AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:		CA18/2/3/10372	
Aircraft Registration	**ZU-ITA**	**Date of Accident**	5 October 2023			**Time of Accident**	1500Z
Type of Aircraft	Titan Tornado S			**Type of Operation**		Private (Part 94)	
Pilot-in-command Licence Type	National Pilot Licence (NPL)			**Age**	63	Licence Valid	Yes
Pilot-in-command Flying Experience		**Total Flying Hours**		1 882.5		**Hours on Type**	48.7

Last Point of Departure	Ceres Airfield (FACE), Western Cape Province
Next Point of Intended Landing	New Tempe Aerodrome (FATP), Bloemfontein, Free State Province
Damage to Aircraft	Destroyed

Location of the accident site with reference to easily defined geographical points (GPS readings if possible)

Bushy terrain near a farm located west of Ceres Airfield at Global Positioning System (GPS) co-ordinates determined to be 33°19'14" South 19°25'4" East, at an elevation of 1 480 feet (ft)

Meteorological Information	Wind direction: 180º; Wind speed: 08kts; Temperature: 21ºC; Dew Point: 16ºC; Cloud Cover: Scattered (SCT); Cloud Base: 4 000; Visibility: CAVOK; QNH: 1015hPa

Number of People On-board	1+0	**Number of People Injured**	0	**Number of People Killed**	1	**Other (On Ground)**	0

Synopsis

On Thursday afternoon, 5 October 2023, a pilot on-board a Titan Tornado S aircraft with registration ZU-ITA was conducting a private flight from Ceres Airfield (FACE) in the Western Cape province to New Tempe Aerodrome (FATP) in Bloemfontein, Free State province, when the accident occurred. The flight was conducted under visual meteorological conditions (VMC) and under the provisions of Part 94 of the Civil Aviation Regulations (CAR) 2011 as amended.

The eyewitness who works at Winterbach Farm stated that he observed the aircraft when it took off from Runway 27. During the climb at approximately 250 feet (ft) above ground level (AGL), the engine stopped. The pilot tried to restart the engine, but without success. Consequently, the aircraft was observed making a left turn but it lost height and crashed near Winterbach Farm, west of the airfield. The aircraft was destroyed on impact and the pilot was fatally injured.

Samples of Octane 95 Unleaded fuel were taken from the fuel tanks, fuel filter and one of the carburettors; it was found free of contaminants. The engine (Rotax 914UL bearing serial number 4417879) was recovered from the accident site and transported to the South African Civil Aviation Authority (SACAA) approved engine overhaul facility (Rotax agent) in Germiston, Gauteng province, for examination. The engine was found to have unapproved modifications, and the engineers were unable to conclusively determine the cause of the engine stoppage.

Probable Cause

During the climb shortly after take-off, the engine failed which prompted the pilot to return to the airfield. It is likely that during the left turn the pilot stalled the aircraft and lost control; the aircraft crashed near a farm. The cause of the engine failure could not be determined.

SRP Date	10 September 2024	Publication Date	12 September 2024

Occurrence Details

Reference Number	**:** CA18/2/3/10372
Occurrence Category	**:** Category 1
Type of Operation	**:** Private (Part 94)
Name of Operator	**:** Bristow
Aircraft Make and Model	**:** Titan Tornado S
Nationality	**:** South African
Registration	**:** ZU-ITA
Place	**:** Bushy type of terrain near Winterbach Farm, West of FACE
Date and Time	**:** 5 October 2023, 1500Z
Injuries	**:** Fatal
Damage	**:** Destroyed

Purpose of the Investigation

In terms of Regulation 12.03.1 of the Civil Aviation Regulations (CAR) 2011, 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.

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.

Investigation Process

The Accident and Incident Investigations Division (AIID) of the South African Civil Aviation Authority (SACAA) was notified of the occurrence on 5 October 2023 at 1530Z. The occurrence was classified as an accident according to the CAR 2011 Part 12 and International Civil Aviation Organisation (ICAO) STD Annex 13 definitions. The notification was sent to the State of Registry, Operator, Design and Manufacturer in accordance with CAR 2011 Part 12 and ICAO Annex 13 Chapter 4. Investigators were dispatched to the accident site.

