AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/9930		
Aircraft registration	ZS-CNM	**Date of accident**	6 November 2020		**Time of accident**	1352Z	
Type of aircraft	Cirrus SR22T (Aeroplane)		**Type of operation**		Part 91 (Private)		
Pilot-in-command licence type	Commercial		**Age**	63	**Licence valid**	Yes	
Pilot-in-command flying experience	Total flying hours		3 533.3		Hours on type	5.0	
Last point of departure	Hazyview Aerodrome (FAHW), Mpumalanga Province						
Next point of intended landing	Nelspruit Aerodrome (FANS), Mpumalanga Province						
Damage to the Aircraft	Destroyed						
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)							
Pecan nut orchard next to FANS (GPS position: 25°30'04.05" South 030°55'00.30" East), elevation 2792 feet							
Meteorological information	Surface wind: 329°/9kts gusting 17kts; Temperature: 32°C; Visibility: CAVOK						
Number of people on board	1 + 0	**No. of people injured**	0	**No. of people killed**	1		
Synopsis							

A Cirrus SR22T aircraft with registration ZS-CNM which took off on Friday afternoon, 6 November 2020 at 1320Z from Hazyview Aerodrome (FAHW) was destroyed during an accident which occurred shortly after the aircraft had touched down hard and bounced on Runway 22 at Nelspruit Aerodrome (FANS). The commercially licenced pilot had opted to perform a go-around, which was unsuccessful, and was fatally injured during the accident.

A close circuit television (CCTV) camera attached to a support pole on the roof structure of a building at the aerodrome and facing towards the runway captured approximately 6 seconds of the aircraft in a left-wing low attitude. In the footage, the aircraft is seen disappearing below the tree line to the left of Runway 22 and, approximately 40 seconds later, black smoke is seen ascending behind the trees. The aircraft was destroyed by post-impact fuel-fed fire that erupted thereafter.

The flight was conducted in Visual Meteorological Conditions (VMC) by day and under Part 91 of the Civil Aviation Regulations (CAR) 2011 as amended.

Probable Cause

Pilot's failure to maintain control of the aircraft during an attempted go-around after a hard touchdown which was followed by a bounce, attributed to an unstable approach.

Contributory factors:

1. Pilot not compensating for a left yaw following the application of maximum power (slam the throttle forward) during an attempted go-around.
2. Pilot's lack of experience on the aircraft type.

SRP date	14 September 2021	Release date	16 September 2021

DESCRIPTION OF THE ACCIDENT

Name of the owner	**:** Aircraft Asset Finance Corporation
Name of the operator	**:** Part 91 (Private)
Manufacturer	**:** Cirrus Aircraft
Model	**:** SR22T
Nationality	**:** South African
Registration markings	**:** ZS-CNM
Place	**:** Mbombela, Mpumalanga Province
Date	**:** 6 November 2020
Time	**:** 1352Z

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 apportion blame or liability.***

Investigations process:

The accident was notified to the Accident and Incident Investigations Division (AIID) on 6 November 2020. An investigator was dispatched to Mbombela the following morning. The investigator co-ordinated with the authorities on site by initiating the accident investigation process according to CAR Part 12 and the investigation procedures. The AIID of the Republic of South Africa is leading the investigation as it is the State of Occurrence.

Notes:
1. Whenever the following words are mentioned in this report, they shall mean the following:

- Accident – this investigated accident
- Aircraft – the Cirrus SR22T 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 are taken from different sources and may be adjusted from the original for the sole purpose of improve clarity of the report. Modifications to images used in this report are limited to cropping, magnification, file compression; or enhancement of colour, brightness, contrast; or addition of text boxes, arrows or lines.

Disclaimer:

Abbreviation	Definition
AGL	Above Ground Level
AMSL	Above Mean Sea Level
AMO	Aircraft Maintenance Organisation
AIID	Accident and Incident Investigations Division
ARCC	Aeronautical Rescue Co-ordination Centre
ATO	Aviation Training Organisation
CAPS	Cirrus Airframe Parachute System
CAR	Civil Aviation Regulations
CAVOK	Ceiling and Visibility OK
CCTV	Close Circuit Television
C of A	Certificate of Airworthiness
C of R	Certificate of Registration
CPL	Commercial Pilot Licence
CVR	Cockpit Voice Recorder
°C	Degrees Celsius
ELT	Emergency Locater Transmitter
FAHW	Hazyview Aerodrome
FAKN	Kruger Mpumalanga International Aerodrome
FANS	Nelspruit Aerodrome
FDR	Flight Data Recorder
FOM	Flight Operations Manual
ft	Feet
GPS	Global Positioning System
hPa	Hectopascal
IIC	Investigator-in-charge
Km	Kilometre
kts	Knots
LEFPA	Lowveld & Escarpment Fire Protection Association
ms	Metre per second
METAR	Meteorological Routine Aerodrome Report
MHz	Megahertz
MTOW	Maximum Take-off Weight
NOSIG	No Significant Change
OEM	Original Equipment Manufacturer
PIC	Pilot-in-Command
RDM	Recoverable Data Module
RLOC	Runway Loss-of-Control
RPM	Revolutions per minute
SACAA	South African Civil Aviation Authority
SAWS	South African Weather Service
TBO	Time Between Overhaul
VMC	Visual Meteorological Conditions
VHF	Very High Frequency
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
Z	Zulu (Term for Universal Coordinated Time - Zero hours Greenwich)

1. FACTUAL INFORMATION

1.1 History of Flight

1.1.1 The pilot flying solo on-board the Cirrus SR22T aircraft with registration ZS-CNM took off on a private flight from Hazyview Aerodrome (FAHW) with the intention to conduct several circuits at Nelspruit Aerodrome (FANS) and to uplift fuel before returning to FAHW.

1.1.2 According to a statement from two pilots on a Cessna 172 (ZS-KNE) aircraft who landed on Runway 22 at FANS before the ZS-CNM aircraft attempted to land, the pilot of ZS-CNM called joining overhead FANS. The next time they heard the pilot on the radio was when he called on final approach for Runway 04. Upon receiving the communication, the pilots of the ZS-KNE aircraft advised him that they were on short final approach for a full stop landing on Runway 22, which he acknowledged. The pilot of ZS-CNM then continued with his approach for Runway 04. Nine seconds after the ZS-KNE had vacated Runway 22, the pilot of the ZS-CNM, still overhead Runway 04, turned out right, flew a teardrop and joined on final approach for Runway 22. The two ZS-KNE pilots at that stage had parked their aircraft on the main apron with the nose of the aircraft facing towards the runway. They then watched the approach and landing of ZS-CNM in the strong crosswind condition which, according to them, was from a north-westerly direction at approximately 10 knots (kts) gusting between 20 and 25kts. From their observation, when the pilot flared the aircraft, it lost lift and touched down hard on the left of the runway's centreline; the aircraft bounced back into the air and the pilot immediately applied maximum power for a go-around. The two pilots then observed the aircraft in a steep bank angle to the left, with the wind from the right and from the tail. The aircraft did not gain height; it remained in a left-wing low nose-high attitude until it disappeared behind the tree line to the east (left side) of Runway 22. At no stage did they observe the Cirrus Airframe Parachute System (CAPS) being deployed. The two pilots then jumped out of their aircraft and ran towards their vehicle. But while they were running towards their vehicle, they heard the impact and saw black smoke ascending at the accident scene. They drove towards the direction of the smoke where they found the crashed aircraft engulfed in flames. There were already people at the scene, some with portable fire extinguishers, which they were using to extinguish the fuel-fed fire, but with little to no effect. The post-impact fuel-fed fire was successfully extinguished by the fire services personnel from the local municipality who had dispatched to the scene.

1.1.3 An eyewitness who was also a pilot and positioned in front of one of the hangars next to Runway 22 when the accident occurred, stated that the location where FANS is situated could be tricky with wind conditions and unstable atmosphere. Runway 22 has an up slope of +2.3° and is the primary landing runway at FANS. According to his observation, the wind on that Friday afternoon was between 320° and 340° at approximately 15 knots, gusting 25 knots. It is possible to encounter a nasty down draught on short finals, especially with the prevailing wind conditions at that time. He observed the Cirrus on a left downwind turn for Runway 22. The atmosphere was very unstable with up and down draughts. With a full cross or tail wind from the right and a flattish approach, one could very easily get behind the drag curve. He stated that the approach was unstable, and the aircraft touched down hard on the threshold of Runway 22, followed by an immediate bounce. He further stated that the pilot must have taken full power, and this consequently led to a big yaw to the left. The strong cross/tail wind lifted the right wing and steepened the bank angle to the downwind side. The wing flaps were down, approximately 20°, but could have been more. The witness observed that the pilot managed to level the wings and tried to climb out. However, there were tall trees to the left of the runway, and the pilot lifted the nose more to clear them, which caused the aircraft to be in a stall angle with a strong tailwind and sinking terrain ahead. The witness then lost visual field as the aircraft sunk into the valley immediately to the east of Runway 22. The witness then heard a crack sound and later realised that it was the right wing impacting the tree tops, which was followed by a loud thud and a bang, with visible smoke approximately 20 seconds later.

1.1.4 A video footage was obtained from a close circuit television (CCTV) camera that was installed on an antenna, mounted on the side of the Lowveld & Escarpment Fire Protection Association (LEFPA) building at FANS. The camera was facing a south-easterly direction and a substantial area of the runway was visible in the video footage. In the video footage, the ZS-KNE aircraft is seen landing on Runway 22; the pilot keeps the speed up and vacates the runway as soon as possible (as they were uncertain what the intentions were of the pilot flying ZS-CNM, and who was on final approach for Runway 04).

