



AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/9533	
Aircraft Registration	ZS-DOM	Date of Accident	26 March 2016		Time of Accident	1400Z
Type of Aircraft	Cessna T206H		Type of Operation		Private Part 91	
Pilot-in-command Licence Type	Private Pilot	Age	57	Licence Valid	Yes	
Pilot-in-command Flying Experience	Total Flying Hours	2780.9		Hours on Type	679.2	
Last point of departure	Aviators Paradise Field Airport (FAAP) Gauteng					
Next point of intended landing	Borneo Farm (Timbavati private nature reserve) Mpumalanga					
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)						
On a private farm at end of the runway						
Meteorological Information	Wind direction:190°; Wind speed:5kt; Wind temperature:30°C: Visibility: Good					
Number of people on board	1+3	No. of people injured	4	No. of people killed	0	
Synopsis	<p>The pilot, accompanied by three passengers, was performing a go-around when the accident occurred. A farm worker, who resides on the farm where the accident happened, saw the aircraft on its arrival approach. He stated that he heard the aeroplane approaching and went outside as he was expecting the farm owner to return in accordance with their telephone discussion earlier. As he was standing outside the house and looking at the aircraft, he confirmed that it was the farm owner coming in to land on his private airstrip. He then decided to continue with what he was doing inside the house where after his wife told him that she heard a noise as if the airplane crashed. He then went outside and looked up the runaway and could not see or hear the aeroplane approaching. The farm worker then drove to the top of the runway to investigate. As he approached he noticed the aeroplane had crashed just after the end of the runway on the right hand side. According to the pilot, during approach for landing he noticed he was too high and reduced power and initiated a steep descent. He then realised he was too deep for landing and initiated a go-around at a low height. During the go-around configuration the aircraft stalled and crashed. The pilot and his passengers were injured.</p> <p>The investigation revealed that the aircraft crash was due to stall during an attempted go-around.</p>					
Probable Cause						
The aircraft stalled as a result of insufficient forward speed following the pilot's decision to go-around during a failed attempted landing.						
Contributory Factor						
Wrong technique: the pilot failed to maintain flying speed and stalled the aircraft						
SPR Date	17 January 2017		Release Date	06 February 2017		
CA 12-12a		20 NOVEMBER 2015			Page 1 of 18	



AIRCRAFT ACCIDENT REPORT

Name of Owner : Van den Berg JL, T/A Domberg Lugdiens
Name of Operator : Van den Berg JL, T/A Domberg Lugdiens
Manufacturer : Cessna Aircraft Company
Model : T206H
Nationality : South African
Registration Marks : ZS-DOM
Place : Mpumalanga Province
Date : 26 March 2016
Time : 1400Z

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) 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 establish legal 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 On the day of the accident, the pilot who is also the owner of the farm where the accident occurred, was expected by the farm worker to arrive back at the farm with his aeroplane. The pilot was accompanied by three passengers during the flight. On the arrival approach, the farm worker who resides in one of the farm houses heard the aeroplane's noise and went outside to see whether it was the farm owner. Upon confirmation that it was the farm owner, he noticed that it was the farm owner's aeroplane coming in to land and decided to go back into the house to continue with

his work.

- 1.1.2 Moments afterwards, his wife told him that she heard a noise that sounded like a plane crash. The farm worker went outside and looked towards the top of the runway and then listened and checked to see if the aeroplane was approaching. As he could not see the aeroplane, he decided to drive towards the end of the runway to investigate. Upon approaching the end of the runway, the farm worker noticed that the aeroplane had crashed on the left side of the runway. All four occupants were injured inside the aeroplane.



Figure 1: Google view of the accident site

- 1.1.3 According to the pilot, he was distracted for a short time during his approach for landing, and realised that he was too high to approach for landing. He reduced the engine power and continued with the descent but at some point he noticed that the aircraft was too deep for landing. He then decided to initiate a go-around by applying full power and immediately took away the flaps. Shortly after taking the evasive actions the aircraft stalled and the pilot lost directional control to the left of the runway.
- 1.1.4 The pilot noticed that the aircraft was going to crash and so he attempted to regain control by pulling back on the controls; however this action worsened the situation.

The aircraft crashed on the left-hand side of the runway with a nose-down attitude and was destroyed. The pilot and his passengers were seriously injured during the accident sequence.