Notes:

1. *Whenever the following words are mentioned in this report, they shall mean the following:*
   Accident — this investigated accident
   Aircraft — the Titan Tornado S involved in this accident
   Investigation — the investigation into the circumstances of this accident
   Pilot — the pilot involved in this accident
   Report — this accident report.

2. *Photos and figures used in this report were taken from different sources and may have been adjusted from the original for the sole purpose of improving clarity of the report. Modifications to images used in this report were limited to cropping, magnification, file compression; or enhancement of colour, brightness, contrast; or addition of text boxes, arrows, or lines.*

Disclaimer

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Abbreviation	Description
°	Degrees
°C	Degrees Celsius
AIID	Accident and Incident Investigations Division
AMO	Aircraft Maintenance Organisation
AMSL	Above Mean Sea Level
ATC	Air Traffic Control
ATF	Authority to Fly
CAA	Civil Aviation Authority
CARs	Civil Aviation Regulations
C of R	Certificate of Registration
CRS	Certificate of Release to Service
CVR	Cockpit Voice Recorder
E	East
EMS	Emergency Medical Services
FACE	Ceres Airfield
FATP	New Tempe Aerodrome
FDR	Flight Data Recorder
FL	Flight Level
FSTD	Flight Simulation Training Devices
ft	Feet
GPS	Global Positioning System
hPa	Hectopascal
I.A.W	In Accordance With
ICAO	International Civil Aviation Organisation
Kg	Kilogram
KM	Kilometre/s
kt	Knot/s
LBS	Pounds
m	Metre/s
METAR	Meteorological Routine Aerodrome Report
mi	Mile/s
NPL	National Pilot Licence
POH	Pilot Operating Handbook
QNH	Altitude Above Mean Sea Level
RPM	Revolutions per Minute
S	South
SACAA	South African Civil Aviation Authority
SAPS	South African Police Services
SAWS	South African Weather Service
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
UTC	Co-ordinated Universal Time
Z	Zulu (Term for Universal Co-ordinated Time - Zero Hours Greenwich)

1. FACTUAL INFORMATION

1.1. History of Flight

1.1.1. On Thursday afternoon, 5 October 2023, the pilot on-board a Titan Tornado S aircraft with registration ZU-ITA was conducting a private flight from Ceres Airfield (FACE) in the Western Cape province to New Tempe Aerodrome (FATP) in Bloemfontein, Free State province, when the accident occurred. The flight was conducted under visual meteorological conditions (VMC) and under the provisions of Part 94 of the Civil Aviation Regulations (CAR) 2011 as amended.

1.1.2. The information gathered during the investigation revealed that on 4 October 2023, ZU-ITA pilot had a conversation with a friend on a WhatsApp platform to inform him that he needed to fly to Bloemfontein but was not 'happy' with the aircraft. The pilot did not mention the concerns he had of the aircraft.

1.1.3. An eyewitness who works at Winterbach Farm, located about a kilometre (km) east of FACE, stated that at approximately 1300Z on 5 October 2023, he witnessed ZU-ITA aircraft land at FACE. Thereafter, he heard a loud engine noise such as when the engine is being run at high revolutions per minute (RPM) settings. The engine-run was performed several times.

1.1.4. The ZU-ITA pilot's wife stated that on the day before the accident flight at about 1430Z, she received a call from her husband in which he informed her that he was examining the aircraft but did not provide a reason why.

1.1.5. Around 1457Z, the same eyewitness at Winterbach Farm saw the aircraft's take-off from Runway 27 at FACE. During the climb at about 250 feet (ft) above ground level (AGL), the engine stopped. The eyewitness observed the aircraft when it made a left turn; at that point, the left wing dropped. The aircraft descended and impacted the ground in a nose-down attitude on a bushy terrain, west of FACE near Winterbach Farm. The eyewitness telephoned the Emergency Medical Services (EMS) and the South African Police Service (SAPS). They swiftly responded to the scene. The EMS personnel reported that they found the pilot fatally injured; he was still strapped to his seat's harness. The EMS personnel cut the seatbelt to recover the pilot's body. The aircraft was destroyed by impact forces.

