LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10610						
Classification	Accident	**Date**	26 October 2025		**Time**	0920Z	
Type of Operation	Training (Part 141)						
Location							
Place of Departure	Rand Aerodrome (FAGM), Gauteng Province	Place of Intended Landing	Rand Aerodrome (FAGM), Gauteng Province				
Place of Occurrence	Hoërskool Alberton, Gauteng Province						
GPS Co-ordinates	Latitude	26°16'01.49" S	Longitude	28°07'55.42" E	Elevation	5 184 ft	
Aircraft Information							
Registration	ZU-BJX						
Make; Model; S/N	Tecnam; P92 Echo (Serial Number: 247)						
Damage to Aircraft	Destroyed	Total Aircraft Hours	491				
Pilot-in-command							
Licence Type	Commercial Pilot Licence (CPL)	Gender	Male	Age	30		
Licence Valid	Yes	Total Hours	1 250	Total Hours on Type	600		
Total Hours 30 Days	38.6	Total Flying on Type Past 90 Days	41.6				
People On-board	2+0	**Injuries**	0	**Fatalities**	0	**Other (on the ground)**	0

What Happened

On Sunday, 26 October 2025, a flight instructor (FI) and a student pilot (SP) on-board a Tecnam P92 Echo aircraft registered ZU-BJX took off on a cross-country navigational training flight from Rand Aerodrome (FAGM) in Gauteng province with the intention to land back at the same aerodrome. A flight plan was filed with Johannesburg (JHB) briefing. The flight was conducted under visual meteorological conditions (VMC) by day and under the provisions of Part 141 of the Civil Aviation Regulations (CAR) 2011, as amended.

The FI stated that a pre-flight inspection of the aircraft was conducted with no anomalies noted. The aircraft was refuelled to capacity (70 litres) with Aviation Gasoline (Avgas) 100LL which equated to a 3.5-hour flight endurance. The planned routes specified on the flight plan included Vereeniging Aerodrome (FAVV), Potchefstroom Aerodrome (FAPS), Rustenburg Aerodrome (FARG), Carletonville Aerodrome (FACR) and back to FAGM. At approximately 0800Z, the aircraft took off from FAGM and flew to FAVV where the SP conducted an uneventful touch-and-go landing. Thereafter, they proceeded to Johannesburg (JHB) General Flying Area (GFA) before proceeding to FAPS and FARG. From FARG, the crew flew to FACR. The aircraft later returned to JHB GFA before routing back to FAGM. En route to FAGM at approximately 6 500 feet (ft) above ground level (AGL), the FI broadcasted on frequency 124.5-Megahertz (MHz) requesting a visual flight rules (VFR)

approach for Runway (RWY) 35. The air traffic control officer (ATCO) granted the request, and the aircraft joined the circuit pattern for RWY35. Whilst overhead Alberton residential area, the engine stopped. The FI took control of the aircraft and attempted to restart the engine several times but to no avail. He then scanned the area and spotted Hoërskool Alberton sports field. Thereafter, the FI glided the aircraft to the sports field to conduct a forced landing; the aircraft touched down in the middle of the sports field but could not bring the aircraft to a stop; consequently, it impacted the school's building (cafeteria) where it came to a stop about halfway through it. Third party damage was limited to the school building. The aircraft was destroyed during the accident sequence; no person was injured.

The accident occurred during daylight at Alberton Hoërskool at Global Positioning System (GPS) co-ordinates 26°16'01.49" South 28°07'55.42" East, at an elevation of approximately 5 184 feet (ft).