1.1.5 In the footage, *shortly after the ZS-CNM aircraft touch down on Runway 22, it bounces and remains in a steep left-wing low and nose-up attitude for approximately 5 seconds. Just before the aircraft disappears out of sight behind the tree line to the left of Runway 22, the pilot manages to turn the wings to a near level attitude (slight left wing low) with the aircraft in a nose-down attitude. Approximately 40 seconds*

later, black smoke is seen ascending following ground impact.

From the wreckage trail, it was evident that the right-wing impacted a large pecan nut tree and approximately 1m of the outer section of the wing was severed. The pilot lost control of the aircraft and it impacted terrain in a steep left-wing low attitude. Once the main wreckage came to rest, a post-impact fuel-fed fire erupted. The pilot was fatally injured during the accident sequence.

1.1.6 The accident occurred during daylight at Global Positioning System (GPS) 25°30'04.05" South 030°55'00.30" East, at an elevation of 2 792 feet (ft).

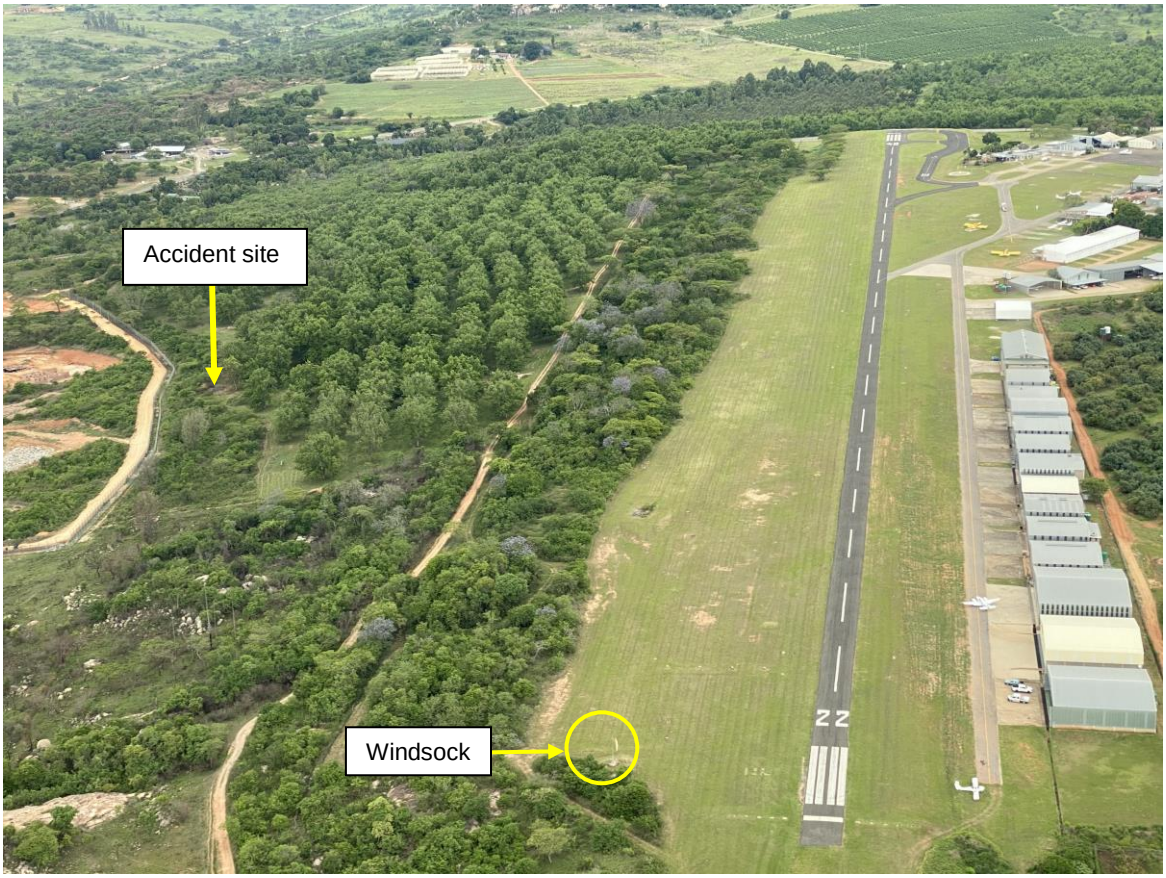


Figure 1: Aerial view of Runway 22 at FANS and the accident site. (Source: Kishugu Aviation)

1.2 Injuries to Persons

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

1.3 Damage to Aircraft

1.3.1 The aircraft was destroyed by impact and post-impact fuel-fed fire.

Figure 2: The wreckage was consumed by post-impact fuel-fed fire.

1.4 Other Damage

1.4.1 Minor damage was caused to the surrounding vegetation.

1.5 Personnel Information

1.5.1 Pilot-in-command (PIC)

Nationality	South African	Gender	Male	Age	63
Licence Number	**********	Licence Type		Commercial Pilot Licence	
Licence Valid	Yes	Type Endorsed		No	
Ratings	Instrument				
Medical Expiry Date	30 April 2021				
Restrictions	None				
Previous Accident	On 2 January 2011, the pilot was involved in a runway excursion accident at Hazyview Aerodrome in a Beech Baron 58, with registration ZS-MRK.				

Aircraft types endorsed on his licence	Beech 33, 55 and 58 Cessna 172, 182, 208, 210 and 337 Piper PA-12 Pilatus PC-12

The pilot was issued a Class 1 aviation medical certificate on 30 October 2020 with an expiry date of 30 April 2021.

According to the SACAA Personnel Licencing division, the pilot was not rated on the Cirrus SR22 in terms of the required regulations (an extract is attached to this report as Annexure A).

The table below reflects the pilot's four flights on the Cirrus SR22 aircraft according to his pilot logbook, prior to the accident flight. The first three flights were conducted with the flight instructor. It was noted that he made use of two different flight instructors.

Date	Flight details	Flying time
12 September 2020	FALA – FALA (Familiarisation)	1.0
18 September 2020	FALA – FALA (Familiarisation)	0.8
21 October 2020	*HAZY – HAZY (Training)	1.4
1 November 2020	FALA – FASZ – *HAZY	1.8

*NOTE: The pilot used the abbreviation HAZY in his logbook for Hazyview Aerodrome, which was issued a designated location indicator allocated to the aerodrome as FAHW.

Flying experience:

Total hours	3 533.3
Total past 90 days	7.6
Total on type past 90 days	5.0
Total on type	5.0

NOTE: The flying hours entered in the table above were obtained from the pilot's logbook. The last entry in his logbook was dated 1 November 2020. The flying hours (above) do not include the accident flight.

1.6 Aircraft Information

1.6.1 The Cirrus SR22T is a four-seat aircraft largely constructed from composite material. The aircraft is fitted with a Continental TSIO-550-N six-cylinder turbocharged piston engine with a power rating of 235 kW (315 HP) at 2 500 revolutions per minute (rpm). The ignition system consists of two engine-driven magnetos and two spark plugs per cylinder. The engine drives a three-blade composite variable-pitch constant speed propeller.

Figure 3: The Cirrus SR22T aircraft ZS-CNM.

Airframe:

Type	Cirrus SR22T	
Serial number	2946	
Manufacturer	Cirrus Aircraft	
Year of manufacture	2008	
Total airframe hours (at time of accident)	1 117.6	
Last MPI (hours & date)	1 113.2	30 October 2020
Hours since last MPI	4.4	
C of A (issue date)	8 May 2008	
C of A (expiry date)	31 May 2021	
C of R (issue date) (Present owner)	5 February 2018	
Operating Categories	Standard Normal (Aeroplane)	

NOTE: The flying hours since the last maintenance inspection were obtained from the pilot's logbook, which add to 5.0 hours and do not include the accident flight.

Engine:

Type	Continental TSIO-550-N
Serial Number	691527
Hours Since New	1 117.6
Hours Since Overhaul	TBO not yet reached

Propeller:

Type	Hartzell PHC-J3YF-1N
Serial Number	FP6503B
Hours Since New	1 117.6
Hours Since Overhaul	TBO not yet reached

1.6.2 Weight and balance

The aircraft was under its maximum take-off weight and within its centre of gravity limit. The pilot was the sole occupant on-board.

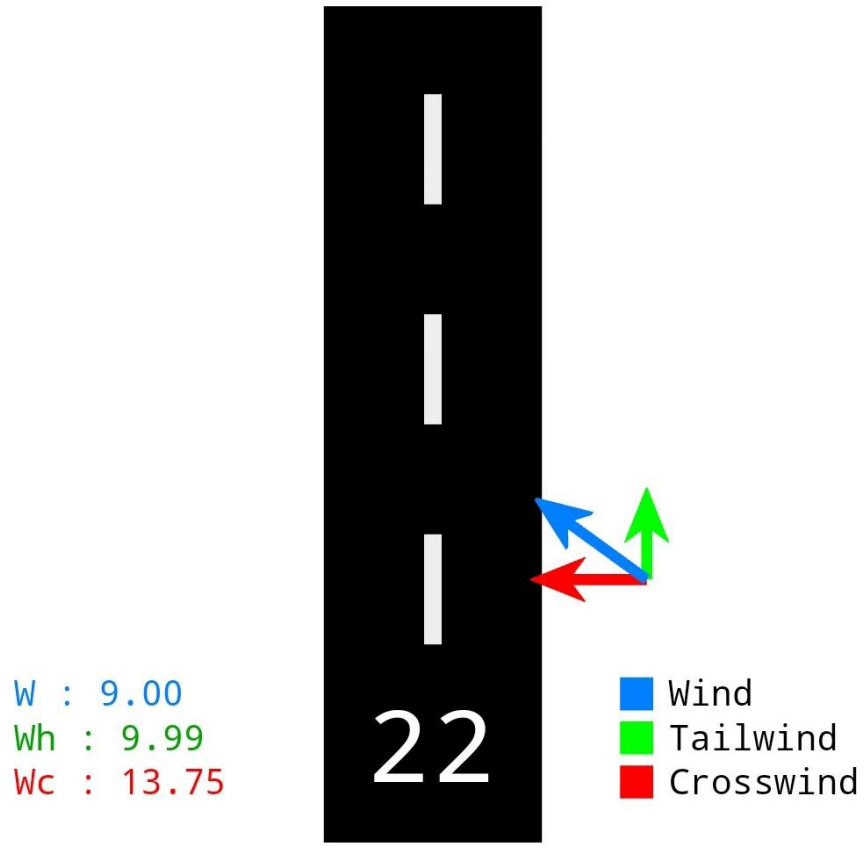
1.7 Meteorological Information

1.7.1 An official weather report was obtained from the South African Weather Service (SAWS). There is an automatic weather station at FANS that recorded weather parameters at the time of the accident. The weather information entered in the table below was obtained from the 1400Z METAR (packtime 1355Z) for FANS, which was 3 minutes after the accident occurred. Runway 22 has a heading of 224°; the prevailing wind was 329° true heading or 346° magnetic.