- 1.1.5 The aeroplane crash occurred during daylight meteorological conditions while on approach for landing on a private farm airstrip with GPS co-ordinates S 24° 13' 54.7", E 031° 25' 26.9" and field elevation of 3780 ft.

1.2 Injuries to Persons

- 1.2.1 The pilot and his passengers sustained serious injuries during the accident sequence.

Injuries	Pilot	Crew	Pass.	Other
Fatal	-	-	-	-
Serious	1	-	3	-
Minor	-	-	-	-
None	-	-	-	-

1.3 Damage to Aircraft

- 1.3.1 The aircraft was destroyed during the accident sequence



Figure 2: Shows the aircraft as it came to rest

1.4 Other Damage

1.4.1 None

1.5 Personnel Information

Nationality	South African	Gender	Male	Age	57
Licence Number	027174741	Licence Type	Private Pilot		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	Night, Instrument				
Medical Expiry Date	28 February 2017				
Restrictions	None				
Previous Accidents	None				

Flying Experience:

Total Hours	2780.9
Total Past 90 Days	8.0
Total on Type Past 90 Days	8.0
Total on Type	679.2

1.6 Aircraft Information

Airframe:

- 1.6.1 The T206H is a six seat landplane, powered by a turbocharged Lycoming TIO-540-AJ1A of 310hp (231 kW), with a gross weight of 3,600 lb (1,633 kg); it was certified on 1 October 1998. After a production hiatus of twelve years, Cessna started manufacturing a new version of the venerable 206 in 1998, with the introduction of the newly certified 206H. The "H" model is generally similar to the previous U206 configuration, with a pilot entry door and a rear double clamshell door for access to the middle and back seats. The "H" is marketed under the name "Station air".

A switch was added to the flap actuation circuit which disables the flaps when the

doors are open. One problem is that if the flaps are already down, the passenger must perform the complicated procedure of opening the front part as far as possible (about 2 in (5.1 cm)) then open the rear door and bestow the rear door handle. This then gives enough clearance to open the rear part of the door. Both the 206H and T206H remained in production in 2013.

Type	Cessna T206H	
Serial Number	T20608958	
Manufacturer	Cessna Textron Company	
Date of Manufacture	1973	
Total Airframe Hours (At time of Accident)	595.7	
Last MPI (Date & Hours)	18 March 2016	588.8
Hours since Last MPI	6.9	
C of A (Expiry Date)	28 July 2015	
C of R (Issue Date) (Present owner)	15 July 2011	
Operating Categories	Standard Part 91	

Engine:

Type	Lycoming TIO-540-AJ1A
Serial Number	L-13457-61E
Hours since New	595.7
Hours since Overhaul	TBO not yet reached

Propeller:

Type	Mc Cauley B3D36C432
Serial Number	090919
Hours since New	595.7
Hours since Overhaul	TBO not yet reached

1.6.2 Aircraft documentation such as maintenance records, certificates and service bulletin letters were studied and reviewed. All service bulletins published by the engine and aircraft manufacturers were complied with during aircraft servicing.

1.7 Meteorological Information

1.7.1 Meteorological information as obtained from the pilot's questionnaire:

Wind direction	190°	Wind speed	5kt	Visibility	Good
Temperature	30°C	Cloud cover	none	Cloud base	None
Dew point	None				

1.8 Aids to Navigation

1.8.1 The aircraft was equipped with the standard factory-fitted navigational equipment approved by the Regulator. There were no recorded defects to the navigational equipment prior to the flight.

1.9 Communications.

1.9.1 The aircraft was equipped with one VHF (very high frequency) radio approved by the Regulator. There were no recorded defects regarding the communications equipment prior to flight.

1.10 Aerodrome Information

1.10.1 The aircraft accident occurred on a private farm and at the left end of the prepared landing strip at approximately 150 meters from the end of the runway. The runway is gravel surfaced with enough running length for aircraft landing.

1.11 Flight Recorders

1.11.1 The aircraft was not equipped with a flight data recorder or a cockpit voice recorder. Neither recorder was required by the relevant aviation regulations.

1.12 Wreckage and Impact Information

1.12.1 The aircraft crashed on the left-hand side of the runway in relation to the landing direction. The runway is surrounded by trees with most of them at a maximum height of approximately 3 meters.

