AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:		CA18/2/3/10273	
Aircraft Registration	ZS-OKS	**Date of Accident**	22 February 2023			**Time of Accident**	0951Z
Type of Aircraft	Beechcraft Baron BE55			**Type of Operation**		Private (Part 91)	
Pilot-in-command Licence Type	Airline Transport Pilot Licence (ATPL) Aeroplane			**Age**	54	**Licence Valid**	Yes
Pilot-in-command Flying Experience		**Total Flying Hours**			4900.0	**Hours on Type**	53.3
Last Point of Departure	Pearly Beach Private Airstrip, Western Cape Province						
Next Point of Intended Landing	Oudtshoorn Aerodrome (FAOH), Western Cape Province						
Damage to Aircraft	Substantial						

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

R43 road, 3.7km from Runway 15 threshold at Global Positioning System (GPS) determined to be 34°39'01"S 019°30'48"E at an elevation of 65.6 ft

Meteorological Information	Wind velocity: 230° at 6KT; Temperature: 23°C; Dew Point: 11°C; Visibility: ≥10000m; Cloud: CAVOK; QNH: 1019 hPa						
Number of People On-board	1 + 0	**Number of People Injured**	1	**Number of People Killed**	0	**Other (On Ground)**	0

Synopsis

On Wednesday, 22 February 2023 at approximately 0950Z, a pilot on-board a Beechcraft Baron BE55 aircraft with registration ZS-OKS took off from Pearly Beach private airstrip, Western Cape province, with the intention to land at Oudtshoorn Aerodrome (FAOH) in the same province. The flight was conducted under visual flight rules (VFR) in visual meteorological conditions (VMC) by day and under the provisions of Part 91 of the Civil Aviation Regulations (CAR) 2011 as amended.

The aircraft took off from Runway 15. At approximately 1000 feet (ft) above mean sea level (AMSL) it lost power on both engines, followed by a stall warning sound. The pilot initiated a forced landing on the R43 road and landed hard. As a result, the nose gear broke off and the aircraft skidded to the left-side of the road. A post-impact fire erupted soon after, and the pilot disembarked from the aircraft. The Emergency Medical Services (EMS) personnel extinguished the fire upon their arrival at the scene. The pilot sustained minor injuries and was treated at the scene; he was later taken to the hospital for medical assessment. Impact forces and the post-impact fire damaged the aircraft.

Probable Cause

Loss of engine power due to incorrect setting of the fuel condition levers which led to fuel starvation and the subsequent unsuccessful forced landing.

SRP Date	19 March 2024	Publication Date	20 March 2024

Occurrence Details

Reference Number	**:** CA18/2/3/10273
Occurrence Category	**:** Accident, Category 1
Type of Operation	**:** Private Flight (Part 91)
Name of Operator	**:** Pearl Coral 1173 CC
Aircraft Registration	**:** ZS-OKS
Aircraft Make and Model	**:** Beechcraft Baron BE55
Nationality	**:** South African
Place	**:** Pearly Beach, Western Cape Province
Date and Time	**:** 22 February 2023 at 0951Z
Injuries	**:** Minor
Damage	**:** Substantial

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 accident which occurred on 22 February 2023 at 0951ZZ. The occurrence was classified as an accident according to the CAR 2011 Part 12 and the international Civil Aviation Organisation (ICAO) STD Annex 13 definitions. Notifications were sent to the State of Registry, Operator, Design and Manufacturer in accordance with the CAR 2011 Part 12 and ICAO Annex 13 Chapter 4. The states did not appoint an accredited representative and/or advisor. The AIID investigators 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 Beechcraft Baron BE55 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
°C	Degree Celsius
AGL	Above Ground Level
AMSL	Above Mean Sea Level
AIID	Accident and Incident Investigations Division
AMO	Aircraft Maintenance Organisation
BE55	Beechcraft Baron
C of R	Certificate of Registration
CAA	Civil Aviation Authority
CAR	Civil Aviation Regulations
CAVOK	Ceiling and Visibility OK
CVR	Cockpit Voice Recorder
C of A	Certificate of Airworthiness
E	East
FACT	Cape Town International Airport
FAGG	George Airport
FAOH	Oudtshoorn Aerodrome
FDR	Flight Data Recorder
ft	Feet
Gal/hr	Gallons per hour
GPS	Global Positioning System
hPa	Hectopascal
IIC	Investigator-in-charge
inHg	Inches of Mercury
IOC	Investigator-on-call
kts	Knot(s)
m	Metre
MHz	Megahertz
MPI	Mandatory Periodic Inspection
NM	Nautical Mile
POH	Pilot's Operating Handbook
QNH	Query: Nautical Height
RPM	Revolutions per Minute
RWY	Runway
S	South
SACAA	South African Civil Aviation Authority
SAWS	South African Weather Service
UTC	Co-ordinated Universal Time
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
Z	Zulu (Term for Universal Co-ordinated Time - Zero Hours Greenwich)