Wind direction	329°	Wind speed	9 kts gusting 17kts	Visibility	+ 10km
Temperature	32.2°C	Cloud cover	Nil	Cloud base	Nil
Dew point	15°C	QNH	1022 hPa		

1.7.2 Prevailing winds at the time of the accident.
Source: www.e6bx.com/wind-components/ (Please note that written permission to use this information was obtained from the e6bx.com service provider)

The variation of 17° west (as contained in the aerodrome chart in Annexure B) was added to the true heading of 329° for the purpose of this calculation in order to standardise the wind direction to a magnetic heading so that it is in line with the runway heading.



Runway Number : Between 1 and 36	22
Wind Direction :	346
Wind Speed :	9
Gust Speed (if any) :	17
	☐ Apply gusts at 50%
Tail Wind :	9.99
Cross Wind :	13.75

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 navigation system 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 (SACAA). There was no record indicating that the communication system was unserviceable prior to the flight.

1.9.2 The pilot communicated briefly with air traffic control (ATC) at Kruger Mpumalanga International Aerodrome (FAKN) approach on the very high frequency (VHF) 119.20 megahertz (MHz) as he flew through their airspace on his in-bound flight from FAHW to FANS. It was evident during the conversation between the pilot and ATC that he had entered FAKN airspace without prior permission.

1.9.3 The designated aerodrome VHF for FANS was 125.20MHz. The pilots of ZS-KNE aircraft were in radio communication with the pilot of ZS-CNM on this frequency.

1.10 Aerodrome Information

Aerodrome Location	Nelspruit Aerodrome (FANS)
Aerodrome Co-ordinates	25°30’08.87” South 030°54’42.45” East
Aerodrome Elevation	2 901 feet AMSL
Runway Designations	04/22
Runway Dimensions	1 042 x 9m
Runway Used	22
Runway Surface	Asphalt
Approach Facilities	Runway lights, Approach lights, VOR (NSV)
Aerodrome Status	Licensed

FANS is an unmanned aerodrome within Class G airspace.

Below is the important information as published on the FANS aerodrome chart (which is attached to this report as Annexure B).

Runway availability:
Landings – RWY 22 only
Take-offs – RWY 04 only, except in strong southerly wind conditions

1.11 Flight Recorders

1.11.1 The aircraft was not 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 struck several large pecan nut trees on a heading of 180° magnetic. Approximately 1m of the outer section of the right wing was discovered below the second tree, which was 36m from the first tree with which the aircraft collided. From there onwards, small pieces of debris consisting mainly of composite material were found along the impact line. The first ground impact mark was caused by the left-wing tip which impacted the ground at an angle of approximately 60° left bank. This was 63m from where the outer right-wing section was located. The main wreckage, which was consumed by post-impact fuel-fed fire, was found located 25m further on from the first ground impact mark. The last piece of the wreckage was the right-wing aileron. The debris was spread over 142m. The Cirrus Airframe Parachute System (CAPS) had not been deployed by the pilot but was activated by the intense heat of post-impact fire.

Figure 4: The outer section of the right wing, lying underneath one of the large pecan nut trees.

Figure 5: Aerial photograph of the main wreckage area.

Figure 6: The main wreckage was consumed by post-impact fire.

Figure 7: The right-wing aileron in the foreground.

Figure 8: The CAPS was found activated by heat of post-impact fire.

1.13 Medical and Pathological Information

1.13.1 At the time this report was concluded, no post-mortem report was available. Should the post-mortem report become available and contain information that may change the outcome of the investigation, a revised report will be issued.

1.14 Fire

1.14.1 The aircraft was destroyed by impact and post-impact fuel-fed fire that erupted.

1.14.2 Several people from the Nelspruit Aerodrome who rushed to the scene took portable fire extinguishers with them which they used to extinguish the fire but proved inadequate.

1.14.3 The fire service personnel from the local municipality were informed of the accident. They responded with a fire vehicle to the scene and extinguished the fire.

1.15 Survival Aspects

1.15.1 The accident was considered not survivable due to destruction of the cockpit/cabin

area during the accident sequence, as well as the post-impact fuel-fed fire that erupted.

1.15.2 The aircraft was fitted with a Cirrus Airframe Parachute System (CAPS) that could be deployed in the event of an in-flight loss of control, failure of the aircraft structure, or other in-flight emergencies. Once deployed, a large parachute lowers the aircraft to the ground. The pilot did not deploy the CAPS; however, it was found on site without any damage after it deployed during the accident sequence.

1.15.3 The aircraft was equipped with an Artex 1000/Kannad Integra AF emergency locator transmitter (ELT). During the impact sequence, the ELT activated a distress signal (406 MHz) which was detected by the Cospas Sarsat System. The Aeronautical Rescue Co-ordination Centre (ARCC) was informed accordingly, and they contacted the aircraft owner.

1.16 Tests and Research

1.16.1 None considered necessary.

1.17 Organisational and Management Information

1.17.1 This was a private flight conducted under the provisions of Part 91 of the CARs 2011 as amended.

1.17.2 The last maintenance inspection prior to the accident flight was carried out on 30 October 2020 at 1 113.2 airframe hours. The aircraft maintenance organisation (AMO) that certified the inspection was in possession of an AMO approval certificate that was issued by the SACAA on 1 August 2020 with an expiry date of 31 July 2021.

1.18 Additional Information

1.18.1 Close Circuit Television (CCTV) footage

A CCTV camera that was installed on the LEFSA building was facing the runway at FANS. The following observations were from the camera footage (*please note that all times used below were as they reflected on the video camera screen. The summary*

is followed by nine screenshots that were taken from the footage; there was no sound captured):

1. At 15:45:45, a Cessna 172 with registration ZS-KNE is seen taking off from Runway 04.

2. At 15:47:06, an aircraft (ZS-CNM) is seen joining overhead FANS from the north-east.

3. At 15:49:30, the Cessna 172 ZS-KNE lands (touch down) on Runway 22.

4. At 15:49:43, the Cessna 172 ZS-KNE vacates the runway. (It should be noted that the crew kept up the taxi speed in order to vacate the runway as soon as possible as the pilot of the ZS-CNM was on final approach for Runway 04).

5. At 15:49:49, the Cirrus SR22 ZS-CNM appears in the camera frame from the right, flying at low-level over the runway from the opposite side (Runway 04). The pilot then turns out right and the aircraft disappears out of site.

6. At 15:52:14, the Cirrus SR22 ZS-CNM appears again in the camera frame. This time from the left, just past the threshold of Runway 22. The aircraft is seen in a steep left bank angle just above the runway surface.

7. Between 15:52:15 and 15:52:19, the aircraft is seen in a steep left-bank attitude.

8. At 15:52:20, it appears that the pilot managed to return the aircraft to a near wings level attitude while descending into the valley.

9. At 15:52:21, the aircraft disappears behind the tree line to the left of Runway 22.

10. At 15:53:00, black smoke is seen emerging from behind the trees.

11. A person in a white light delivery vehicle (LUV) as well as a person on a bicycle (visible in the camera footage) immediately head in the direction where the aircraft impacted terrain (as they had heard the impact).

Figure 9: Cessna 172, ZS-KNE as it vacates Runway 22.

Figure 10: The Cirrus SR22, ZS-CNM joins overhead from the north-east.
Windsock in red window.

Figure 11: Cessna 172, ZS-KNE taxiing towards the apron.

Figure 12: The Cirrus SR22, ZS-CNM visible within the yellow window.