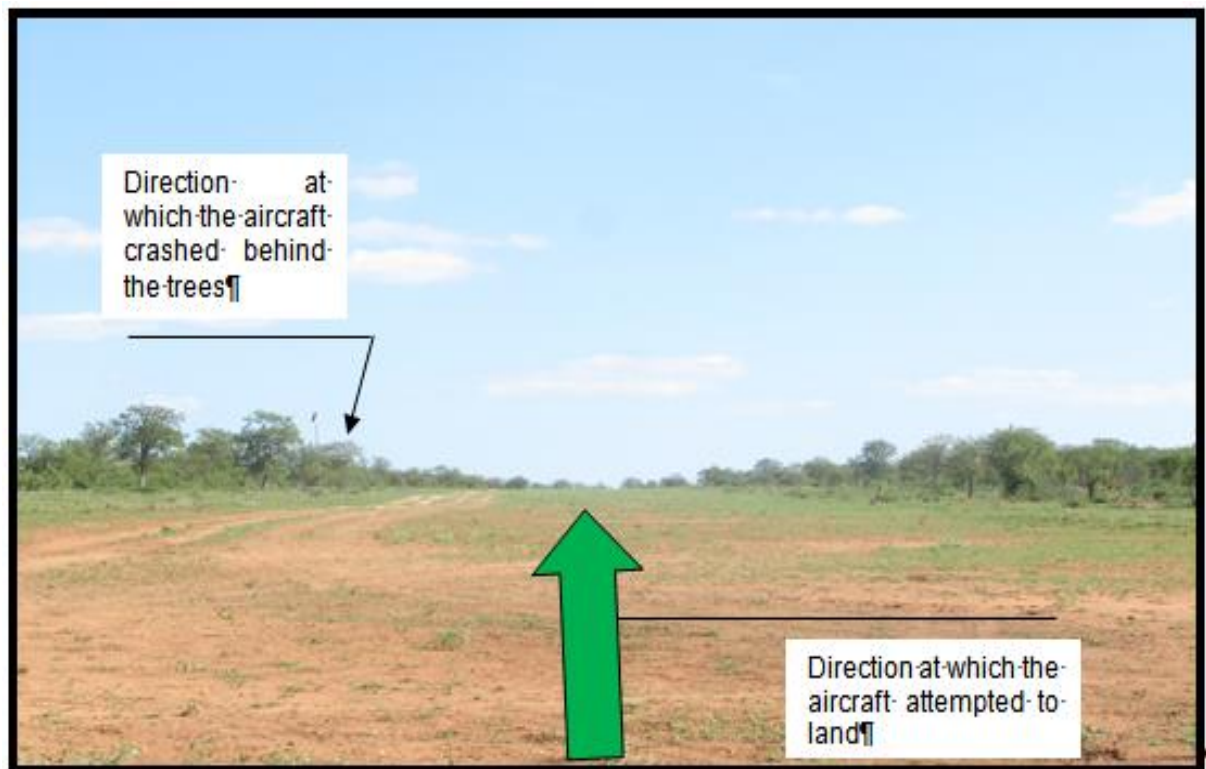


Figure 3: Shows the runway on the side next to aircraft crash

1.12.2 According to the pilot, shortly after he decided to go-around, the aircraft stalled and he lost directional control to the left of the runway. He then realised that the aircraft was going to impact with the ground and then pulled back on the controls, which worsened the situation. This action caused the left wing to drop and to impact with the ground first.

1.12.3 The onsite observation revealed the following regarding the aircraft wreckage and the impact marks.

- The aircraft stalled and dropped the nose towards the left-hand side and then entered into an inverted attitude.
- According to the impact marks trail and damages, the aircraft first clipped a

tree with its left wing following a stall prior to impact with the ground.

- The initial impact with the ground was on a tree, with the left hand wing first, followed by the nose section as shown below in Figure 4.