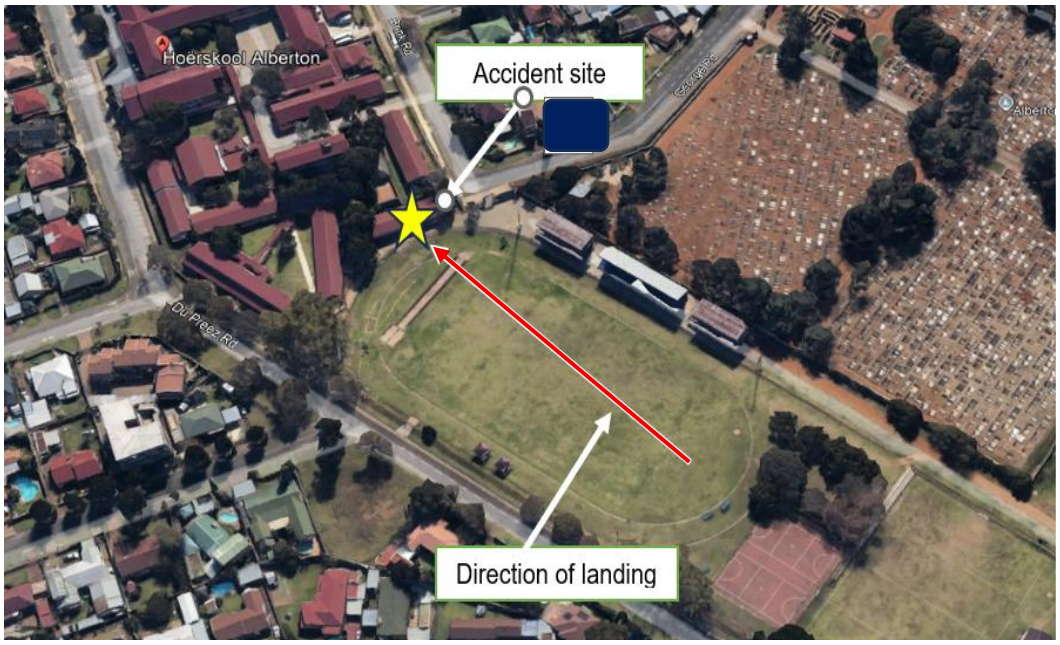

Figure 1: The accident site (yellow star) and the direction of landing (red arrow). (Source: Google Earth)

Figures 2 and 3: The images depict the damaged school cafeteria with the aircraft halfway through.

Aircraft Description (Source: Pilot's Operating Handbook [POH])

The Tecnam Echo P92 is an all-metal, high-wing, two-place, single-engine aircraft equipped with tricycle landing gear. The aircraft is powered by a four stroke, horizontally opposed spark ignition Jabiru 2200 engine driving a GT wooden propeller. The aircraft fuel system is equipped with two aluminium fuel tanks integrated within the wing leading edge and accessible for inspection through dedicated covers. Capacity of individual tank is 35 litres (9.2 gallons), and total usable fuel is 66.8 litres (17.6 gal); 3.2 litres is unusable. Each fuel tank is equipped with a cabin installed shutoff valve. A strainer cup with a drainage valve (Gascolator) is located on the engine side of the firewall. Fuel level indicators for each tank are located on instrument panel. Fuel feed is through an engine-driven mechanical pump. All fuel lines located in the engine compartment are protected with fireproof braiding to avoid possible fire.

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Post-accident Investigation

The investigator-in-charge (IIC) arrived at the accident site on Sunday afternoon, 26 October 2025. There were neither traces of fuel leakage under the wings nor smell of gasoline fumes at the site. Both fuel caps were found secured with their retention springs in place and in locked position. Upon removal of the fuel caps to inspect fuel visually, it was confirmed that there was no fuel in either tank as they were dry.

The gascolator was checked and did not contain fuel. A wooden dip stick was inserted in each fuel tank, and it came out dry. Fuel was drained from the underwing fuel drain points and a total amount of 3 litres of unusable fuel was drawn. The aircraft was recovered to the aircraft maintenance organisation (AMO) facility at FAGM for further examination. The coolant water pump was examined for condition, and no anomalies were observed. The coolant lines were assessed for condition; they were found serviceable. The oil system was examined and no anomalies were noted. The oil tank was checked and found to be in good condition. The oil tank cap was in place, and the tank had adequate oil. The oil pump was examined for condition, and no anomalies were noted. The oil lines were examined and were in good condition. No leaks were found on the oil supply lines. The induction system was assessed and nothing abnormal was noted. The ignition system was also examined, and it was in good condition. All eight spark plugs remained intact in their cylinders and were undamaged. The engine was placed on a test bench for functional evaluation; it was started without difficulties. Power was incraesed in stages and it met all the parameters as outlined in the aircraft maintenance manual (AMM).

Fuel Calculation and Endurance

The investigation revealed that the aircraft took off with a total of 70 litres of fuel in the tanks, which the crew thought would give them an endurance of 3 hours and 30 minutes (3.5 hours) as per the flight plan. According to the Pilot's Operating Handbook (POH), 66.8 litres of fuel was usable and 3.2 litres was unusable on the aircraft type. Based on the flight duration of 3 hours and 30 minutes at a cruise power setting of 75% and fuel consumption rate of 17 litres per hour, the total amount of fuel used during the navigational flight was estimated to be 59.5 litres, including 3 litres (estimated) of fuel that was burned during the touch-and-go landing at FAVV. After the accident, about 3 litres of unusable fuel was drained. Approximately 4.5 litres of fuel could not be reconciled. According to available information, the aircraft, before departure from FAGM, had remained on the ground for approximately 10 minutes with the engine running; it is possible that the unreconciled fuel was burned during this period. The investigation determined that the engine stopped during its return flight to FAGM due to fuel exhaustion.