1. FACTUAL INFORMATION

1.1. History of Flight

1.1.1. On Wednesday, 22 February 2023 at approximately 0950Z, a pilot on-board a Beechcraft Baron BE55 aircraft with registration ZS-OKS took off from Pearly Beach private airstrip, Western Cape province, with the intention to land at Oudtshoorn Aerodrome (FAOH) in the same province. The flight was conducted under visual flight rules (VFR) in visual meteorological conditions (VMC) by day and under the provisions of Part 91 of the Civil Aviation Regulations (CAR) 2011 as amended. Clear weather conditions prevailed at the time of the flight.

1.1.2. The pilot reported that the aircraft was parked on the apron at Pearly Beach private airstrip since Saturday, 18 February 2023. He stated that prior to take-off, he conducted the pre-flight checks. The right fuel tank was almost full, and the left tank was three quarters full. He noticed that there was some water that had accumulated in the fuel tanks, which he drained at least three times from each tank. After he was satisfied that the fuel was clear of water, he proceeded with start-up and then taxied for run-up checks with no anomalies detected.

1.1.3. The aircraft took off from Runway 15 (RWY15) and flew towards the east. The pilot stated that the engine parameter indications were within the required limitations. During the initial climb phase, he levelled the aircraft and retracted the undercarriage and flaps after establishing a positive climb. However, at approximately 1000 (ft) feet above mean sea level (AMSL) (800ft AGL), the pilot retarded the throttle but struggled to set the power to cruise setting of 2500 revolutions per minute (RPM) and 25 inches of mercury (inHg). The pilot also noticed illuminated alternator warning lights on both sides of the engine. He switched them off and on to reset them, but the warning lights remained illuminated. This was followed by a reduction of power from 2500 RPM to approximately 2300 RPM on both engines.

1.1.4. The pilot banked the aircraft to the left to return to the airstrip for landing and the stall aural warning sounded at approximately 800ft AMSL. He advanced the propeller pitch and throttle levers to full forward position, lowered the nose to prevent a stall and tried restoring the engine power, but to no avail. The aural stall warning persisted whilst the height of the aircraft decreased (reduced). The pilot did not have time or altitude to complete the emergency fault finding procedure. He then elected to execute a forced landing on the R43 road which ran parallel to the runway.

1.1.5. During approach, the pilot took evasive actions to avoid colliding with the power lines which spanned across the road. He cleared the power lines but the aircraft stalled and landed hard on the road. It spanned on its vertical axis and skidded backwards several metres. The nose wheel broke off, the right main landing gear collapsed, and the right wing collided with a tree before the aircraft stopped on the edge of the road facing south-east. The flight duration was approximately 1 minute.

1.1.6. A post-impact fire erupted which initiated from the trailing edge of the right wing. The pilot closed the fuel selectors and switched off the battery master switch before evacuating the aircraft without assistance. A truck driver assisted the pilot by using a fire extinguisher to contain the fire whilst the pilot called the Emergency Medical Services personnel. Upon their arrival, they extinguished the fire. The pilot sustained minor injuries and was treated on the scene before being taken to the hospital for medical observation. The aircraft was substantially damaged; it was recovered to the operator at FAOH by road.

1.1.7. The accident occurred during day light on the R43 road, 3.7 kilometres (km) from the take-off airstrip and at Global Positioning System (GPS) co-ordinates determined to be 34°39’01’’S 019°30’48’’E at an elevation of 65.6 ft.