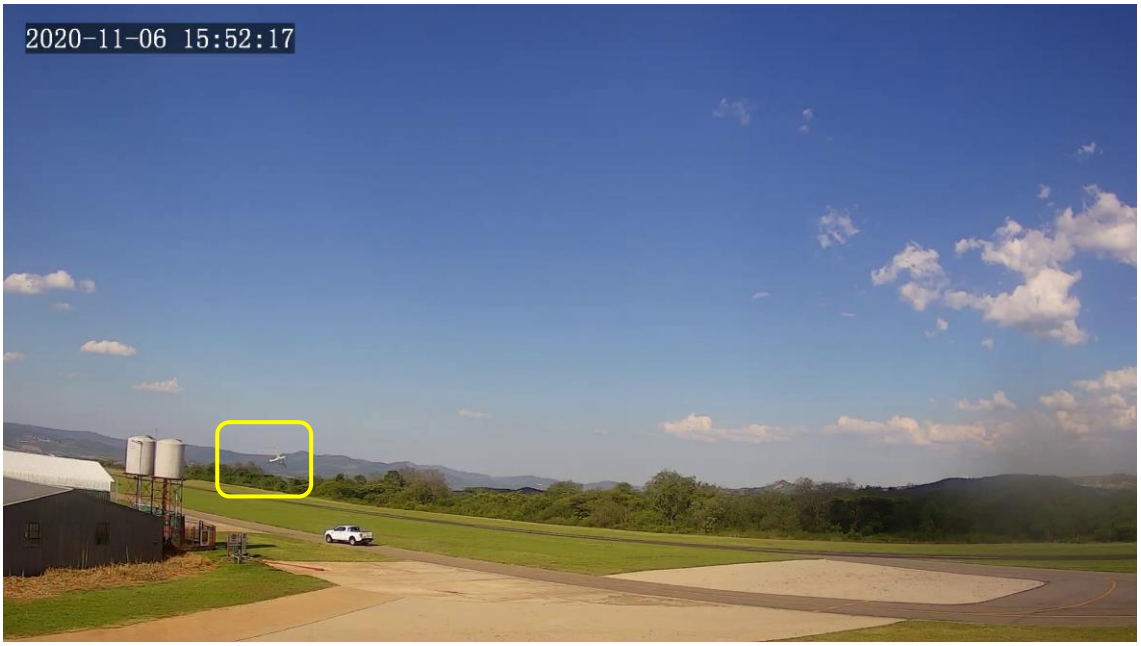


Figure 13: The Cirrus SR22, ZS-CNM visible within the yellow window.

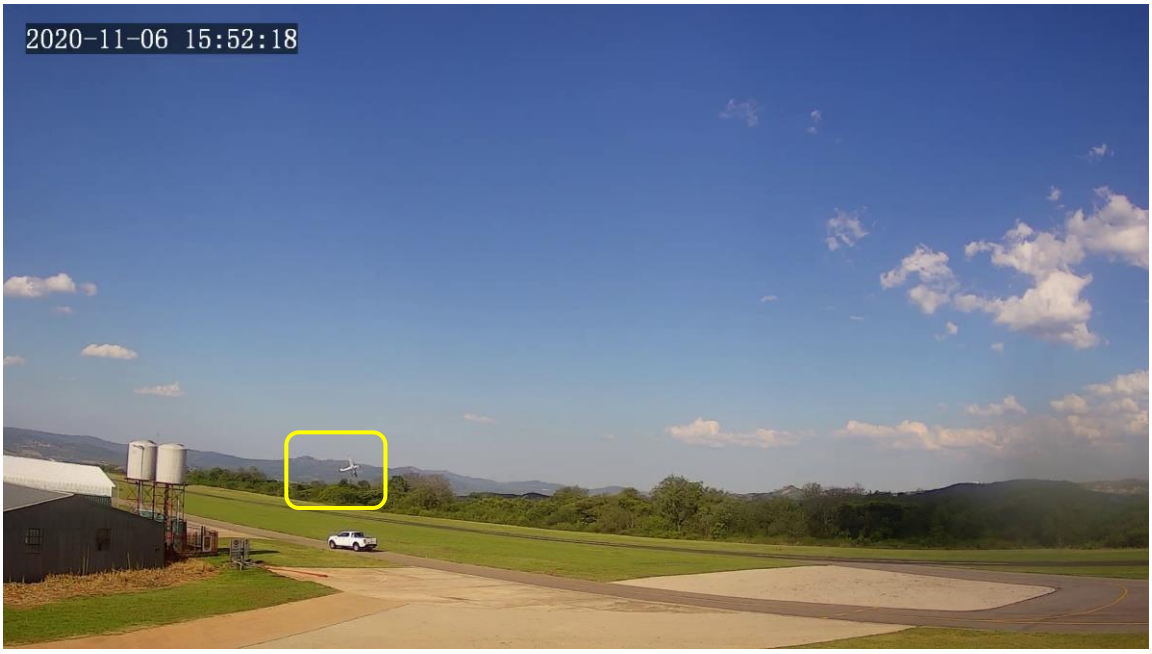


Figure 14: The Cirrus SR22, ZS-CNM visible within the yellow window.

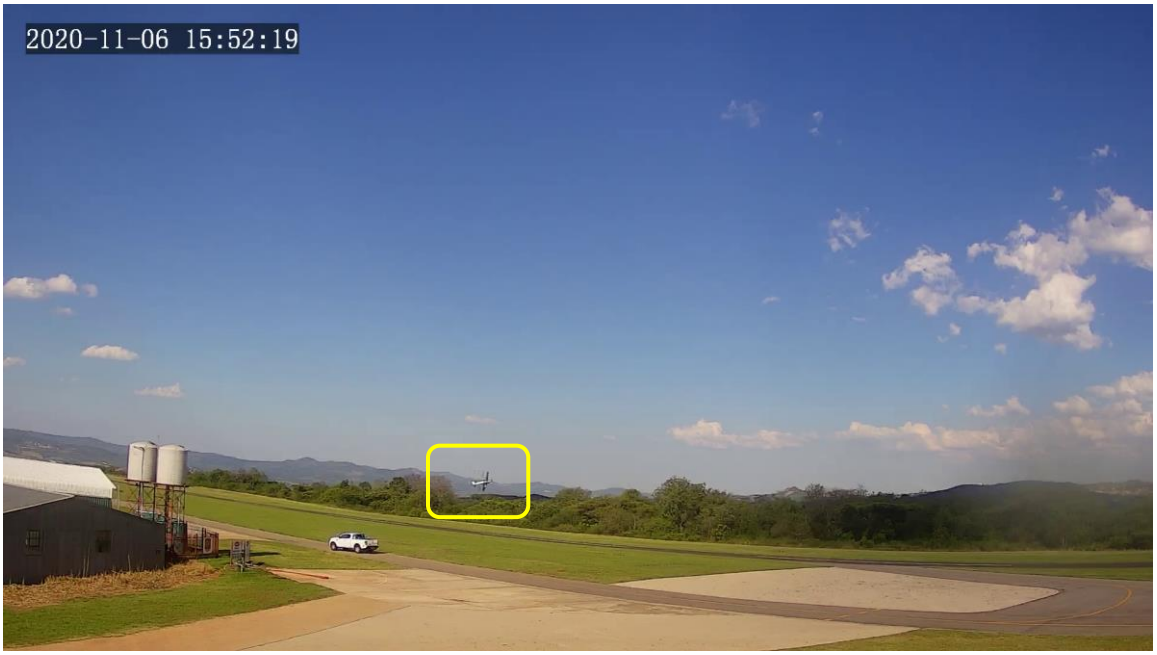


Figure 15: The Cirrus SR22, ZS-CNM visible within the yellow window.

