the speed drops even faster and the aircraft performance is significantly reduced. To maintain lateral balance, more intensive aileron control and high pilot attention are required. Flying with full flaps at minimum speed, just above the runway is to be considered as risky. Every time, it should end with a touchdown in around near minimum speed. In such a case, with the engine throttled down to the minimum, the roll-out is short, particularly when affected by a headwind.

A rapid increase of engine power at stall speed on full flaps could most often result in a progressive lateral imbalance (a torque is generated from the propeller tending to roll the airplane). Large angles of attack and full tilted flaps generate significant aerodynamic drag. However, the lift does not increase as quickly - the airplane does not accelerate. This is also what the pilot experienced, moving at high speed on frozen grass, additionally causing a braking effect on the landing gear (due to rolling drag).

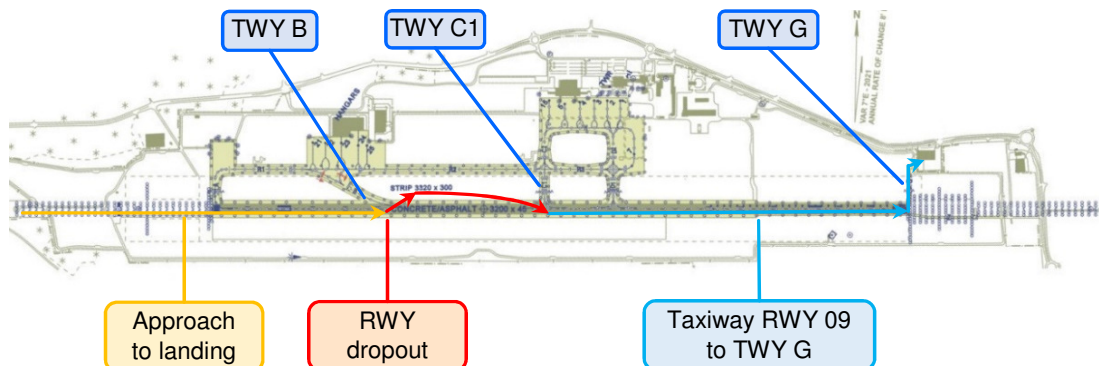


Fig. 2. Sketch of the landing of the Tecnam airplane

The results of the analysis of the occurrence indicate that the lateral and directional balance was lost while touching down. At the same time, it was determined that the roll or side-slip could not be the cause of the loss of direction after touchdown.

2.5. Aircraft

It was found that neither the aircraft nor its components were not related to the occurrence. Prior to the incident, the aircraft was operational and landing it in low headwind conditions and maintaining it on a wide runway did not require extraordinary skills.

¹³ Stall speed of the airplane on flaps released.

During the inspection of the Tecnam after landing, operator representatives found some damage (including structural damage) to the rear part of the fuselage, horizontal stabilizer and left wing. The aircraft was qualified for further detailed structural inspection.

2.6. Rescue and firefighting service response

Upon receipt of the notification from the TWR, RFFS vehicles departed for the waiting area. As the aircraft quickly returned to the RWY on its own, the RFFS followed it, remaining on standby for further action. Since the pilot reported no troubles and later confirmed that he did not need any assistance, the RFFS vehicles turned back to the Watchtower.

2.7. Survivability aspects

Any aircraft veer off the RWY involves the risk of an accident and potential injuries to those on board. Hooking the wingtip on the RWY surface, as occurred, or on a pile of snow along the RWY, could cause a ground loop or even an aircraft turnover. There are the paved strips on both edges of RWY 09/27 of the EPRZ aerodrome. On the day of the occurrence, the strips were frozen. A light sport aeroplane such as the Tecnam P2008-JC exerted negligibly low load on the ground, also because it traveled at a speed that allowed to generate significant lift, which relieved the load on the landing gear. Due to rolling with relatively high speed, the mentioned effect was even less due to the aerodynamic force generated by the aircraft, which relieved the landing gear. However, due to the small diameter of the landing wheels, the danger was posed by the above-mentioned snow piles, located outside the RWY edges, followed by clumps of frozen grass covered with snow. In special cases, e.g., after the landing gear was damaged as a result of hitting a RWY edge lamp (no lamp was damaged) or the wheel was blocked by a snow pile or a clump of grass, an uncontrolled rotation of the airplane (circling) or even turnover could have occurred.

After dragging of the wing and tail over RWY surface, hitting a snow pile, and fast taxiing across a rough grassy part of the maneuvering area, the pilot did not bring the aircraft to halt in order to check its condition.

According to the Commission, the pilot may have been under the influence of shock caused by the unexpected improper landing course. The pilot assured ATC that everything was fine with the airplane, despite the fact that he should have expected damage, which indeed occurred. The damage must be considered serious, taking the airplane out of service pending comprehensive diagnostics and repairs.

It should have been assumed that contact with the paved surface of the RWY and the grassy part of the airport could have caused damage to the airplane.

The proper reaction of the pilot should have been to stop the airplane off the RWY and shut down the engine. Such an action would have reduced potential consequences, such as progressive risks to the pilot and the airplane, including the risk of turnover, fire, further structural damage, and contamination of the RWY with airplane parts.

2.8. Additional information

The draft Final Report was sent for consultation to EASA¹⁴, SIA¹⁵ Austria and the engine manufacturer, SIA Italy and the aircraft manufacturer, PANSA¹⁶, the manager of Rzeszów-Jasionka Airport, the owner of the aircraft.

No comments were made on the draft.

3. Conclusions

3.1. Findings

- 1) No evidence was found that the pilot's behavior was influenced by incapacitation or physiological factors.
- 2) No malfunction or failure of the airplane was found to contribute to the occurrence.
- 3) All damage to the airplane can be attributed to impact forces.
- 4) The course of the occurrence indicates continuous operation of the airplane engine.
- 5) The pilot had the appropriate ratings and medical certificate.
- 6) The pilot maintained normal radio communication with the TWR.
- 7) The pilot had not been flying for more than three months, which given his overall limited experience should be considered as an interruption affecting a regression in his piloting skills and related flight planning elements.
- 8) The pilot failed to maintain lateral balance of the airplane during touchdown. The result of the loss of lateral balance was a loss of directional balance and an uncontrolled descent of the airplane from the RWY.
- 9) Weather conditions were favorable for a proper and safe landing.
- 10) The pilot's continued movement of the airplane at high speed off the RWY could have had serious consequences in the form of progressive damage to the airplane and potential injury to the pilot.
- 11) The workload of air traffic controllers was assessed as high but with normal complexity.
- 12) The TWR promptly and correctly initiated the rescue operation.
- 13) The RFFS proceeded to the designated positions, but the pilot did not require assistance.

3.2. Causes and/or contributing factors

- 1) Airplane touchdown under conditions of loss of lateral and directional balance.
- 2) A significant break of three months without flying.

¹⁴ European Union Aviation Safety Agency.

¹⁵ Safety Investigation Authority.

¹⁶ Polish Air Navigation Agency.