The FI did not comply with the provisions of Part 91, Subpart 7, 91.07.12 of the CAR 2011, as amended.

Fuel Supply

(Source: Part 91.07.12)

(1) The pilot shall not commence a flight unless he or she is satisfied that the aircraft carries at least the planned amount of fuel to complete the flight safely, taking into account operating and meteorological conditions and the expected delays.

(2) The PIC shall ensure that the amount of usable fuel remaining in flight is not less than the fuel required to proceed to an aerodrome or, in the case of a helicopter, a suitable landing place, where a safe landing can be made.

(3) If the usable fuel on board the aircraft is less than the final reserve fuel, the PIC of such aircraft, shall –

(a) in the case of an aeroplane, declare an emergency; or

(b) in the case of a helicopter, land as soon as possible.

(4) The method of calculating the amount of fuel to be carried for each flight shall be as prescribed in Document SA-CATS 91.

Findings

Flight Instructor (FI)

1. The FI had a Commercial Pilot Licence (CPL) that was initially issued on 15 May 2022. His latest licence validation was conducted on 29 August 2025 with an expiry date of 31 August 2026. The aircraft type was endorsed on the FI's licence.

2. The FI had a Class I aviation medical certificate that was issued on 27 May 2025 with an expiry date of 31 May 2026.

Student Pilot (SP)

3. The SP had a Student Pilot Licence (SPL) that was initially issued on 2 April 2025 with an expiry date of 1 April 2026. The aircraft type was endorsed on the SP's licence.

4. The SP had a Class 4 aviation medical certificate that was issued on 4 March 2024 with an expiry date of 31 January 2026.

5. The pilot had a total of 106.3 flight hours on the aircraft type.

6. The crew did not comply with the provisions of Part 91.07.12 of the CAR 2011, as amended.

Aircraft

7. The aircraft's Certificate of Registration (C of R) was issued to the current owner on 12 September 2019.

8. The Authority-to-Fly (ATF) Certificate was initially issued on 13 September 2019. The latest ATF was issued on 29 September 2025 with an expiry date of 30 September 2026.

9. The last annual inspection of the aircraft was certified on 4 September 2025 at 4 291 total airframe hours. At the time of the accident, the aircraft had a total of 4 296 airframe hours. The aircraft was flown a further 5 hours since the said inspection.

10. The approved training organisation (ATO) was issued an ATO Certificate on 29 April 2025 with an expiry date of 31 March 2026. The aircraft was listed on the ATO's operations specification certificate.

11. A review of the flight folio and maintenance documentation confirmed that the aircraft was certified, equipped and maintained in accordance with the approved procedures. No outstanding defects, anomalies or flight control issues were recorded prior to the accident flight, and the aircraft was considered airworthy.

12. The sports field measured approximately 120 metres, which was insufficient length for the Tecnam P92 Echo aircraft to land as it needed approximately 300 metres.

Probable Cause

The engine stopped en route to FAGM due to fuel exhaustion which led to an unsuccessful forced landing on a school's sports field in Alberton.

Contributing Factors

- Fuel mismanagement.
- Inadequate pre-flight planning.

Safety Action(s)

Accurate fuel management is a critical aspect of flight operations, and it is important to utilise all available means to gain the highest assurance that fuel quantity measurement is accurate. It is essential that a reliable quantity cross-check is adopted, utilising at least two independent methods and a conservative approach. Pilots should also understand the functionality of the low-fuel warning system on their aircraft and treat any warning annunciations as being accurate unless there is overwhelming evidence otherwise.

Safety Message and/or Safety Recommendation/s

None.

About this Report

The decision to conduct a limited investigation is based on factors including whether the cause is known and the evidence supporting the cause is clear, the level of safety benefit likely to be obtained from an investigation and that will determine the scope of an investigation. For this occurrence, a limited investigation has been conducted, and the Accident and Incident Investigations Division (AIID) has relied on the information submitted by the affected person/s and organisation/s to compile this limited report. The report has been compiled using information supplied in the initial notification, as well as from follow-up desk top enquiries to bring awareness of potential safety issues to the industry in respect of this occurrence, as well as possible safety action/s that the industry might want to consider in preventing a recurrence of a similar occurrence.

All times given in this report are Co-ordinated Universal Time (UTC) and will be denoted by (Z). South African Standard Time is UTC plus 2 hours.
Purpose
In terms of Regulation 12.03.1 of the Civil Aviation Regulations (CAR) 2011 and ICAO Annex 13, this report was compiled in the interest of the promotion of aviation safety and the reduction of the risk of aviation accidents or incidents and not to apportion blame or liability.
Disclaimer
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This report is issued by:

Accident and Incident Investigations Division
South African Civil Aviation Authority
Republic of South Africa