1.1.6. The accident occurred during daylight near Winterbach Farm, west of FACE, at Global Positioning System (GPS) co-ordinates determined to be 33°19'14" South 19°25'4" East, at an elevation of 1 480ft.

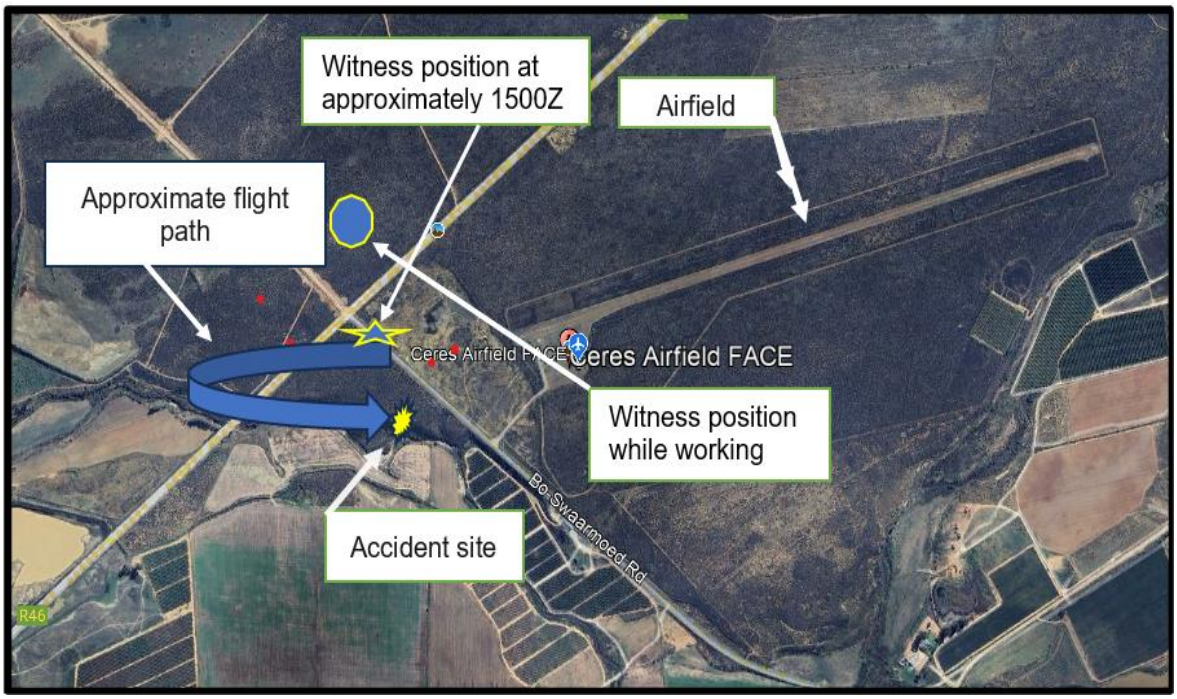

Figure 1: Aerial view of the airfield, the eyewitness location and the accident site. (Source: Google Earth)

1.2. Injuries to Persons

Injuries	Pilot	Crew	Pass.	Total On-board	Other
Fatal	1	-	-	1	-
Serious	-	-	-	-	-
Minor	-	-	-	-	-
None	-	-	-	-	-
Total	**1**	**-**	**-**	1	**-**

Note: Other means people on the ground.

1.3. Damage to Aircraft

1.3.1. The aircraft was destroyed by impact forces.

Figure 2: The aircraft at the accident site.

1.4. Other Damage

1.4.1. None.

1.5. Personnel Information

Nationality	South African	Gender	Male	Age	63
Licence Type	National Pilot Licence				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	None				
Medical Expiry Date	30 November 2023				
Restrictions	Suitable corrective Lenses				
Previous Accidents	None				

Note: Previous accidents refer to past accidents the pilot was involved in, when relevant to this accident.

Flying Experience:

Total Hours	1 882.5
Total Past 24 Hours	Unknown
Total Past 7 Days	Unknown
Total Past 90 Days	Unknown
Total on Type Past 90 Days	Unknown
Total on Type	48.7

1.5.1. The pilot was initially issued a National Pilot Licence (NPL) on 24 April 2003. His licence was reissued on 21 April 2023 with an expiry date of 14 April 2025. The aircraft type was endorsed on the pilot's licence. The pilot was issued a Class 4 aviation medical certificate on 30 November 2021 with an expiry date of 30 November 2023.