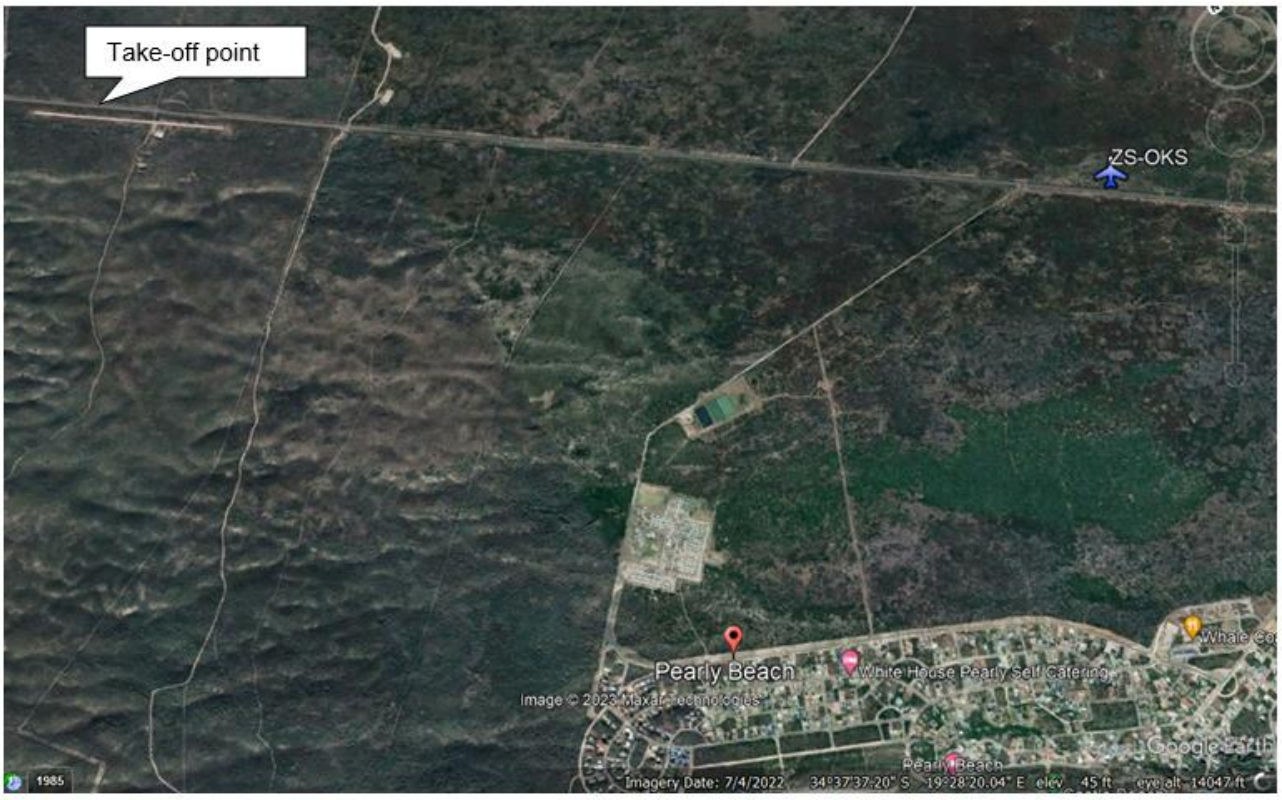


Figure 1: An aerial view of the take-off point and the accident scene. (Source: Google Earth)

1.2. Injuries to Persons

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

Note: Other means people on the ground.

1.2.1. The pilot sustained minor injuries and was rushed to the hospital.

1.3. Damage to Aircraft

1.3.1. The aircraft sustained substantial damage to the right main landing gear, propellers and wings during the accident sequence.

Figure 2: The aircraft as it came to rest. (Source: Operator)

1.4. Other Damage

1.4.1. None.

1.5. Personnel Information

Nationality	South African	Gender	Male	Age	54
Licence Type	Airline Transport Pilot Licence (ATPL)				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	Test Pilot (Class 1), Aerobatics, Instructor Grade II, Instrument				
Medical Expiry Date	31 July 2023				
Restrictions	Corrective lenses				
Previous Accidents	16 September 2022.				