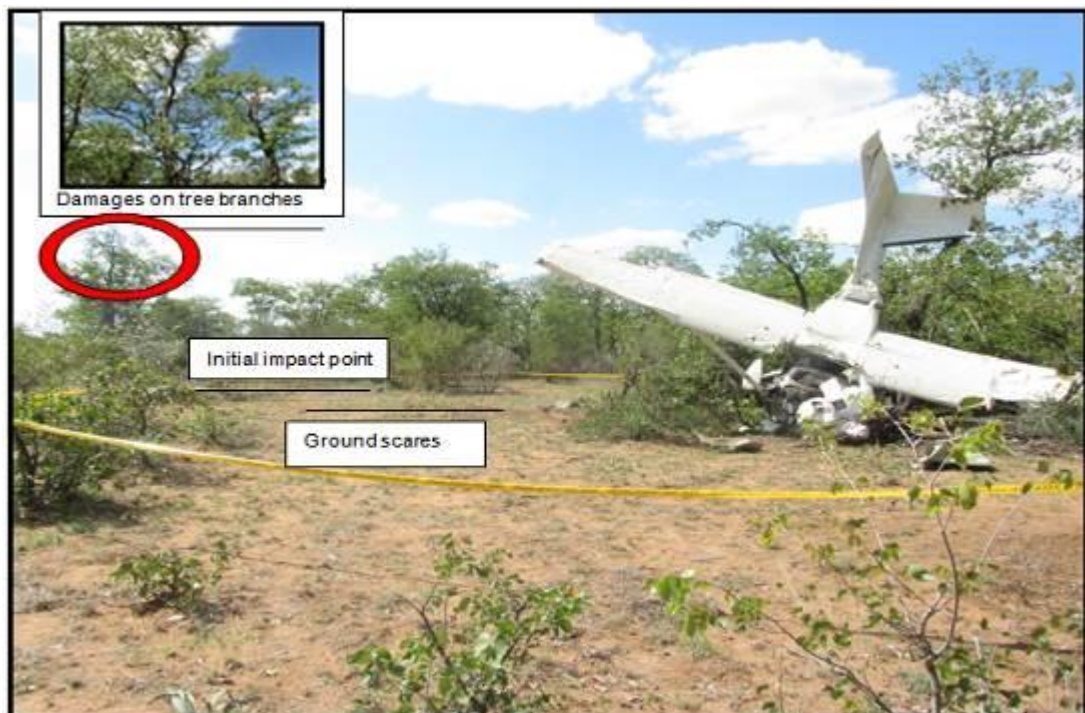


Figure 4: Shows the tops of trees which were clipped by the aircraft



Figure 5: The aircraft impact trail

1.12.4 Following impact, the aircraft rolled to the left as the right wing contacted the ground on its tip, becoming a pivot point allowing the aircraft to rotate further. It came to rest against the big tree as shown in Figure 5 above. The aircraft remained resting against the tree with the nose in a facing down attitude.



Figure 6: Shows damages on the left wing

Figure 7: Shows damages on the nose section

1.12.5 More damage was observed on the left wing and the nose section. The damage to the propeller blades is consistent with damage resulting on impact when the engine is running with high power. The aircraft empennage was damaged. Most of the wreckage was intact and localised within a radius of approximately 15 meters at the impact contact points.

1.13 Medical and Pathological Information

1.13.1 Following the accident, all occupants of the aircraft was admitted at the hospital due to the serious injuries sustained.

1.14 Fire

1.14.1 There was no evidence of pre- or post-impact fire during the accident sequence.

1.15 Survival Aspects

1.15.1 There were no fatalities during the accident sequence. However, all occupants of the aircraft sustained serious injuries during the accident. The attitude at which the aircraft impacted the ground was more susceptible to cause serious or fatal injuries. The shoulder harnesses provided in the aircraft were being used by all occupants during the flight and these helped to restrain them, avoiding even more serious injuries.

1.16 Tests and Research

1.16.1 The pilot stated that he stalled the aircraft as he attempted to reject landing. This was following an attempted landing whereby the aircraft was too deep for safe landing on a runway surface. No special tests were conducted on any of the aircraft components and systems. However, the onsite inspection showed that all damage to the aircraft and control systems was accounted for and was attributable to damage upon impact.

1.16.2 SHORT FIELD LANDING

The following information is extracted from the T206HBUS-00 Manual: GFC 700 AFCS

DESCENT

At 75% MCP or less (both manifold pressure and RPM indicators in the green arcs), adjust the mixture if necessary to get smooth engine operation. Avoid using FULL RICH mixture during long or low power descents. Using FULL RICH mixture under these conditions can cause carbon and lead deposits to be formed in the engine which could result in roughness or hesitation.