1.5.2. The pilot's logbook was last updated on 14 April 2023 during his licence renewal. There were reports that the pilot was flying since his last renewal, however, evidence of these entries was not recorded in his logbook. Therefore, Part 61.01.8 of the CAR 2011 was not adhered. The hours in the table above were obtained from the pilot's logbook, entries were until the 14 April 2023.

Logging of flight time

61.01.8 (*1*) *The holder of a pilot licence must maintain in a pilot logbook a record of all his or her flight time, instrument time, flight simulation training devices (FSTD) time and instruction time. Where electronic logbooks are used, the electronic data must be printed on paper at least every 90 days and the printed pages filed sequentially in a binder.*

(2) The form of and information to be contained in the logbook, referred to in subregulation (1), and the manner in which such logbook must be maintained are as prescribed in Appendix A to Document SA-CATS 61.

(3) Entries in pilot logbooks must be made within the following periods after the completion of the flight to be recorded—

(a) seven days in the case of flights not for hire and reward (Part 91 operations), flight training, and domestic commercial air transport operations;

(b)14 days in the case of international commercial air transport operations;

(c)48 hours after return to base in the case where a pilot is engaged in flight operations away from the base where the pilot logbook is normally kept.

1.6. Aircraft Information (Source: Titan Tornado S Manual)

1.6.1 *The Tornado S is designed to a +6 gravity/-4 gravity (g) load limit capability at 1 140 pounds (lbs) (gross weight 517.1 kilograms). The aircraft has a two-seat in tandem "stretched" fuselage and it is equipped with the Rotax 912S engine. The cruise speed is more than 120 miles per hour (mph). The aircraft's fuel capacity is 56.8 litres (L) (15 gallons). Titan Tornado S qualified as a Light Sport Aircraft as defined by the Federal Aviation Administration (FAA).*

Figure 3: File picture of ZU-ITA aircraft. (Source: http://airliners.net)

Airframe:

Manufacturer/Model	Titan Aircraft / Tornado S	
Serial Number	SO3912SOHK0462	
Year of Manufacture	2020	
Total Airframe Hours (At Time of Accident)	57.8	
Last Annual Inspection (Date & Hours)	26 August 2022	41.7
Airframe Hours Since Last Inspection	16.1	
CRS Issue Date	26 August 2022	
ATF (Issue Date & Expiry Date)	12 April 2023	11 April 2024
C of R (Issue Date) (Present Owner)	30 September 2020	
Operating Category	Private (Part 94)	
Type of Fuel Used	Octane 95 Unleaded	
Previous Accidents	None	

Note: Previous accidents refer to past accidents the aircraft was involved in, when relevant to this accident.
The hours depicted above were taken during the renewal of the ATF on 14 April 2023.

1.6.2. According to available information, the aircraft was built by the owner using the manufacturer's design (Titan Tornado). The approval to build the aircraft was granted by the Regulator (SACAA) on 9 July 2020.

1.6.3. According to available information, the aircraft was first registered to the present owner on 30 September 2020. The last annual inspection of the aircraft was certified on 26 August 2022 at 41.7 total airframe hours. The Certificate of Release to Service (CRS) was issued and signed by the approved person (AP) on 26 August 2022 at 41.7 airframe hours with an expiry date of 26 August 2023 or at 141.7 hours, whichever occurs first.

1.6.4. The Authority to Fly (ATF) Certificate was issued on 12 April 2023 with an expiry date of 11 April 2024; however, the ATF was invalid because the CRS had expired on 26 August 2023 and the accident occurred on 5 October 2023.

Engine:

Manufacturer/Model	Rotax / 914UL
Serial Number	4417879
Part Number	Unknown
Hours Since New	41.7
Hours Since Overhaul	Unknown

Propeller:

Manufacturer/Model	Woodcomp / Klassic
Serial Number	1029633L
Part Number	Unknown
Hours Since New	41.7
Hours Since Overhaul	Unknown

1.7. Meteorological Information

1.7.1. The weather information below was obtained from the South African Weather Service (SAWS), recorded at Cape Town International Airport (FACT) on 5 October 2023 at 1500Z.