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

Flying Experience:

Total Hours	4900
Total Past 24 Hours	0.02
Total Past 7 Days	1.2
Total Past 90 Days	2.2
Total on Type Past 90 Days	1.2
Total on Type	53

1.5.1. The pilot was initially issued an Airline Transport Pilot Licence (ATPL) Aeroplane by the SACAA on 13 February 2004. The licence was revalidated on 29 July 2022 with an expiry date of 31 July 2023 with Class 1 Test Pilot and Grade II Instructor ratings endorsements. The BE55 aircraft type was endorsed on the pilot's licence. The pilot also had a Class I

medical certificate that was issued on 8 August 2022 with an expiry date of 31 July 2023 with a restriction to wear corrective lenses. The pilot is rated on various aircraft types, including jets and several twin-engine aircraft.

1.5.2. The pilot was involved in a ground collision aircraft accident on 16 September 2022 at Wonderboom Aerodrome. The probable cause on this accident was taxiing at a higher than recommended speed.

1.6. Aircraft Information

1.6.1. The Beechcraft Baron BE55 is a low-wing twin-engine aircraft of metal construction. The aircraft is powered by two, six-cylinder fuel injected engines.

Airframe:

Type	BE55	
Serial Number	TE 989	
Manufacturer	Beech Aircraft Corporation	
Date of Manufacture	1974	
Total Airframe Hours (At time of Accident)	3469.8	
Last Inspection (Date & Hours)	6 June 2022	3430.9
Hours since Last MPI	38.9	
CRS Issue Date	6 June 2022	
C of A (Issue Date and Expiry Date)	15 September 2006	30 September 2023
C of R (Issue Date) (Present owner)	10 August 2010	
Type of Fuel Used	Avgas 100 LL	
Operating Categories	Normal	
Previous Accidents	None	

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

Engine Left:

Type	Continental IO-520-C
Serial Number	555508
Hours since New	2850.5
Hours since Overhaul	79.2

Engine Right:

Type	Continental IO-520-C
Serial Number	555512
Hours since New	2850.5
Hours since Overhaul	79.2

Propeller Left:

Type	Hartzell PHC-C3YF-UF
Serial Number	EB5579B
Hours since New	79.2
Hours since Overhaul	TBO not reached

Propeller Right:

Type	Hartzell
Serial Number	EB5580B
Hours since New	79.2
Hours since Overhaul	TBO not reached

1.6.2. The aircraft was registered to the current owner on 10 August 2010, and the Certificate of Airworthiness was initially issued on 15 September 2006 with an expiry date of 30 September 2023. The last 50-hour mandatory periodic inspection (MPI) was conducted on 6 June 2022 at 3430.9 airframe hours. The aircraft was reissued a Certificate of Release to Service (CRS) on 6 June 2022 at 3430.9 hours with an expiry date of 3530.9 airframe hours or on 7 June 2023, whichever occurs first. The aircraft had accrued a further 38.9 airframe hours since the last inspection.

1.6.3. According to the reviewed records, the aircraft was last refuelled on 16 February 2023 at FAOH with 227.57 litres to fill the tanks to capacity before the flight to Pearly Beach. The flight duration from FAOH to Pearly Beach was approximately 1 hour. The fuel flow was 10.9 gallons per hour per engine; therefore, approximately 26 gallons (98.4 litres) including start and taxi fuel was used in this flight. If 227.57 - 98.4 = 129 (litres), then the amount of fuel that remained in the tanks before the accident flight was 129 litres.

1.7. Meteorological Information

1.7.1. The pilot questionnaire form completed by the pilot stated the prevailing weather at the time as: 180º at 08 knots, CAVOK, and 22 degrees Celsius.

1.7.2. The meteorological information was sourced from the South African Weather Service (SAWS) for Cape Town International Airport (FACT) on 22 February 2023 at 0930Z. FACT is located 60 nautical miles (nm) north-west of the accident site.

FACT 220930Z 23006KT 160V310 CAVOK 23/11 Q1019 NOSIG=

1.7.3. A review of the weather showed that from 18 to 22 February 2023, good weather conditions prevailed on most days. However, it was cloudy with light to moderate rain overnight on 19 February 2023 into the morning of 20 February 2023, followed by clear skies until 22 February (the accident day).