For a short field landing in smooth air conditions, approach at 67 KIAS with FULL flaps using enough power to control the glide path. Slightly higher approach speeds should be used in turbulent air conditions. After all approach obstacles are cleared,

smoothly reduce power and hold the approach speed by lowering the nose of the airplane. The main wheels must touch the ground before the nose-wheel with power at idle. Immediately after the main wheels touch the ground, carefully lower the nose-wheel and apply heavy braking as required. For maximum brake performance, retract the flaps, hold the control wheel full back, and apply maximum brake pressure without skidding the tyres.

BALKED LANDING (Go-Around)

In a bailed landing (go-around) climb, reduce the flap setting to 20° immediately after full power is applied and climb at 85 KIAS. Adjust mixture to 34 GPH fuel flow. After clearing any obstacles, carefully retract the flaps and allow the airplane to accelerate to normal climb airspeed.

STALLS

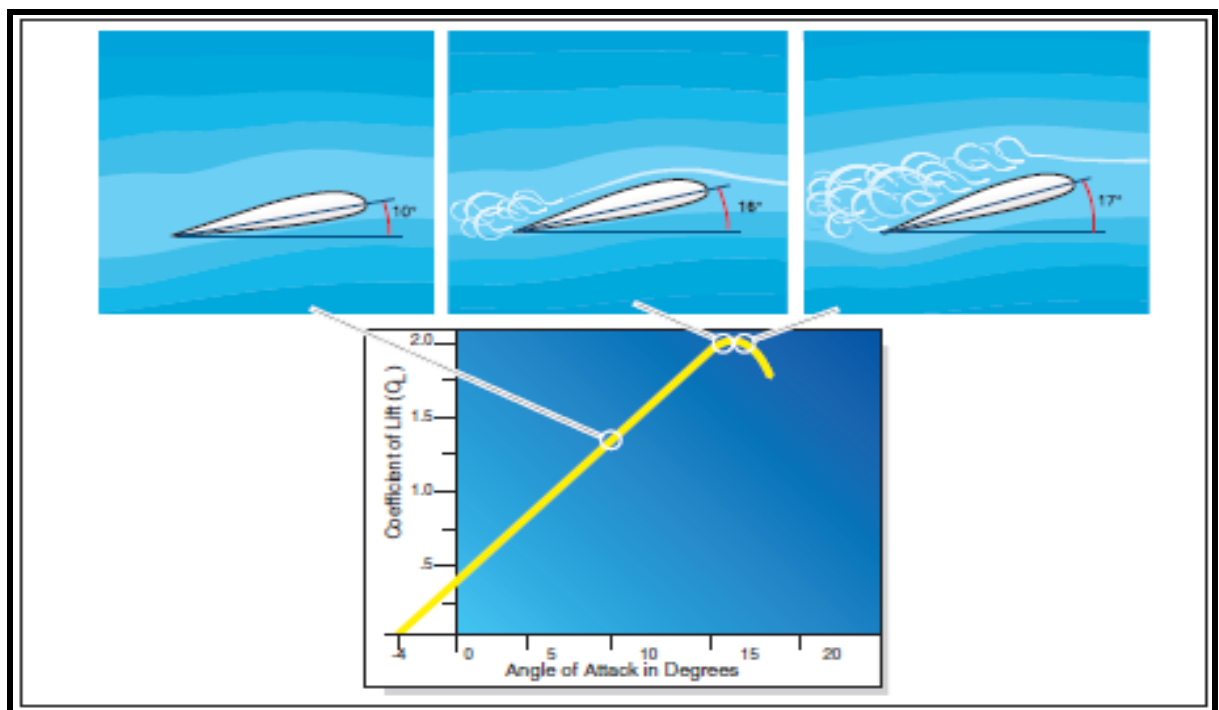


Figure 8: Critical angle of attack and stall

A stall occurs when the smooth airflow over the airplane's wing is disrupted, and the lift degenerates rapidly. This is caused when the wing exceeds its critical angle of attack. This can occur at any airspeed, in any attitude, with any power setting. The practice of stall recovery and the development of awareness of stalls are of primary

importance in pilot training. The objectives in performing intentional stalls are to familiarize the pilot with the conditions that produce stalls, to assist in recognizing an approaching stall, and to develop the habit of taking prompt preventive or corrective action.