Wind Direction	180°	Wind Speed	08kt	Visibility	9999m
Temperature	21°C	Cloud Cover	Scattered (SCT)	Cloud Base	4000ft
Dew Point	16°C	QNH	1015hPa		

1.8. Aids to Navigation

1.8.1. The aircraft was equipped with standard navigational equipment as approved by the Regulator. There were no records indicating that the navigational equipment was unserviceable prior to the flight.

1.9. Communication

1.9.1. The aircraft was equipped with a standard communication system as approved by the Regulator. There were no recorded defects with the communication system prior to the flight.

1.10. Aerodrome Information

Aerodrome Name	Ceres Airfield
Aerodrome Location	Ceres, Westen Cape province
Aerodrome Status	Licensed
Aerodrome GPS coordinates	33º19’10.0” South, 019º25’20.0” East
Aerodrome Elevation	1 900ft
Runway Headings	073º / 253º
Dimensions of Runway Used	1 600m x 20m
Heading of Runway Used	073º
Surface of Runway Used	Grass
Approach Facilities	None
Radio Frequency	119.6MHz, 102.3MHz, 122.3MHz

1.11. Flight Recorders

1.11.1. The aircraft was neither equipped with a flight data recorder (FDR) or a cockpit voice recorder (CVR), nor was it required by regulation to be fitted to the aircraft type.

1.12. Wreckage and Impact Information

1.12.1. The aircraft impacted the ground in a nose-down attitude and came to rest in an inverted attitude at 203º magnetic heading. The continuity of the flight controls was checked, and no anomalies were found. The wings were found separated from their mounting points, the flaps were selected to 15º, the main landing gears and wheel assemblies were intact, and the tyres were sufficiently inflated.

Figure 4: The aircraft in an inverted attitude.

Figure 5: The damaged right-wing tip.

Figure 6: The damaged wings.

1.12.2. Both fuel tanks contained sufficient fuel. The instruments were substantially damaged; they had separated from the instrument panel during the accident. The auxiliary and fuel pump switches were found in the “OFF” position.

Figure 7: Auxiliary and fuel pump switches in OFF positions (red arrows).

1.12.3. The on-site examination of the propeller indicated that the engine was not delivering power at the time of impact. Most of the engine components were still attached to the crankcase, except for the carburettor that had dislodged after impact. The fuel filter contained adequate amount of fuel which was free of contaminants.

Figure 8: The damaged engine and propeller.

1.13. Medical and Pathological Information

1.13.1 At the time of completion of this report, the results of the post-mortem and the toxicology tests were not released. Should the results at the time of their release have substantive evidence on the outcome of this investigation and which is considered new, the AIID will reopen the investigation of this accident.

1.14. Fire

1.14.1 There was no evidence of a pre- or post-impact fire.

1.15. Survival Aspects

1.15.1. The accident was considered not survivable due to the impact forces. The impact forces compromised the structural integrity of the cockpit and the cabin area, hence, the resultant fatality.

1.15.2. The aircraft was not equipped with an emergency locator transmitter (ELT), and it was not a requirement according to Part 91.04.23 (b) of the CAR 2011.

1.16. Tests and Research

1.16.1 The engine was transported to the SACAA-approved engine overhaul facility (Rotax agent) in Germiston for further investigation. The following findings were made:

I. The engine was modified from its original configuration of 914UL turbo-charged (115 horsepower) to 912UL (80 horsepower). Rotax does not approve such modifications. The provisions of Part 44.01.10 of the CAR 2011 were contravened.

II. The engines are identical, the only difference is the performance. The 914UL is 115 horsepower (hp) while the 912UL is 80 horsepower.

Figure 9: Rotax 914UL

Figure 10: Rotax 912UL

III. The crankshaft was rotated by hand, there were no indications of any internal damage. The oil pump was checked for correct functioning, no abnormalities were found, and there was evidence of oil being present in the systems.