Wind direction	230°	Wind speed	06 knots	Visibility	≥10000 m
Temperature	23°C	Cloud cover	CAVOK	Cloud base	CAVOK
Dew point	11°C	QNH	1019 hPa		

1.8. Aids to Navigation

1.8.1. The aircraft was equipped with standard navigational equipment as approved by the Regulator (SACAA). There was no record indicating that the navigational equipment was unserviceable prior to the flight.

1.9. Communication

1.9.1. The aircraft was equipped with standard communication equipment as approved by the Regulator. There was no record indicating that the communication system was unserviceable prior to the flight.

1.10. Aerodrome Information

1.10.1 The accident occurred on the R43 road, 3.7km from RWY15, Pearly Beach private airstrip.

Aerodrome Location	Western Cape
Aerodrome Status	Unlicensed
Aerodrome GPS coordinates	34°37'40.00" South, 019°28'19.00" East
Aerodrome Elevation	7.8 feet
Runway Headings	15/33
Dimensions of Runway Used	838 x 9 metres
Heading of Runway Used	15
Surface of Runway Used	Asphalt
Approach Facilities	None
Radio Frequency	119.8 MHz

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 this aircraft type.

1.12. Wreckage and Impact Information

1.12.1. The aircraft lost power on both engines after take-off. The pilot elected to execute a forced landing on the R43 road which ran parallel and to the left of Pearly Beach runway. The pilot averted the power lines that spanned across the road, but the aircraft lost forward speed, stalled and landed hard on the road before it skidded backwards for several metres.

1.12.2. The nose wheel broke off and the right main landing gear collapsed, the propeller blades scrapped the surface of the road during the accident sequence. The aircraft impacted a tree and came to a stop on the edge of the road facing south-east; the post-impact fire initiated on the right wing. The pilot deboarded from the aircraft with minor injuries. He was treated at the accident scene and was later taken to the hospital for medical assessment. The normal aircraft shutdown procedure was not followed due to the post-impact fire that initiated on the right wing. The aircraft maintenance organisation (AMO) recovered the aircraft by road to the operator in FAOH.

1.12.3. The inspection of the airframe, engine and propeller indicated that there was no pre-impact failures, and all damage was attributed to the impact forces during the forced landing sequence. The left-side propeller damage had minimal rotation force during impact, an

indication of no significant engine power. Pronounced damage was to the right propeller blades than the left propeller blades due to the collapse of the right gear assembly which resulted in the propeller strikes on the ground whilst rotating. Both engines were subjected to a teardown inspection by the AMO; no anomalies were noted.

Figure 3: Damage to the right wing and propeller blades. (Source: Operator)

1.12.4. Observation post-accident:

- Right and left engine power levers were towards the ‘open’ position.
- Propeller levers were towards the ‘unfeathered’ position.
- Right and left engine mixture levers were in ‘lean’ position. (Figure 4)
- The magneto switches were found in the ‘on’ position.
- Fuel selectors were found in auxiliary position.
- Landing and strobe lights were found in the ‘on’ position.
- Flaps selector was found in the first notch (take-off) position.

Figure 4: The throttle lever power quadrant after the accident. (Source: Operator)

1.13. Medical and Pathological Information

1.13.1. None.

1.14. Fire

1.14.1. A post-impact fire initiated from the right-wing trailing edge after the landing sequence. A truck driver who was driving by helped the pilot contain the fire using a portable fire extinguisher to contain the fire before the arrival of EMS. The fire was extinguished by the EMS personnel.

Figure 5: The EMS at the accident site. (Source: EMS)

1.15. Survival Aspects

1.15.1. The accident was considered survivable as there was no damage to the cockpit and cabin area that could have seriously injured the pilot. The pilot had made use of the safety harness.

1.16. Tests and Research

1.16.1. The aircraft was transported to FAOH on 23 February 2023 for examination. No pre-accident anomalies were noted from the engines and all the aircraft systems. Fuel samples were drawn from the right and left tanks to be tested.