Intentional stalls should be performed at an altitude that will provide adequate height above the ground for recovery and return to normal level flight. Though it depends on the degree to which a stall has progressed, most stalls require some loss of altitude during recovery. The longer it takes to recognize the approaching stall, the more complete the stall is likely to become, and the greater the loss of altitude to be expected.

A number of factors may be induced as the result of other factors. For example, when the airplane is in a nose-high turning attitude, the angle of bank has a tendency to increase. This occurs because with the airspeed decreasing, the airplane begins flying in a smaller and smaller arc. Since the outer wing is moving in a larger radius and traveling faster than the inner wing, it has more lift and causes an overbanking tendency. At the same time, because of the decreasing airspeed and lift on both wings, the pitch attitude tends to lower. In addition, since the airspeed is decreasing while the power setting remains constant, the effect of torque becomes more prominent, causing the airplane to yaw.

STALL WARNING SYSTEM

The airplane is equipped with a vane-type stall warning system consisting of an inlet in the leading edge of the left wing, which is electrically connected to a stall warning horn located in the headliner above the left cabin door. 5-amp push-to-reset circuit breakers labeled WARN, on the left side of the circuit breaker panel, protects the stall warning system. The vane in the wing senses the change in airflow over the wing, and operates the warning horn at airspeeds between 5 and 10 knots above the stall in all configurations.

The airplane has a heated stall warning system. The vane and sensor unit in the wing leading edge is equipped with a heating element. The heated part of the system is operated by the PITOT HEAT switch, and is protected by the PITOT HEAT circuit breaker.

The stall warning system should be checked during the preflight inspection by momentarily turning on the MASTER switch and actuating the vane in the wing. The system is operational if the warning horn sounds as the vane is pushed upward.

STALL CHARACTERISTICS

The information is extracted from the T206HBUS-00 Manual: GFC 700 AFCS

The stall characteristics are conventional and an aural warning is provided by a stall warning horn which sounds between 5 and 10 knots above the stall in all configurations. Altitude loss during stall recovery may be as much as 360 feet.

Power-off stall speeds at maximum weight for both forward and aft C.G. positions are presented in Section 5 of the abovementioned T206HBUS manual.

1.17 Organizational and Management Information

1.17.1 This was a private flight operated under provision of standard Part 91

1.18 Additional Information

1.18.1 The pilot was qualified and has sufficient experience on the aircraft type, demonstrating a clear understanding of the aircraft's operational limitations. The pilot had 679,2 flying hours on the aircraft type at the time of the accident. Moreover the pilot had a total of approximately 2870,9 flying hours experience. The pilot stated clearly that because of the distraction he experienced during the important time of final landing approach, he realised he was too deep for landing and decided to go-around.

1.19 Useful or Effective Investigation Techniques

1.19.1 None

2. ANALYSIS

2.1 Man

- 2.1.1 According to the available records the pilot was licensed and qualified for the flight. He holds a valid medical certificate with the aircraft type endorsed on his license.
- 2.1.2 During the investigation follow-up, the pilot stated clearly that because of the distraction that he experienced for a short period at the important moment of final landing approach, he realised he was too high for landing but attempted to land the aircraft regardless. During an attempt at landing at some point at a low height, he realised that the aircraft was too deep for a safe landing. The pilot then decided to reject landing whereby he increased power and re-configured the aircraft for go-around. However, the aircraft stalled and crashed.

The pilot reduced aircraft power to achieve a high rate of descent and to reduce forward speed during an attempt to land on the remaining runway. The pilot's actions and statements indicated that his knowledge and understanding of the aircraft systems was adequate despite the events that led to the accident. His flying experience, totalling 2780.9 flying hours with approximately 679.2 flying hours on the aircraft type, qualifies his statement made during the reporting of the accident. The pilot's decision making was not appropriate at the time of landing approach. He should have considered executing a go-around. The aircraft had enough fuel remaining which could have afforded the pilot the opportunity to execute a safe go-around as soon as he noticed he was too high on approach.