IV. A test of the ignition system was not possible due to the unapproved modifications.

V. The carburettors were dismantled and examined, revealing no signs of component failure.

Figure 11: An unauthorised modification found on the ignition system.

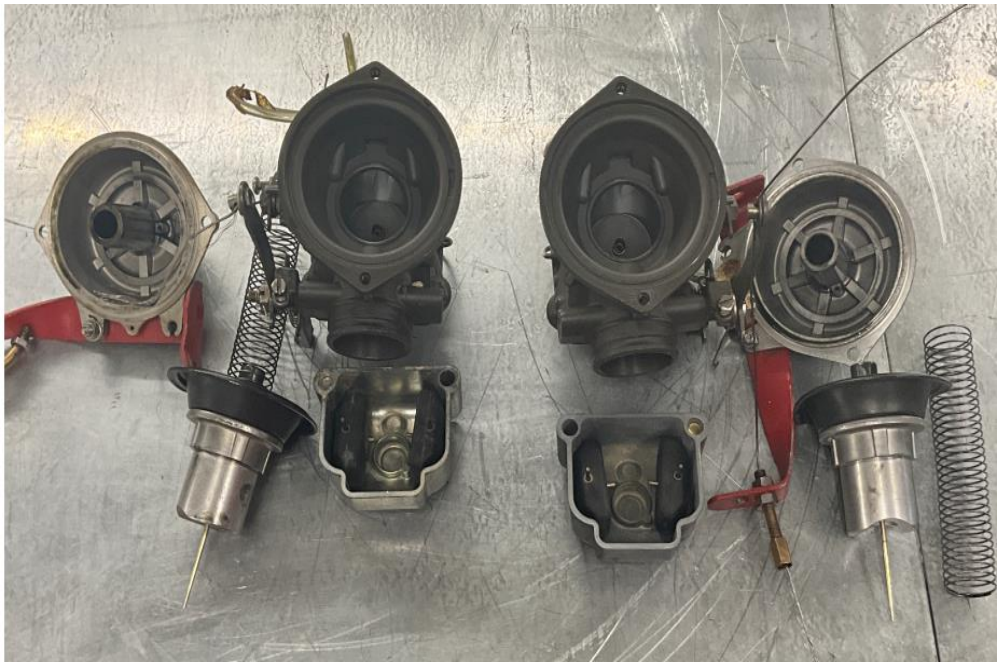

Figure 12: Dismantled carburettors.

VI. The float chambers had the old version of the floating gasket, which is no longer in use, this indicated that the specified 200-hour inspections of the carburettors were not done. The parts in red, are not from the manufacturer, and the attached cables are incorrectly installed. In case they fail they would cut off the engine instead of letting the engine run.