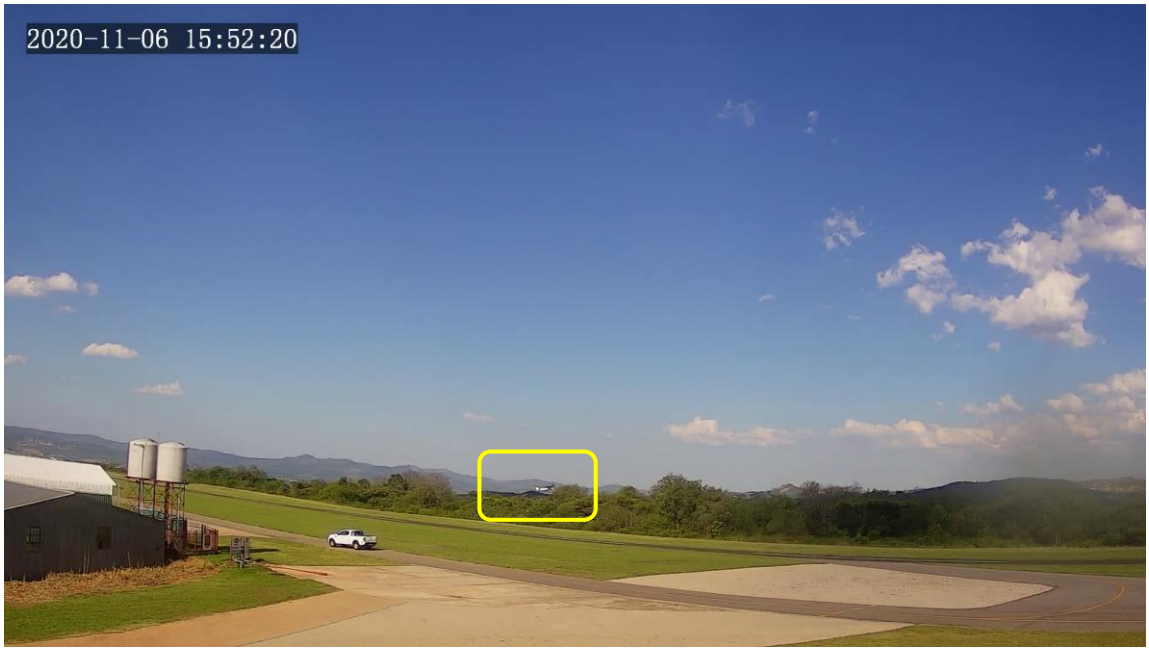


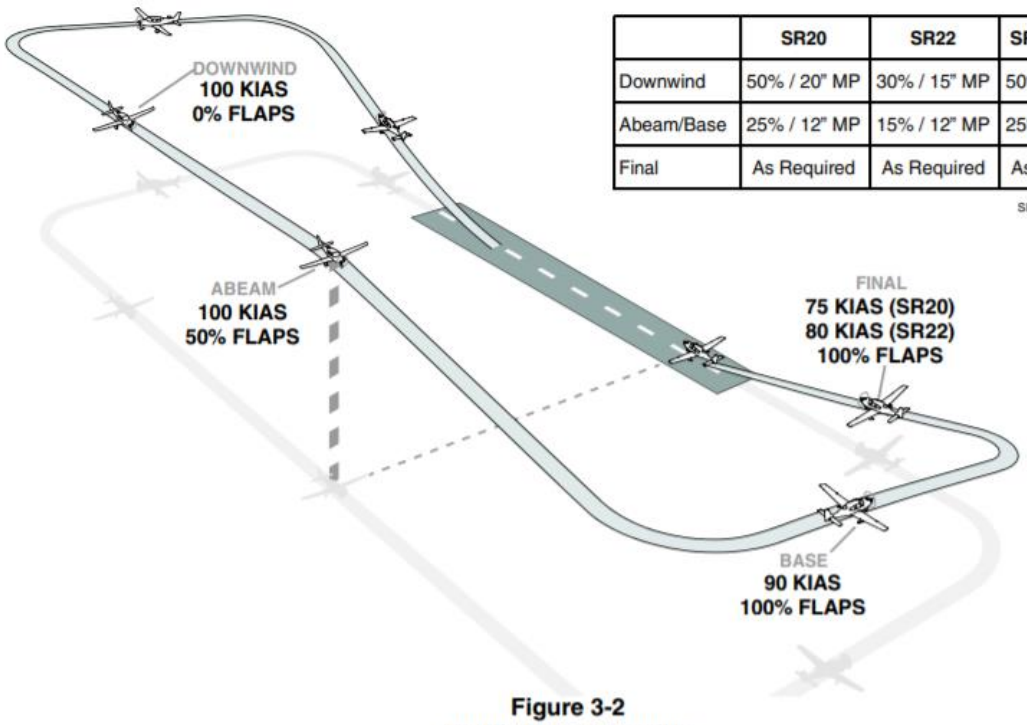
Figure 16: The Cirrus SR22, ZS-CNM visible within the yellow window.

Figure 17: Black smoke from the accident site.

1.18.2 Traffic Pattern Profile

Source: Flight Operations Manual (FOM), Cirrus SR20 and SR22, pg. 3-52

The pilot flying the aircraft did not comply with the traffic pattern profile when he joined overhead FANS as outlined in the FOM of the aircraft. He first flew an approach for Runway 04, which was not in line with the FANS chart guidance; this was pointed out to him by the crew flying the ZS-KNE who landed on Runway 22 while he was on approach for Runway 04. He then flew a teardrop approach for Runway 22 and, again, he did not follow the traffic pattern profile as provided.



	SR20	SR22	SR22 Turbo
Downwind	50% / 20" MP	30% / 15" MP	50% / 15" MP
Abeam/Base	25% / 12" MP	15% / 12" MP	25% / 12" MP
Final	As Required	As Required	As Required

SR22_OP02_2666

Figure 3-2
Traffic Pattern Profile

1.18.3 Go-Around

Source: Flight Operations Manual (FOM), Cirrus SR20 and SR22, pg. 3-64, 3-65

Go-Around

A go around should be executed anytime an approach does not meet the stabilized approach criteria outlined in this manual for instrument or visual conditions. A go around should be completed from memory since it is a time critical maneuver.

In addition to the stabilized approach criteria, execute a go around/ missed approach for these conditions:

- Excessive ballooning during round out or flare,
- Excessive bouncing or porpoising,
- Landing beyond 1st third of the runway,
- Any condition when a safe landing is in question.

The first priority of executing a go around is to stop the aircraft's descent. Smoothly and promptly apply full power while simultaneously leveling the wings and pitching the aircraft to stop the descent. Maintain coordination while adding power by applying rudder pressure. Retract the flaps to 50%. Do not fully retract the flaps at this point in the go around because it may lead to excessive altitude loss.

Begin pitching for a climb attitude once the aircraft's descent rate has been stopped. Pitch for V_X if obstacle clearance is an issue. Pitch for V_Y for all other situations. Retract flaps to 0% once the aircraft is climbing, and clear of obstacles, and at 80kts (SR20), 85kts (SR22)

Procedure (Memory)

1. Autopilot ..... DISENGAGE

   Disengage the Autopilot by depressing the AP DISC on the control yoke.

2. Power Lever ..... FULL FORWARD

   Increase power lever to the full forward position. Ensure full power is used and do not stop at any detents along power lever travel.

3. Flaps 50%

   Select flaps to 50% to decrease drag and maintain maximum lift as a climb is initiated.

4. Airspeed ..... SEE BELOW

   SR20 - 81 to 83 KIAS

   SR22 - 75 to 80 KIAS

5. Flaps ..... UP

   Verify flaps have been retracted to 0%. If not, ensure the following criteria is met before retracting the flaps:

   SR20 - 85 KIAS

   SR22 - 80 KIAS

   Positive rate of climb

   Clear of terrain and obstacles

1.18.4 Aircraft Wind Limitations During Landing

Source: Cirrus FOM, General Operating Procedures, Envelope of Safety, pg. 2-7

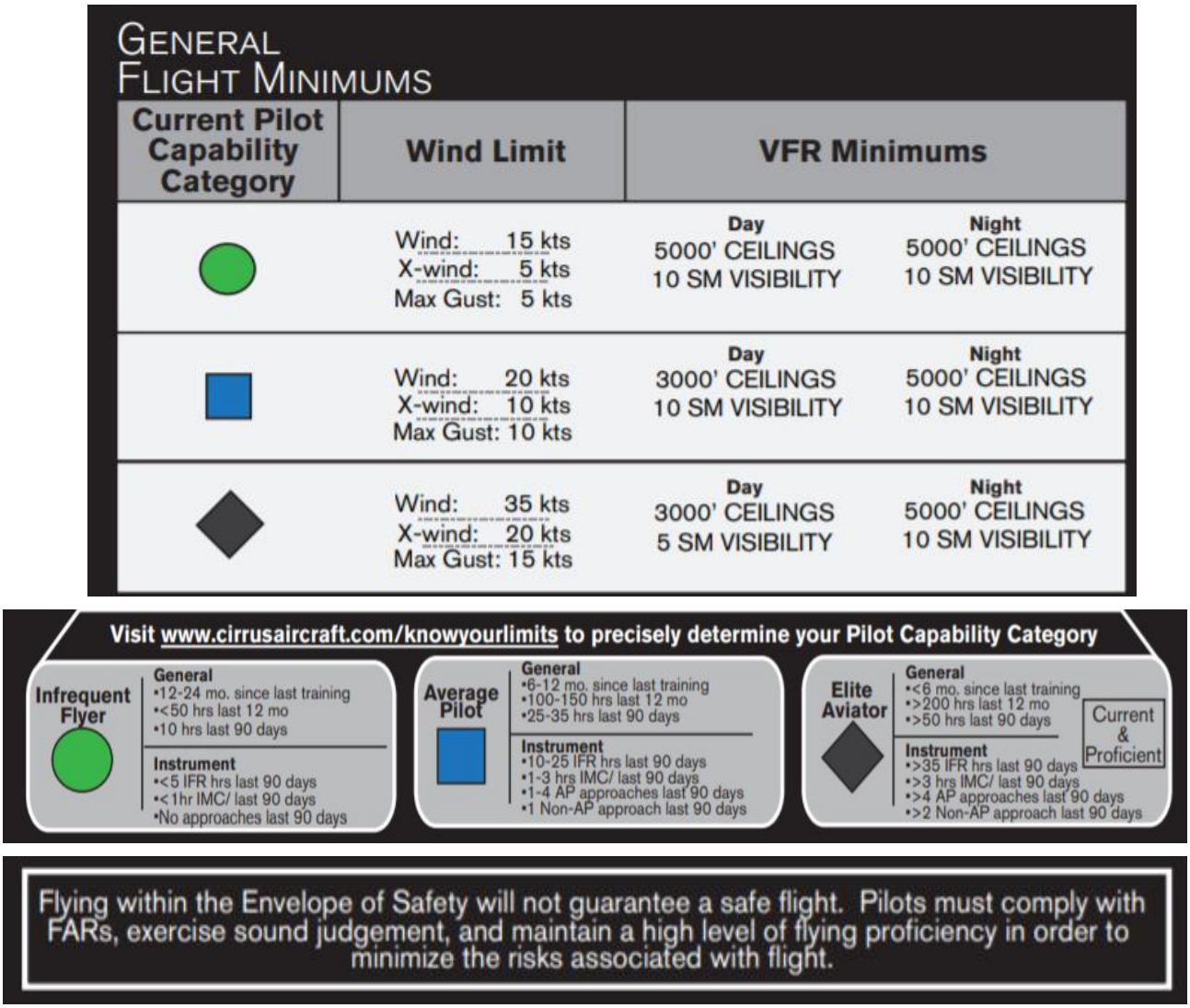
With reference to the FOM, wind limitations (infographic below) are divided it into three categories: (i) Wind, (ii) X-wind, (iii) Max Gust.

The FOM infographic also includes a Current Pilot Capability Category column, which consist of: (i) Infrequent Flyer, (ii) Average Pilot, (iii) Elite Aviator.

Using the website link provided: www.cirrusaircraft.com/knowyourlimits, the pilot flying the ZS-CNM fell within the first category; Infrequent Flyer. He had logged less than 50 hours total time on type, and he had flown less than 10 hours on type in the last 90 days. According to the Envelope of Safety, his crosswind limitation was 5 knots. The crosswind, at the time he attempted to land, was approximately 14 knots.

Crosswind Landings

Normal crosswind landings are made with full flaps. Avoid prolonged slips: After touchdown, hold a straight course with rudder and brakes as required. The maximum allowable crosswind velocity is dependent upon the pilot capability as well as aircraft limitations.