2.2 Machine

- 2.2.1 According to the aircraft maintenance records, the aircraft was maintained and equipped in accordance with existing regulatory approved procedures.
- 2.2.2 The aircraft had a valid Certificate of Airworthiness which had been awarded in accordance with the regulations. There was no evidence of any defect or malfunction on the aircraft that could have contributed to the accident. There was enough fuel on-board the aircraft for the flight.

2.2.3 The pilot stated that during approach for landing and while the aircraft was already configured for landing, he was distracted for a short period of time. As he refocussed on the aircraft operation, he realised that the aircraft was too high for landing. However he took off power to commence a steep landing approach. He then noticed that the landing was going to be too deep with an insufficient runway left for landing roll. The pilot initiated a go-around at a low height. During this time the aircraft stalled because of insufficient available engine power and aircraft configuration.

- At first the pilot was distracted during the landing approach. He then realised that the landing approach was too high which would have resulted in a deep touchdown, leaving a short runway for the landing roll. The pilot indicated that he reduced power; however, it is possible that he reduced the power too much with the intention of reducing forward speed significantly by increasing drag and rate of descent. This action is not safe but will not have consequences as long as there is enough runway to execute a safe landing roll. Thus, it is possible that the pilot might have reduced the aircraft power beyond the critical level and as a result, when he decided to initiate a go-around the aircraft speed was too low and the aircraft was at too low a height.
- The flaps had to be adjusted from a position of inducing drag to a position of improving lift; time was an important factor at that stage. At the time the pilot increased power and configured the aircraft for take-off, he pulled the aircraft controls up earlier than required as he was trying to avoid a collision with a tree at a distance from the runway end. The aircraft at the time could have not gained sufficient forward speed to create sufficient lift (airflow under the wings) and also by pitching the nose up, induced an angle of attack which might have exceeded the maximum allowable required. The aircraft then stalled and clipped some tree tops before it crashed in an inverted attitude.

2.3 Environment

2.3.1 The place where the aircraft landed was a prepared airstrip with sufficient length for a pilot to execute a safe landing. However, the pilot's actions during approach led

him to decide to go-around, and as a result, the runway remaining was too short. The pilot was trying to avoid overshooting the runway and colliding with a tree.

- 2.3.2 According to the weather report, good weather conditions prevailed in the area. Therefore, the weather cannot be considered as being a contributing factor to the accident.

2.4 Conclusion

- 2.4.1 The investigation concluded that the pilot's statement made during reporting of the accident was adequate in relation to the events of the accident sequence. The pilot stated that he stalled the aircraft during an attempt at a go-around following a misjudged landing approach. The pilot's initial actions and his decision to go-around were not adequate and led to the aircraft accident, in which all occupants incurred serious injuries.

3. CONCLUSION

3.1 Findings

- 3.1.1 The flight pilot was properly licensed, medically fit and adequately rested to operate the flight.
- 3.1.2 According to the available evidence, the aircraft was certified, equipped and maintained in accordance with existing regulations and approved procedures.
- 3.1.3 The pilot's actions and statements indicated that his knowledge and understanding of the aircraft systems was adequate at the time of the accident.
- 3.1.4 All control surfaces were accounted for, and all damage to the aircraft was found to be attributable to the severe impact forces.
- 3.1.5 There was no evidence of any defect or malfunction in the aircraft that could have contributed to the accident.

- 3.1.6 The pilot made a late decision to go-around while attempting to land the aircraft although he was aware of the short fall of the runway space, because of his landing approach height and position.
- 3.1.7 The pilot's decision to go-around was not appropriate at the time of flight.
- 3.1.7 The pilot stated that he was distracted during landing approach and he then reduced power to achieve a high rate of descent after he noticed that he was going to land the aircraft too deep.
- 3.1.8 It is possible that the maximum allowable angle of attack was exceeded during an attempt to lift up the aircraft nose.

3.2 Probable Cause/s

- 3.2.1 The aircraft stalled as a result of insufficient forward speed following the pilot's decision to go-around during a failed attempted landing.

3.3 Contributing Factors

- 3.3.1 Wrong technique: the pilot failed to maintain flying speed and stalled the aircraft

4. SAFETY RECOMMENDATIONS

- 4.1 None

5. APPENDICES

- 5.1 None

...END...