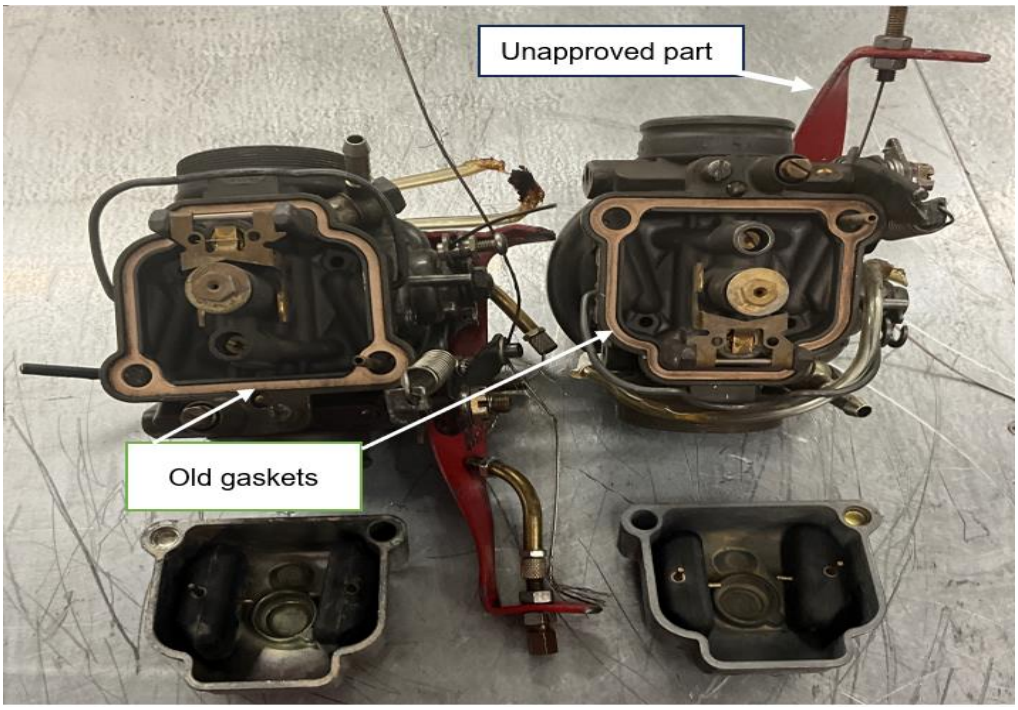

Figure 13: Old gaskets on the carburettors.

VII. According to the engine logbook, there were no records indicating that the engine was subjected to testing or certification processes after the modifications. Therefore, the examination of the engine could not conclusively determine the exact cause of the engine stoppage.

Modifications

44.01.10 (*1) If a person intends to carry out any modifications, including changes to equipment or the installation thereof, which affect, or are likely to affect, the serviceability of the aircraft, or the safety of its occupants or any other persons or property, to about an amateur-built aircraft or a production-built aircraft—*

(a) in the case of a minor modification, a notification of the modification must be submitted to the Director, or the organisation designated for the purpose in terms of part 149, as the case may be, within 30 days of the modification being performed. All subsequent modifications shall be an amendment to the build standard;

(b) in the case of a major modification an application for the approval of the modification and authority to fly, as prescribed in Document SA-CATS 44, must be submitted to the Director or the organisation designated for the purpose in terms of part 149, as the case may be before the modification has been performed.

(2) The application referred to in sub regulation (1) must be accompanied by the appropriate fee as described in part 187.

(3) All approved modifications shall be entered into the appropriate logbook(s).

(4) An appropriately rated approved AMO, AME, or approved person, rated in accordance with subpart 4 of part 66 shall sign in the appropriate logbook(s) that all procedures, as stated in the application for modification, were adhered to and that he or she is satisfied with the quality of the work which was carried out.

1.16.2 Samples of Octane 95 Unleaded fuel were taken from the fuel tanks, fuel filter and one of the carburettors; it was free of contaminants.

1.17. Organisational and Management Information

1.17.1. This was a private flight conducted under the provisions of Part 94 of the Civil Aviation Regulations (CAR) 2011 as amended.

1.18. Additional Information

1.18.1 The following emergency procedure is an extract from the Titan Tornado S Pilot's Operating Handbook (POH)

Engine Failure Immediately After Take-off

1. *Airspeed – 60 to 70 MPH*
2. *Ignition Switch – OFF*
3. *Master Switch – OFF*
4. *Wing Flaps – As Required*

1.19. Useful or Effective Investigation Techniques

1.19.1 None.

2. ANALYSIS

2.1. General

From the available evidence, the following analysis was made with respect to this accident. This shall not be read as apportioning blame or liability to any organisation or individual.

2.2. Analysis

2.2.1. The pilot

The pilot was initially issued a National Pilot Licence (NPL) on 24 April 2003. His licence was reissued on 21 April 2023 with an expiry date of 14 April 2025. The aircraft type was endorsed on the pilot's licence. The pilot was issued a Class 4 aviation medical certificate on 30 November 2021 with an expiry date of 30 November 2023.

2.2.2. Weather

The weather information obtained from the South African Weather Service (SAWS) on 5 October 2023 at 1500Z indicated favourable clear weather conditions for the flight.

2.2.3. Aircraft

Post-accident examination of the aircraft technical records indicated that the last annual inspection was certified on 26 August 2022 at 41.7 total airframe hours. The Certificate of Release to Service (CRS) was issued on 26 August 2022 at 41.7 airframe hours with an expiry date of 26 August 2023 or at 141.7 hours, whichever occurs first. The Authority to Fly (ATF) Certificate was issued on 12 April 2023 with an expiry date of 11 April 2024; however, it was invalid because the CRS had expired on 26 August 2023 and the accident occurred on 5 October 2023.

