SHORT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/9595		
Aircraft registration	**ZU-SWL**	**Date of accident**	29 January 2017		**Time of accident**	0745Z	
Type of aircraft	Falcon 402		**Type of operation**		Private (Part 91)		
Pilot-in-command licence type		Commercial	**Age**	25	**Licence valid**	Yes	
Pilot-in-command flying experience		**Total hours**	1 628.4		**Hours on type**	450.8	
Last point of departure	Wonderboom Aerodrome (FAWB), Gauteng Province						
Next point of intended landing	Rustenburg Aerodrome (FARG), Northwest Province						
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)							
Clearway Runway 11, FAWB (GPS position; 25°39'13.28" South 028°14'25.66" East) elevation 4095ft AMSL							
Meteorological information	Surface wind; 100°/7 knots, Temperature; 27°C, Visibility; + 10km						
Number of people on board	1 + 0	**No. of people injured**	0	**No. of people killed**	0		

Synopsis

On Sunday morning, 29 January 2017 at approximately 0745Z, the pilot, who was the sole occupant on board the Falcon 402 aircraft with registration markings ZU-SWL, took off from Runway 11 at FAWB when the engine lost power shortly after the aircraft became airborne. The pilot stated that he then opted to execute a forced landing on the open grass clearway ahead on the extended centre line of runway 11. He stated that as the landing gear was already retracted during take-off, he decided to lower the gear prior to touch down, but during the forced landing, the landing gear collapsed, which caused substantial damage to the aircraft. This was a private/positioning flight for the aircraft owners after unscheduled maintenance was carried out on the aircraft at FAWB. The aircraft was based at Rustenburg aerodrome (FARG). The pilot was not injured in the accident although the aircraft was substantially damaged.

Probable cause

Unsuccessful forced landing due to a loss of engine power, associated with the engine display screen that turned from green to red. This was an indicative of a possible exceedance of engine parameters the pilot opted to execute a forced landing straight ahead.

SRP date		Release date	12 September 2018

AIRCRAFT ACCIDENT REPORT

Name of Owner	**:** Cross Border Aviation (Pty) Ltd
Name of Operator	**:** Private (Part 91)
Manufacturer	**:** HJ Venter (Amateur Build)
Model	**:** Falcon 402
Nationality	**:** South African
Registration markings	**:** ZU-SWL
Place	**:** Wonderboom Aerodrome
Date	**:** 29 January 2017
Time	**:** 0745Z

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 of the Investigation:

In terms of Regulation 12.03.1 of the Civil Aviation Regulations (2011) the purpose of investigation of an aircraft accident or incident is to determine, in terms of the provisions of this Part, the facts of an accident or incident in the interest of the promotion of aviation safety and the reduction of the risk of aviation accidents or incidents, and ***not to establish blame or liability****.*

Disclaimer:

This report is produced without prejudice to the rights of the CAA, which are reserved.

1. FACTUAL INFORMATION

1.1 History of flight

1.1.1 The pilot, who was the sole occupant on board the aircraft attempted to take-off from runway 11 at FAWB with the intention to position the aircraft from FAWB to FARG after a 50-hour maintenance inspection was carried out on the aircraft. The aircraft was hangared by the owners at FARG in the North-west province.

1.1.2 The pilot stated that as the aircraft became airborne he retracted the landing gear. He then selected the propeller pitch lever to the climb RPM setting, the engine power then decreased, which was observed on the 'Gemini Engine Parameter Display Screen' which was a digital display that shows several engine parameters such as the inter turbine temperature (ITT), N1 - turbine speed, N2 - propeller speed, engine torque, oil pressure and battery voltage indications that changed colour and turned from '**Green** to **Red**' (see Figures 4 and 5 of this report). He immediately selected both fuel boost pumps to the ON position. This device was not limited to providing engine parameter data but its primary function was that it serves as an engine start computer, which could be overridden by the pilot if he or she opted to do a manual start. When the colour of the display changed to **RED** the pilot associated it with an engine power loss as he physically experienced the decay in engine power, and the N1 decayed to approximately 70%. He then elected to land on the grass covered area on the extended centre line of runway 11 ahead. The pilot concluded that he selected the landing gear to the down position and called Mayday. During the landing, the landing gear ed as it was not fully down and locked. The aircraft came to rest on its lower fuselage with the engine still running where after the pilot shut down the engine with the condition lever. He also switched off the fuel pumps and the fuel selector levers where after he vacated the aircraft.

1.1.3 The air traffic controller (ATC) activated the crash alarm following a Mayday call made by the pilot. The Aerodrome Rescue and Fire-fighting (ARFF) personnel reacted immediately and secured the accident scene as there was no post impact fire observed. (The aircraft was fuelled to capacity with Jet A1 prior to the flight. Approximately 900 litres of fuel was on board). The pilot was not injured in the accident but the aircraft sustained substantial damage.

1.1.4 The accident occurred during daylight conditions at a geographical position that was determined to be 25°39'13.28" South 028°14'25.66" East at an elevation of 4 095 feet above mean sea level (AMSL).

Figure 1. Aerial view of the aircraft as it came to a halt on the clearway - extended centre line runway 11

Figure 2: The aircraft as it came to rest on its lower fuselage

Figure 3: A front view of the aircraft as it came to rest

Figure 4: Engine parameter display screen (GREEN)

Figure 5: Engine parameter display screen (RED)

1.2 The investigation revealed the following:

1.2.1 The pilot was the holder of a commercial pilot licence (CPL) and had the aircraft type endorsed in his licence.

1.2.2 The pilot was involved in a previous accident, which occurred at Lanseria Aerodrome (FALA) on 13 December 2016 with a similar type of aircraft (ZU-TVB), accident reference number CA18/2/3/9589.

1.2.3 This was the pilot first flight on this aircraft type since the accident flight on 13 December 2016.

1.2.4 The pilot concluded that as he advanced the propeller pitch lever he heard and experienced a decrease in engine power after the Falcon 402 became airborne and the Gemini Engine Display Screen changed colour from green to red.

1.2.5 The pilot broadcasted a Mayday call on the FAWB tower frequency and the crash alarm was activated by the ATC and the ARFF personnel responded accordingly.

1.2.6 The aircraft was in possession of a valid Authority to Fly.

1.2.7 The aircraft sustained substantial damage during the forced landing.

1.2.8 There was ample fuel on board the aircraft.

1.2.9 Due to substantial damage during the accident it was not possible to conduct a functional engine test run.

1.2.10 The Falcon 402 was a non-type certified aircraft (NTCA) that was designed and manufacturered in South Africa. The Walter M601 turboprop engine was installed on the aircraft type..

1.2.11 The weather conditions had no bearing on the accident flight.

1.2.12 No on site investigation was conducted by the Accident and Incident Investigation Division (AIID).

2. CONCLUSION

2.1 Probable cause:

2.1.1 Unsuccessful forced landing due to a loss of engine power, associated with the engine display screen that turned from green to red. This was an indicative of a possible exceedance of engine parameters the pilot opted to execute a forced landing straight ahead.

2.2 Contributory factors:

2.2.1 This was the pilot first flight on this aircraft type following the accident on a similar aircraft type on 13 December 2016.

2.2.2 The cause of the decay in engine power after take-off could not be determined with certainty.

3. SAFETY RECOMMENDATIONS

3.1 In the interest of aviation safety it is recommended to the Director of Civil Aviation that the division Aviation Safety Operations conduct airworthiness assessment of this aircraft type following similar accidents in a short period of time.

4. APPENDICES

4.1 None.