1.18.5 Cirrus Guide to CAPS

Source:
https://cirrusaircraft.com/wp-content content/uploads/2014/12/CAPS_Guide.pdf

Height Above Ground Level (AGL)	Recommended Response
0' – 500' (600' G5)	Land Straight Ahead*
500' (600' G5) – 2000'	Deploy CAPS Immediately
2000' or Greater	Troubleshoot, Use CAPS as Required

*Activate CAPS immediately if no other survivable alternative exists.

CAPS Deployment Procedure

1. **Activation Handle Cover**.....REMOVE
2. **Activation Handle (Both Hands)**.....PULL STRAIGHT DOWN

Approximately 45 lbs of force is required to active CAPS. Pull the handle with both hands in a chin-up style pull until the handle is fully extended.

After Deployment:

3. **Mixture**.....CUTOFF
4. **Fuel Selector**.....OFF
5. **Fuel Pump**.....OFF
6. **Bat-Alt Master Switches**.....OFF

If time permits, declare the emergency and announce CAPS activation prior to turning off the Bat and Alt switches.

7. **Ignition Switch**.....OFF
8. **ELT**.....ON
9. **Seat Belts and Harnesses**.....TIGHTEN
10. **Loose Items**.....SECURE
11. **Assume emergency landing body position.**

Reference the passenger briefing card for the correct emergency landing body position.

12. **After the airplane comes to a complete stop, evacuate quickly and move upwind.**

In high winds the parachute may inflate and drag the aircraft after touchdown. Remain upwind of the aircraft.

Figure 18: The CAPS handle in the cockpit roof structure.

1.18.6 Recoverable Data Module

The aircraft was fitted with a Recoverable Data Module (RDM) unit which is located within the vertical fin (see Figure 19). It is possible to extract flight data from this unit; however, in this accident, the unit was destroyed by post-impact fuel-fed fire that erupted as it is not a crash-/fire-resistant device.

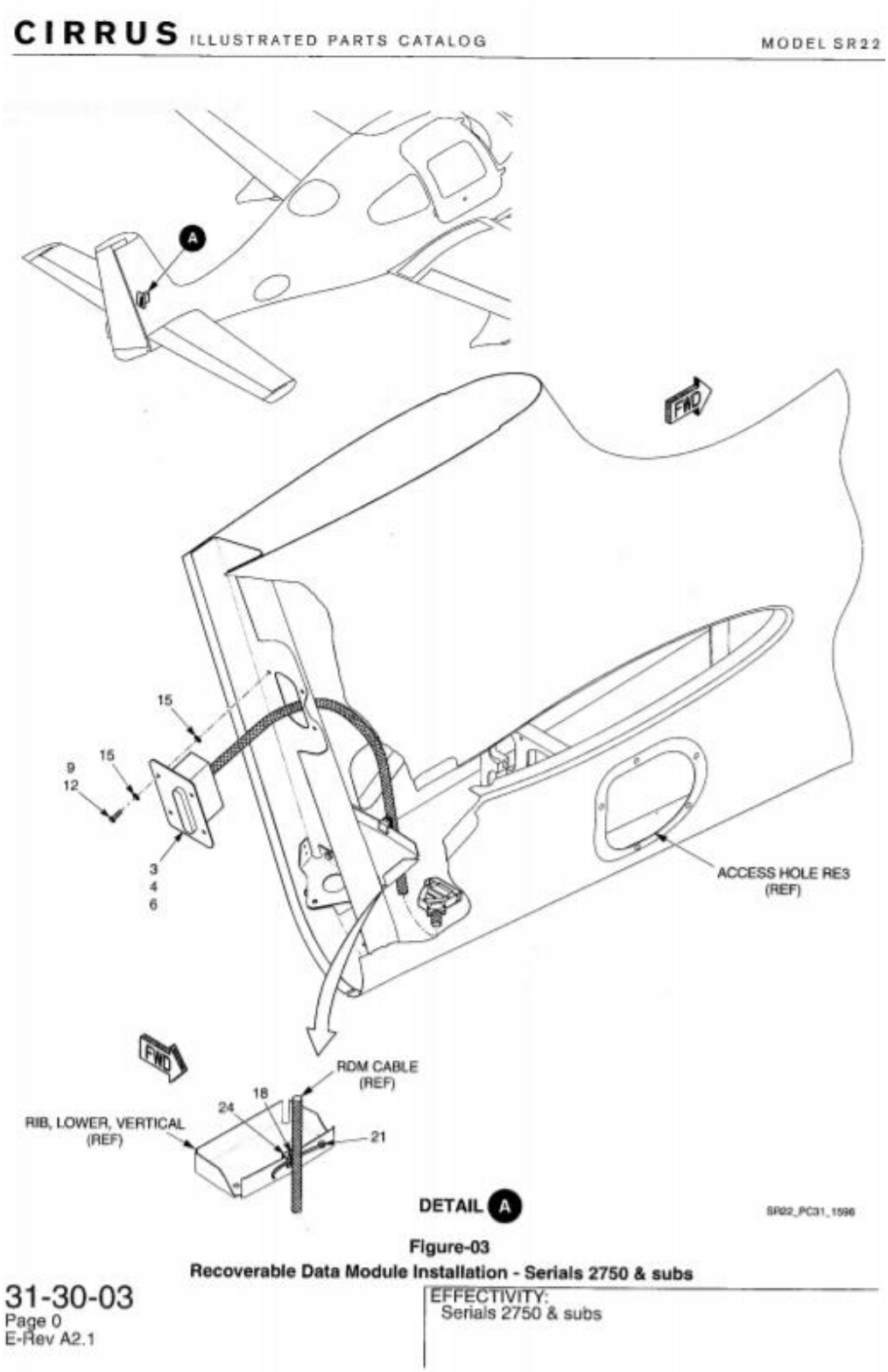


Figure 19: The position of the RDM on the aircraft structure.

1.19 Useful or Effective Investigation Techniques

1.19.1 No new methods were used.

2. ANALYSIS

2.1 General

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

2.2 Pilot

The pilot had a valid Commercial Pilot Licence with an instrument rating. He also had a valid Class 1 aviation medical certificate. The aircraft type (Cirrus SR22T) was, however, not endorsed on his licence.

Pilot conversion to the Cirrus type aircraft

There is a Cirrus Aircraft Pilot Training Centre in South Africa, which is one of 90 such centres around the world. This is an approved aviation training organisation (ATO) by the SACAA. The ATO also had a simulator at its facility. These centres have factory-trained Cirrus Standardised Instructor Pilots (CSIP) or Training Centre Instructors (TCI) who follow the Cirrus Transition Training course syllabus. This course is especially compiled for new pilots for the aircraft type. Cirrus Aircraft also has a programme called "Cirrus Embark" (www.cirrusaircraft.com/embark/), which allows for transition training through Cirrus Training Centres. The programme includes complimentary training to address the specific needs of pilots and owners of new or pre-owned Cirrus aircraft. The Cirrus Owners and Pilot Association (COPA) has tracked a series of accidents which revealed that pilots who have been trained by non-CSIP or non-TCI instructors have a higher fatal accident rate.

Following consultation with the SACAA division that deals with personal licensing, it was concluded that the pilot had not met the requirements as per Part 61 of the CARs (see Appendix A) for his licence to be endorsed with the Cirrus SR22T aircraft type rating. The ATO that specialises in Cirrus aircraft training in South Africa was consulted and it was found that they had no record of this pilot. According to the pilot's logbook, he had accumulated a total of 5.0 hours flying time on the Cirrus SR22T aircraft at the time of the accident, this includes three 'training flights' with two different flight instructors as tabled in paragraph 5.1 of this report. No evidence could be found whether these 'training flights' were conducted via an ATO and/or approved ATO.

What makes this aircraft different from most other aircraft that are below 2 250kg maximum take-off weight (MTOW) category and above on the market is the fact that this aircraft is designed with a unique side yoke (similar to Airbus aircraft) which is located on the left- and right-side of the cockpit (see Figure 19). With the PIC seated on the left seat, the side yoke configuration was positioned on his left-hand side. The pilot's control inputs are, therefore, within the range of his/her left-hand side. Only one hand is required to operate it; a two-hand operation is neither possible nor necessary, unlike flying an aircraft with a conventional control yoke fitted to most aircraft in this weight category and above. Even though the pilot had accumulated a substantial number of flying hours on other aircraft types, including the Pilatus PC12 (fitted with a Pratt & Whitney PT6 turboprop (turbine) engine (see cockpit displayed in Figure 20), the Cirrus SR22 cockpit layout was new to him and should be considered a significant contributory factor to this accident, based on his limited experience, as well as the fact that the accident flight was his second solo flight on this aircraft type.

Figure 19: The cockpit layout of the Cirrus SR22 with the side yoke configuration.

Figure 20: The cockpit layout of a Pilatus PC12 aircraft with a conventional control yoke.

Joining overhead FANS and flying two different approaches

The pilot did not follow the unmanned aerodrome approach procedure when he joined overhead FANS, nor did he broadcast his intentions on the designated VHF aerodrome frequency 125.50MHz. He then proceeded to fly an approach for Runway 04, which was in conflict with other traffic in the circuit (traffic was landing on Runway 22 and he was on final approach for landing Runway 04). Due to the 2.3° runway slope (uphill if landing on Runway 22, downhill if landing on Runway 04) the aerodrome chart as published by the SACAA (Annexure B) states the following: *"Landings Runway 22 only"* and *"Take-off Runway 04 only, except in strong southerly wind conditions"*. The ZS-KNE crew who landed on Runway 22 as the (ZS-CNM) pilot was approaching Runway 04 managed to vacate the runway seconds before the ZS-CNM was observed on CCTV footage flying at low-level and still maintaining runway heading (Runway 04) over the aerodrome (see Figures 10 and 11). The pilot of ZS-CNM then turned out right, remaining at low-level and flew a non-standard circuit (teardrop) for what appeared to be a possible landing on Runway 22.