The aircraft was destroyed by impact forces. The on-site examination of the propeller indicated that the engine was not delivering power at the time of impact. Most of the engine components were still attached to the crankcase and intact, except for the carburettor that had dislodged after impact. Samples of Octane 95 Unleaded fuel were taken from the tanks, the fuel filter and one of the carburettors; the fuel was free of contaminants. The engine was recovered from the accident site and transported to the SACAA-approved engine overhaul facility (Rotax agent) in Germiston, Gauteng province, for further investigation. Examination of the engine by the engineers at Rotax revealed unapproved modifications that were performed on the engine. After examination, the engineers were unable to conclusively determine the cause of the engine stoppage.

3. CONCLUSION

3.1. General

From the available evidence, the following findings, causes and contributing factors were made with respect to this accident. These shall not be read as apportioning blame or liability to any organisation or individual.

To serve the objective of this investigation, the following sections are included in the conclusion heading:

- **Findings —** are statements of all significant conditions, events, or circumstances in this accident. The findings are significant steps in this accident sequence, but they are not always causal or indicate deficiencies.
- **Causes —** are actions, omissions, events, conditions, or a combination thereof, which led to this accident.
- **Contributing factors —** are actions, omissions, events, conditions or a combination thereof, which, if eliminated, avoided or absent, would have reduced the probability of the accident occurring, or would have mitigated the severity of the consequences of the accident. The identification of contributing factors does not imply the assignment of fault or the determination of administrative, civil, or criminal liability.

3.2. Findings

3.2.1. The aircraft was operated in accordance with the provisions of Part 94 of the CAR 2011 as amended.

3.2.2. The pilot had a National Pilot Licence (NPL) that was issued on 21 April 2023 with an expiry date of 14 April 2025. The pilot was issued a Class 4 aviation medical certificate on 30 November 2021 with an expiry date of 30 November 2023.

3.2.3. The aircraft had a valid Certificate of Registration (C of R) that was issued to the owner on 30 September 2020.

3.2.4. The aircraft had the Authority to Fly (ATF) Certificate that was issued on 12 April 2023 with an expiry date of 11 April 2024; however, it was invalid as the CRS had expired on 26 August 2023 and the accident occurred on 5 October 2023.

3.2.5. The last annual inspection of the aircraft was certified on 26 August 2022 at 41.7 total airframe hours. The Certificate of Release to Service (CRS) was issued and signed by the approved person (AP) on 26 August 2022 at 41.7 airframe hours with an expiry date of 26 August 2023 or at 141.7 hours, whichever occurs first.

3.2.6. Examination of the engine by the engineers at Rotax revealed unapproved modifications that were performed on the engine. The engine logbook had no records to indicate that the engine had undergone thorough testing or certification processes after the modifications were conducted. Examination of the engine was unable to conclusively determine the cause of the engine stoppage. Therefore, engineers at Rotax were unable to conclusively determine the exact cause of the engine stoppage.

3.3. Probable Cause

3.3.1 During the climb shortly after take-off, the engine failed which prompted the pilot to return to the airfield. It is likely that during the left turn the pilot stalled the aircraft and lost control; the aircraft crashed near a farm. The cause of the engine failure could not be determined.

3.4. Contributory Factor

3.4.1 None.

4. SAFETY RECOMMENDATIONS

4.1 General

The safety recommendations listed in this report are proposed according to paragraph 6.8 of Annex 13 to the Convention on International Civil Aviation and are based on the conclusions listed in heading 3 of this report. The AIID expects that all safety issues identified by the investigation are addressed by the receiving States and organisations.

4.2 Safety Message

4.2.1 It is recommended that all personnel involved in the maintenance, repair and operation of the aircraft adhere strictly to the approved procedures and regulations outlined by relevant aviation authorities. Any modifications or alterations to the aircraft must undergo thorough evaluation, approval and documentation processes to ensure compliance with safety standards and airworthiness requirements.

5. APPENDICES

5.1 None.

This report is issued by:
Accident and Incident Investigations Division
South African Civil Aviation Authority
Republic of South Africa