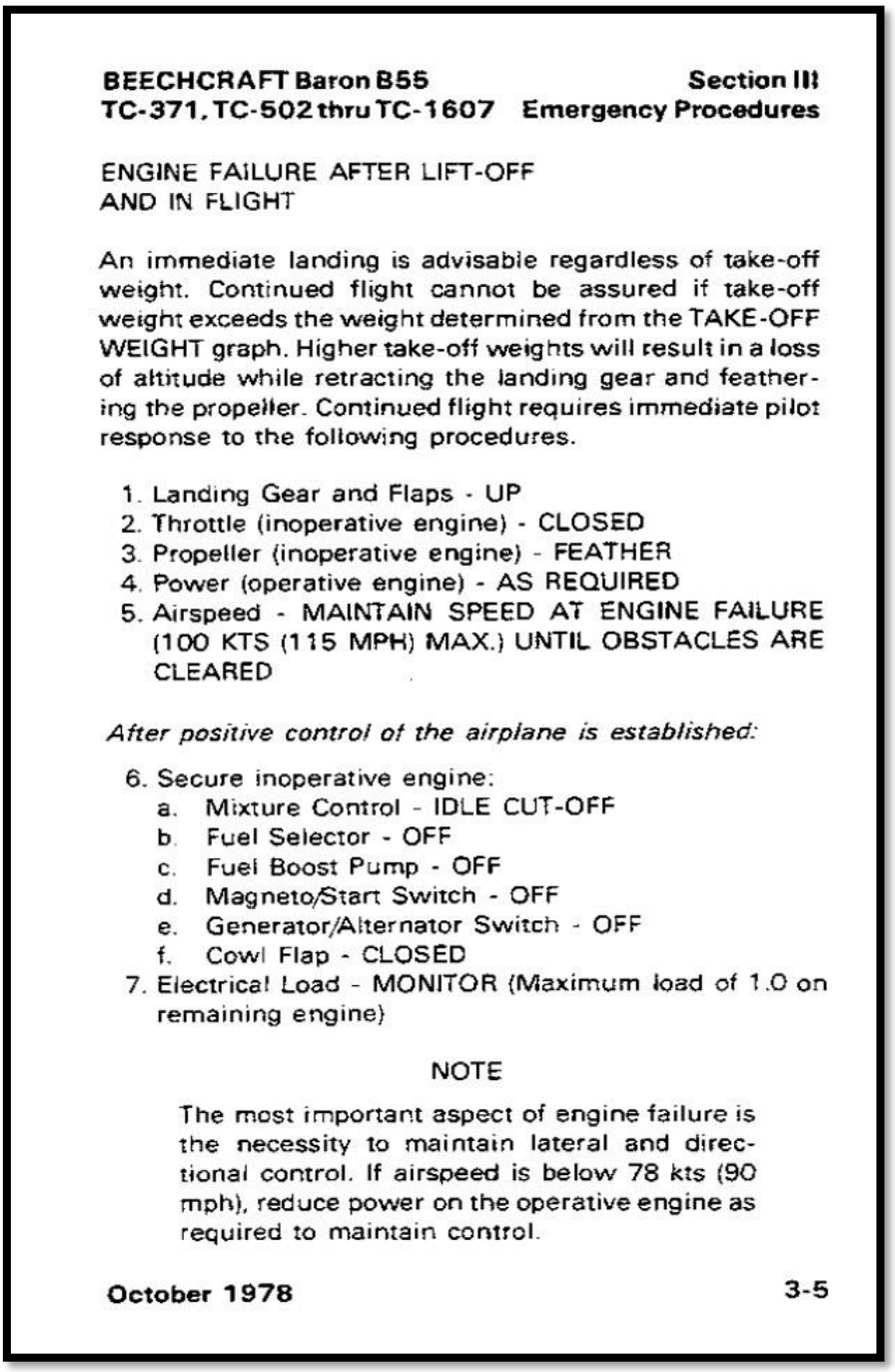
1.16.2. On 24 February 2023, the electric components – four magnetos and two alternator generators – were taken to an approved AMO at George Airport (FAGG) for testing. The components were tested by qualified aircraft maintenance engineers (AME) in the presence of the investigators using calibrated equipment. No anomalies were detected on the components. The AMO had an AMO certificate that was issued by the Regulator on 2 November 2022 with an expiry date of 30 November 2023.