According to an eyewitness who was standing in front of the hangars near the threshold of Runway 22, the pilot had an unstable approach, which was low and flat on the approach for the runway. The flaps of the aircraft were in the down position (estimated to be 20°). The prevailing wind was from the north-west at approximately 15 knots gusting up to 25 knots. On touchdown, the witness saw the aircraft bounce,

whereupon the pilot immediately applied full power for a go-around. The aircraft then yawed to the left at a substantial bank angle, estimated to be approximately 60°, with a nose-up attitude of approximately 15°, much like a knife-edge manoeuvre which is common in aerobatic flying.

The pilot was not familiar with the environmental effects at Nelspruit Aerodrome, and he did not anticipate the effect the prevailing crosswind from the right would have on his approach and attempted landing. What aggravated the situation was the fact that he opted for a low and flat approach, which did not meet the criteria for a stabilised approach. The aircraft touched down hard on the threshold of Runway 22, as a consequence, the pilot bounce. The pilot opted to perform a go-around, but it was not handled correctly as the aircraft's speed decreased and power was applied without (or a lack of) rudder input. The aircraft rolled to the left side of the runway. This probably caught the pilot off guard and, with the crosswind from the right, the situation was aggravated as the wind most probably lifted the right wing. By applying full power, the situation was exacerbated as he now encountered a tail wind and was trying to fly out of the situation while drifting further to the left.

2.3 Aircraft

The aircraft was maintained in accordance with the approved maintenance requirements and was serviceable at the time of the accident flight. At the aerodrome, there were several people who observed the aircraft flying overhead and as it joined on final approach for Runway 04 and, again, for Runway 22. None of the people interviewed mentioned hearing or seeing anything on the aircraft that would indicate a possible mechanical failure or that anything was wrong with the engine. The on-site investigation revealed that the aircraft was intact before the right wing impacted a large pecan nut tree and all flight controls were accounted for. The runway and adjacent areas were inspected and no evidence could be found of failed or broken off components/structure from the aircraft when it touched down and bounced.

The CAPS system was not activated by the pilot. However, the intense heat caused by post-impact fire activated the ballistic system, and the CAPS deployed. It was found next to the main wreckage, undamaged.

2.4 Environment

The windsock (see Figure 10) indicated the prevailing wind at the time to be from the north-west when the ZS-CNM aircraft was seen overhead Runway 22. According to the SAWS weather report, which received weather information from the automatic weather station at the aerodrome, the wind was 9 knots gusting 17 knots at 1355Z, which was 3 minutes after the accident occurred.

The two pilots that were flying the ZS-KNE aircraft estimated the wind to be 320° to 340° at 15 knots gusting up to 25 knots when they landed. The eyewitness who was standing in front of the hangars at FANS agreed with their (two pilots) observation on the wind conditions in his statement.

On the FANS aerodrome chart (Annexure B) under the heading "Runway availability" the aerodrome chart refers to *"…except in strong southerly wind conditions"*. The question is: "what is define as a strong wind?". According to the Beaufort Wind Force Scale (official scale to measure wind), a strong wind is between 22 and 27 knots (40 to 50 km/h). The 9kt wind that prevailed at the time is, therefore, categorised as a gentle breeze according to the wind scale.

There was a wind sock located to the left of the threshold of Runway 22, with a row of hangars on the right-side of the runway (see Figure 1).

2.5 Aerodrome

The aerodrome chart for FANS has an information section that states: *Landing - Runway 22 only. Take-off Runway 04 only, except in strong southerly wind conditions*. The chart is attached to this report as Annexure B. The runway at FANS was 1 042m long and 9m (the asphalt surface) wide. The runway slopes down from the threshold of Runway 04 (elevation 2 901 ft) towards the threshold of Runway 22 (elevation 2 835 ft), which accounts for a difference in elevation of 66ft (20m) and a slope of -2.3°. This was an unmanned (non-towered) aerodrome.

3. CONCLUSION

3.1 General

From the evidence available, 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 conclusions 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 or incident occurring, or mitigated the severity of the consequences of the accident or incident. The identification of contributing factors does not imply the assignment of fault or the determination of administrative, civil or criminal liability.

3.2 Findings

Pilot

3.2.1 The pilot was issued a Commercial Pilot Licence (CPL) on 26 September 2005. According to his pilot logbook, he had flown a total of 3 533.3 hours, of which 5.0 hours were on the aircraft type.

3.2.2 The pilot was also issued a valid Class 1 aviation medical certificate on 30 October 2020 with an expiry date of 30 April 2021.

3.2.3 According to the SACAA Personnel Licensing division, the pilot was not rated on the aircraft type (Cirrus SR22T), nor was his ‘training’ conducted by an approved ATO.

3.2.4 This was a private flight conducted under the provisions of Part 91 of the CAR 2011 as amended.

3.2.5 The pilot did not activate the CAPS.

3.2.6 The pilot was fatally injured during the accident sequence.

Aircraft

3.2.7 The aircraft was issued a Certificate of Airworthiness on 8 May 2008 with an expiry date of 31 May 2021.

3.2.8 The aircraft was issued a Certificate of Release to Service on 30 October 2020 with an expiry date of 29 October 2021 or at 1 213.2 airframe hours, whichever comes first.

3.2.9 The aircraft was issued a Certificate of Registration on 3 February 2018.

3.2.10 The last scheduled maintenance inspection carried out on the aircraft prior to the accident flight was certified on 30 October 2020 at 1 113.2 airframe hours. The aircraft had accumulated an additional 4.4 airframe hours since the said inspection.

3.2.11 The aircraft was destroyed by impact and post-impact fuel-fed fire that erupted.

3.2.12 The Recoverable Data Module (RDM) was destroyed by post-impact fire and no data download was possible.

Aerodrome

3.2.13 FANS is a licensed aerodrome with Runway 22 being 1042m long and 9m wide (asphalt surface) and with an uphill slope of 2.3°.

3.2.14 The narrow runway surface, being 9m of asphalt surface, could cause the pilot who is not familiar with this aerodrome to not meet the criteria of a stabilised approach.

3.2.15 The crew that was flying ZS-KNE was in radio contact with the pilot of ZS-CNM on the designated VHF aerodrome frequency of 125.50MHz.

3.2.16 The pilot of ZS-CNM was observed flying an approach for Runway 04, which was in conflict with the ZS-KNE aircraft that was on short final approach for Runway 22. The pilot abandoned the approach for Runway 04 to join the lading pattern for Runway 22.

3.2.17 The pilot deviated from the unmanned aerodrome approach procedure by not joining the pattern for the active runway (Runway 22) but for Runway 04, which was in conflict with the prevailing traffic.

3.2.18 The FANS chart, attached to this report as Annexure B, provides clear guidance on the use of the runway at FANS, which the pilot did not adhere to.

3.2.19 The aircraft was visible on CCTV camera that was installed on a building at FANS. The aircraft was visible on its approach for Runway 04 and, again, for several seconds after the aircraft touched down hard and bounced on Runway 22.

Environment

3.2.20 The flight was conducted under Visual Flight Rules (VFR) by day.

3.2.21 The pilot approached Runway 22 for landing with a prevailing crosswind from the right (north-west) at approximately 14 knots, which was above the pilot's proficiency level on the aircraft type.

3.3 Probable Cause

3.3.1 Pilot's failure to maintain control of the aircraft during an attempted go-around after a hard touchdown followed by a bounce, which was attributed to an unstable approach.

3.4 Contributory Factors

3.4.1 The pilot did not compensate for the left yaw following the application of maximum power (slam the throttle forward) during an attempted go-around.

3.4.2 The pilot had limited flying experience on the aircraft type.

3.4.3 The pilot was not familiar with the environmental effects at the aerodrome (the crosswind of approximately 14 knots which prevailed from the right while he was on approach for Runway 22).

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.

4.1.1 Safety Recommendation: It is recommended to the Director of Civil Aviation that an urgent aerodrome notice and/or notice to airmen (NOTAM) be issued by the SACAA to ensure that safe operations prevail at FANS for non-regular/visiting pilots who intend flying to the aerodrome.

The following environmental conditions prevail at FANS: When a westerly or a north-westerly wind prevails, as was the case with the fatal accident in question, a condition arises that could lead to an accident when using Runway 22 for landing, which is the recommended runway for landing at FANS as per the attached aerodrome chart (Annexure A).

Pilots who are well familiar with the aerodrome have noticed that when there is a westerly or a north-westerly crosswind, an approaching aircraft could experience a sudden “sink rate/loss of lift” just before touchdown. This is caused by the rotor affect from the hangars that have been erected on the western side of Runway 22, (see Figure 1). The structures block the wind, which then forms a rotor action into the path of a landing aircraft. An aircraft in the landing configuration fly slowly, often with flaps extended and gear down which, in turn, causes the aircraft to be more prone to losing lift due to the unstable rotor action of the prevailing wind.

If the pilot is not expecting the sudden loss of lift, he or she might have a hard touchdown as well as bounce back into the air. If he or she reacts too hastily by adding full power at a low speed, directional control might be lost, or the aircraft might enter a stall, with fatal consequences.

Action taken following the accident: The NOTAM (below) as recommended was issued on 10 December 2020.

“(C3659/20 NOTAMNQ) FAJA/QXXXX/IV/NBO/A/000/999/2530S03055E005
A) FANS B) 2012101402 C) PERM E) PILOTS ON SHORT FINAL APCH FOR RWY 22 TO EXER CTN AS THEY CAN ENCOUNTER A SUDDEN SINK RATE/LOSS OF LIFT WHEN A WESTERLY OR NORTH-WESTERLY WIND PREVAILS. THE WIND CAN CAUSE A ROTOR EFFECT ONTO THE PATH OF LANDING ACFT DUE TO THE HANGARS ERECTED ON THE WEST SIDE OF RWY 22.)”

4.1.2 This accident highlights the importance of the identification and management of the environmental risks, with special emphasis to pilots operating in unfamiliar aerodromes. It is recommended to the aerodrome licence holder that they install a windsock on the roof structure of the first hangar located to the right of Runway 22. This will allow pilots the opportunity to make a proper assessment of the wind velocity and direction while on approach for Runway 22. This is essential information as it will allow pilots to make a proper assessment to proceed with the landing or perform a go-around timeously.

Action taken following the accident: The safety recommendation was forwarded to FANS manager for consideration. The feedback received from the aerodrome management was that they have decided that they do not feel an additional windsock will make any difference to pilots making use of Runway 22 at FANS.

4.1.3 Safety Message: It is recommended that the SACAA issue a detailed document by emphasising the importance of conducting a go-around timeously. Conducting a go-around is as important to any pilot as flying a stabilised approach. The stigma associated with a go-around should be dealt with in detail.

4.1.4 Safety Message: The importance of following the correct conversion training to a new aircraft type as per the provisions of the CARs should always be adhered to. Over the years, there had been many accidents that emanated from pilots taking short cuts when it came to conversion to a new aircraft type. Several aircraft manufacturers provide detailed training courses.

5. APPENDICES

5.1 Appendix A (Part 61 subpart 9 of the Civil Aviation Regulations)
5.2 Appendix B (FANS Aerodrome Chart)

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

APPENDIX A

Part 61 SUBPART 9:
CLASS AND TYPE RATINGS

General

Part 61.09.1 (1) This Subpart applies to the issuing of class ratings and type ratings and the endorsement of models or variants for the aircraft categories aeroplane and helicopter as prescribed in Document SA-CATS 61.

(2) No person may act as pilot of an aircraft, except when undergoing a skills test or receiving flight training, unless he or she—

(*a*) has the applicable class or type rating and the model or variant endorsed in his or her logbook and licence or file copy (as applicable); or

(*b*) is in possession of a temporary 30-day certificate of competency and has the logbook endorsement. The temporary certificate of competency is part of the application for class or type rating form and does not entitle a pilot to conduct international flights.

(3) For the purpose of this Subpart—

(*a*) aircraft in a class are referred to by manufacturer, model and variant(s) of the model; and

(*b*) aircraft which require a type rating are referred to by manufacturer, type and variant(s) of the type.

Conversion training

Part 61.09.7 (1) Conversion training as prescribed in Document SA-CATS 61 consists of either differences or familiarisation training and is required in order to add—

(*a*) a different manufacturer, model or variant of an aircraft within a particular class to a licence which is already endorsed with the relevant class; and

(*b*) a variant of an aircraft within a particular type to a licence which is already endorsed with the relevant type.

(3) The flight instructor who conducts or supervises the conversion training shall, on satisfactory completion of the training, endorse the logbook of the applicant and complete a notification of differences or familiarisation training form.

(4) The notification of differences or familiarisation training form shall be submitted to the Director within 30 days of completion of the training.

Differences training

Part 61.09.8 (1) Differences training consists of theoretical knowledge instruction, a theoretical knowledge examination and flight training as prescribed in Document SA-CATS 61 and is required when converting to—

(*a*) an aircraft within a class rating which has an additional system or additional systems, as prescribed in Document SA-CATS 61;

(*b*) an aircraft of a different aircraft manufacturer within a class rating; and

(*c*) a variant of a type as specified in the list of aircraft types published by the Director on the Authority website.

(2) Differences flight training for aircraft within a class and for all helicopters may be carried out in an aircraft or in an FSTD approved for the purpose.

(3) Differences flight training for aeroplanes of a type shall be carried out in an FSTD approved for the purpose, except when such FSTD is not available, in such case, the differences flight training shall be carried out in an aircraft.

(4) Differences training shall be conducted by an approved ATO or a foreign training organisation as specified in this Subpart.

Application for issuing of a class or type rating

Part 61.09.14 (1) An application for a class or type rating must be made on the appropriate prescribed form within 30 days of the skills test.

(2) The application must be accompanied by—

(*a*) documentary evidence showing compliance with the requirements of the relevant provisions of this Subpart; and

(*b*) the appropriate fee as prescribed in Part 187.

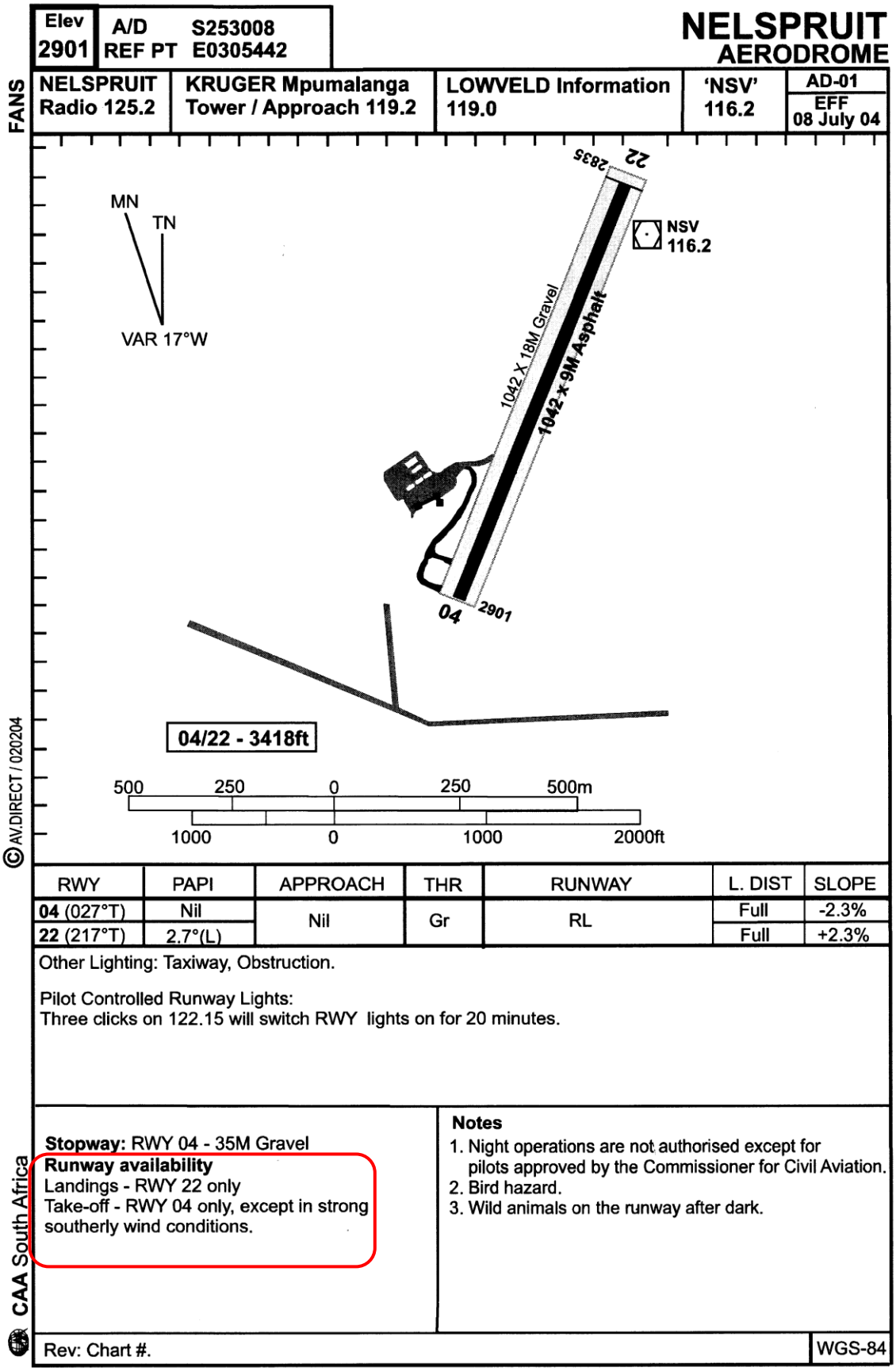
(3) If the applicant complies with all the relevant requirements, the Director must issue a class or type rating on the appropriate prescribed form.

(4) (*a*) A DFE or flight instructor must, on satisfactory completion of all the requirements for the issue of a class or type rating, endorse the logbook of the applicant entitling the applicant to exercise the privileges of the rating, as PIC or pilot instructor as the case may be.

(*b*) A DFE or flight instructor may place a restriction on the applicant to act as co-pilot or as third pilot as the case may be.

(*c*) The Director reserves the right to withdraw the privilege of the rating should any irregularity with respect to the endorsement be found.

APPENDIX B



RWY	PAPI	APPROACH	THR	RUNWAY	L. DIST	SLOPE
04 (027°T)	Nil	Nil	Gr	RL	Full	-2.3%
22 (217°T)	2.7°(L)				Full	+2.3%

Other Lighting: Taxiway, Obstruction.

Pilot Controlled Runway Lights:
Three clicks on 122.15 will switch RWY lights on for 20 minutes.

Stopway: RWY 04 - 35M Gravel

Runway availability
Landings - RWY 22 only
Take-off - RWY 04 only, except in strong southerly wind conditions.

Notes
1. Night operations are not authorised except for pilots approved by the Commissioner for Civil Aviation.
2. Bird hazard.
3. Wild animals on the runway after dark.

CAA South Africa

Rev: Chart #. WGS-84