Figures 6 and 7: The left and right magnetos during testing.

1.16.3. Fuel samples from the fuel tanks were tested for water and contaminants, and none was detected. The aircraft fuel system, including fuel pumps, were bench tested on 16 March 2023 and they met all the parameters set out by the manufacturer.

Figure 8: The fuel samples from the left and right tanks.

Figures 9 and 10: The left and right fuel pumps on a test bench.



BEECHCRAFT Baron B55 **Section III**
TC-371, TC-502 thru TC-1607 **Emergency Procedures**

ENGINE FAILURE AFTER LIFT-OFF
AND IN FLIGHT

An immediate landing is advisable regardless of take-off weight. Continued flight cannot be assured if take-off weight exceeds the weight determined from the TAKE-OFF WEIGHT graph. Higher take-off weights will result in a loss of altitude while retracting the landing gear and feathering the propeller. Continued flight requires immediate pilot response to the following procedures.

1. Landing Gear and Flaps - UP
2. Throttle (inoperative engine) - CLOSED
3. Propeller (inoperative engine) - FEATHER
4. Power (operative engine) - AS REQUIRED
5. Airspeed - MAINTAIN SPEED AT ENGINE FAILURE (100 KTS (115 MPH) MAX.) UNTIL OBSTACLES ARE CLEARED

After positive control of the airplane is established:

6. Secure inoperative engine:
   a. Mixture Control - IDLE CUT-OFF
   b. Fuel Selector - OFF
   c. Fuel Boost Pump - OFF
   d. Magneto/Start Switch - OFF
   e. Generator/Alternator Switch - OFF
   f. Cowl Flap - CLOSED
7. Electrical Load - MONITOR (Maximum load of 1.0 on remaining engine)

NOTE

The most important aspect of engine failure is the necessity to maintain lateral and directional control. If airspeed is below 78 kts (90 mph), reduce power on the operative engine as required to maintain control.

October 1978 **3-5**

Figure 11: The emergency procedure after lift-off. (Source: Pilot's Operating Handbook)

1.16.4 The aircraft Pilot's Operating Handbook (POH) has no emergency procedure in the event that two engines fail after take-off. The propeller blades were in an unfeathered position which indicated minimal engine power on impact.

1.16.5 The outcome of the AMO inspection/tests:

- *The AMO found no fuel contamination or water in the remaining wing tank or fuel distributor.*
- *Alternators were tested and found serviceable.*
- *The fuel selector box was tested and found to be operational.*
- *Fuel pumps were found serviceable.*

- *Both engines were found to be operational.*
- *The aircraft propellers indicate that the engines were windmilling/running with partial power on impact. This suggests that a complete engine failure is debatable but rather that a partial loss of power was experienced.*
- *Bench testing the fuel system, indicated that the fuel system was serviceable.*
- *The mixture control levers positions were tested to simulate the mixture control positions as they were found post-impact, and it was noted that the engines would not be able to produce sufficient power for a level flight. Testing results showed that the found mixture setting position only supplied a fuel flow of 8 and 7 Gal/hr to the engines, respectively. According to the Flight Manual, the optimum mixture setting is 13 Gal/hr.*

We (AMO) are uncertain as to the definitive cause of the accident but looking at industry trends and previous industry accidents, the Beechcraft Baron tends to cause mishaps due to environmental capture, as the throttle, pitch lever and mixture levers are installed in a non-standard sequence. It is possible that the pilot might have mistaken the mixture lever for the propeller pitch lever and, thus, leaned the mixture instead of reducing propellor RPM after take-off. This might have led to a point where insufficient power was being generated by the engines and level flight was not possible.

1.16.6 Below is an example of the cockpit layouts of the King Air BE20 (Figure 11) and the Piper Seminole PA44 (Figure 12) multi-engine aircraft, with the throttle lever on the left, propeller lever in the centre, and mixture lever to the right of the quadrant, which the pilot was also rated on. The accident aircraft's throttle lever is positioned in the middle of the quadrant (Figure 4).

Figure 12: An example of the BE20 cockpit layout. (Source: https://www.generalairways.co.za/kingAirB200/*)*

Figure 13: An example of the PA44 cockpit layout (Source: https://www.flyffh.com/2-umruestung-abgeschlossen/p1000398/)

1.17. Organisational and Management Information

1.17.1. The aircraft was operated privately under the provisions of Part 91 of the CAR 2011 as amended.

1.17.2. An authorised AMO maintained the aircraft. The AMO had an AMO certificate that was issued by the Regulator on 9 November 2022 with an expiry date of 31 October 2023.

1.18. Additional Information

1.18.1 None.

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 was licensed and had the correct rating to conduct the flight. He had a Class I medical certificate. The pilot had flown the aircraft from FAOH to Pearly Beach private airstrip on 18 February 2023 without incident. The flight was conducted in day light; good weather

conditions prevailed on the day of the accident but there was ambient moisture and rain on the night of 19 February 2023 night the morning of 20 February 2023, two days before the flight. This led to the fuel tanks accumulating water, which the pilot drained before the flight.

2.2.2. According to the records, the aircraft was properly maintained in accordance with the Regulation and the manufacturer prescriptions. It was airworthy at the time of the flight.

2.2.3. The AMO which maintained the aircraft had the appropriate ratings and could operate within the scope of their approval.

2.2.4. The aircraft was last refuelled on 16 February 2023 at FAOH with 227.57 litres. Therefore, there was sufficient fuel to conduct the flight from Pearly Beach private airstrip to FAOH. The samples drawn from the fuel remaining in the tanks after the accident were clear of contaminants. There was no evidence of anomalies with the engines and the electric systems. The aircraft was parked in the apron for four days which may have had low battery power after start; hence, the alternator lights which illuminated after take-off.

2.2.5. Based on the position of the aircraft's power controls as they were found at the accident scene (Figure 4), it is probable that the pilot may have inadvertently over leaned the engine mixtures which led to loss of both engines power due to non-standard positioning of the levers. The position of the fuel mixture lever during recovery rendered the optimal fuel flow of 13 gallons per hour (Gal/hr) to maintain normal flight, which was impossible as both fuel condition levers were set at a position which supplied 7 to 8 Gal/hour. Therefore, the engines power loss was probably due to fuel starvation.

2.2.6. This led to an unsuccessful forced landing on the public road. The POH does not have a procedure to be followed in the event that two engines fail after take-off.

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 pilot was reissued an ATPL Aeroplane on 29 July 2022 with an expiry date of 31 July 2023 with a Class 1 Test Pilot and Grade II Instructor ratings endorsements. The BE55 aircraft type was endorsed on his licence.

3.2.2. The pilot had a Class I medical certificate that was issued on 8 August 2022 with an expiry date of 31 July 2023 with a restriction to wear corrective lenses. The flight was operated privately under VFR and under the provisions of Part 91 of the CAR 2011 as amended.

3.2.3. The aircraft was issued a Certificate of Registration (C of R) on 10 August 2010. The Certificate of Airworthiness (C of A) was initially issued on 15 September 2006. The latest C of A had an expiry date of 30 September 2023.

3.2.4. The Certificate of Release to Service (CRS) was issued on 6 June 2022 at 3430.9 hours with an expiry date of 7 June 2023 or at 3530.9 airframe hours, whichever occurs first. The aircraft had accrued 38.9 hours since the last inspection. The aircraft was maintained by the AMO with an AMO certificate that was issued by the Regulator on 9 November 2022 with an expiry date of 31 October 2023.

3.2.5. The aircraft lost power on both engines shortly after take-off due to incorrect setting of the fuel condition levers at approximately 1000ft AMSL. The pilot could not recover the engine power and he elected to execute a forced landing. The pilot executed an unsuccessful forced landing on the R43 road and, the aircraft touched down hard which resulted in substantial damage.

3.2.6. The aircraft sustained damage to both left and right engine propellers which were not in the feathered position, an indication of no significant engine power on impact. The aircraft's electric, fuel systems and engine teardown results did not reveal any anomalies with all the systems.

3.3. Probable Cause

3.3.1. Loss of engine power due to incorrect setting of the fuel condition levers which led to fuel starvation and the subsequent unsuccessful forced landing.

3.4. Contributory Factor/s

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 Recommendation/s

4.2.1. None.

5. APPENDICES

5.1. None.

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