AIRCRAFT ACCIDENT SHORT REPORT

CA18/2/3/9730: ZS-IAM, Failure to maintain runway centreline on final approach at an unlicensed aerodrome, causing the left wing to collide with vegetation

Date and time	: 1 September 2018, 1247Z
Location	: Leshiba Wilderness, Limpopo Province
Occurrence type	: Accident
Aircraft registration	: ZS-IAM
Aircraft manufacturer and model	: Cessna Textron 182M
Last point of departure	: Leshiba Wilderness Aerodrome
Next point of intended landing	: Leshiba Wilderness Aerodrome
Location of accident site with reference to easily defined geographical points (GPS readings if possible)	: 22° 59' 24.35" South 029° 33' 49.73" East
Meteorological information	: METAR for FAPP 011200Z Wind: 060°/6 kts, temp: 27°C, dew point: -05 °C, CAVOK, NOSIG
Type of operation	: Private (Part 91)
Persons on board	: 1 + 1
Injuries	: Both occupants sustained serious injuries.
Damage to aircraft	: The aircraft sustained substantial damage.

All times given in this report are Coordinated 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 accidents and ***not to apportion blame or liability.***

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1. SYNOPSIS

1.1 On Saturday, 1 September 2018, a pilot accompanied by a passenger departed on a private flight (Part 91) from Wonderboom Airport (FAWB) with the intention of flying to Leshiba Wilderness aerodrome near Louis Trichardt in the Limpopo province.

1.2 On arrival at Leshiba Wilderness aerodrome, the aircraft landed safely with no incidents. After a brief rest period, the pilot and a passenger departed from the aerodrome with the intention of conducting one circuit and returning to the same aerodrome for a landing.

1.3 On final approach and just before touchdown on the runway, the aircraft drifted to the left of the runway centreline and the left wing collided with trees on the left side of the runway.

1.4 The aircraft had substantial damage and both occupants sustained serious injuries.

1.5 The investigation revealed that the pilot did not maintain runway centreline on final approach and the aircraft drifted to the left, as a result, the pilot lost control of the aircraft and the left wing collided with trees next to the runway.

Figure 1: The aircraft as it came to rest

2. FACTUAL INFORMATION

2.1 On Saturday 1 September 2018 at approximately 0921Z, a pilot accompanied by a passenger departed FAWB for a flight to Leshiba Wilderness aerodrome near Louis Trichardt in the Limpopo province.

2.2 The pilot was a German national flying in South Africa using a foreign pilot license validation. This validation gave the pilot the privileges of a private pilot license on the strength of a Federal Aviation Administration (FAA) issued Commercial Pilot License (CPL).

2.3 The intention was to fly to Leshiba Wilderness aerodrome and spend the night at the game reserve. This was a private flight conducted under the provision of the Civil Aviation Regulation (CAR) 2011, Part 91 and the aircraft was operated on a hire and fly basis.

2.4 At 1207Z, the pilot and passenger arrived at Leshiba Wilderness aerodrome. The flight to aerodrome and the landing were uneventful.

2.5 After a brief rest period, the pilot and the passenger elected to depart again with the intention of carrying out one circuit in the same aerodrome. Following the flight and during the landing sequence, the aircraft drifted to the left of the runway centreline and the left wing impacted with trees on the left side of the runway. The initial impact with the trees broke off the aircraft left wingtip. The second impact broke off the portion of the left aileron and caused substantial damage to the left wing leading edge. The final impact occurred after the aircraft rotated through 90° to the left. This caused the right side of the aircraft to also impact with the tree. From the first contact with the trees to the final resting position, the aircraft travelled 71 meters.

2.6 The aircraft sustained substantial damage.

2.7 Both occupants sustained serious injuries. A local doctor initially treated both occupants on the scene. The pilot was airlifted to a hospital in Johannesburg. The passenger was stabilised at a hospital in Polokwane before being transferred by road to a hospital in Johannesburg. The pilot remained in a critical condition in hospital, and would be moved to a hospital in Germany when possible. The passenger has since been discharged from the hospital.

2.8 First impact

Figure 2: Positions of each impact point (Google Earth)

2.8.1 The first impact occurred 242m from the threshold of runway 26 at a height of approximately 10 ft. above ground level.

2.8.2 The left wing of the aircraft collided with a tree causing the wingtip to break off.

Figure 3: Impact marks on the first tree

Figure 4: The arrow shows the broken wingtip lying among debris from the tree

2.9 Second Impact

2.9.1 The second impact with the next tree occurred 290m from the threshold of runway 26.

2.9.2 This caused substantial damage to the leading edge of the left wing and sheared the left aileron in half, which was located near the tree.

Figure 5: The broken portion of the aileron

Figure 6: Damage sustained to the left wing

2.10 Final Impact

2.10.1 The final impact occurred approximately 310 m from the threshold of runway 26.

2.10.2 After the second impact, the aircraft rotated through 90° on its vertical axis, in an anticlockwise direction.

2.10.3 The aircraft impacted a tree with its nose cowling before coming to a stop.

Figure 7: The final position of the aircraft

3. FINDINGS

3.1 Pilot-in-command (PIC**)**

3.1.1 The pilot-in-command (PIC) held a private pilot licence (PPL) foreign validation which was initially issued on 30 June 2014 and expires on 29 June 2019. The foreign license validation was based on the pilot's Federal Aviation Administration (FAA) commercial pilot licence (CPL) (see Appendix B). According to a statement made by the pilot's flight instructor, the last FAA flight review was carried out on 28 July 2018. This test was carried out on a Diamond DA42 aircraft.

3.1.2 The pilot had elected to apply for a private pilot licence (PPL) foreign validation despite being the holder of an FAA commercial pilot license (CPL). This is allowed based on the South African Civil Aviation Regulations (CARs) 2011: Part 61.01.13 (2) (b) which states: "*A foreign licence or rating shall only be validated or converted provided the minimum experience requirements for the issue of the applicable South African licence or rating have been met*." Therefore, by being the holder of an FAA CPL, it would be deemed that the pilot would meet the necessary requirements to be the holder of a private pilot licence (PPL) foreign validation.

3.1.3 The pilot complied with the appropriate skills test as stipulated by the CARs 2011: Part 61.01.13 (5) (a) for the validation of foreign pilot licenses on 5 September 2014. This test was conducted in a Cessna 172. This aircraft is regarded as the same class of aircraft as the Cessna 182 according to CARs: Part 61.09.8 (1) and CATS 61.09.8.

3.1.4 The South African Civil Aviation Regulations require a pilot to undergo familiarization or differences training when changing to another type or variant in the same class. The Federal Aviation Regulations do not require this and allow a pilot to fly any "Aircraft Single Engine Land" below 12 500 lbs, 200 horse power (HP) and not powered by a turbojet engine.

3.1.5 According to FAA records, the pilot held a class rating for "Aircraft Single Engine Land" as well as endorsements for complex and high performance aircraft. This

would allow the pilot to operate any single engine land based aircraft under 12500 lbs, with a power rating exceeding 200 HP but not powered by a turbojet engine.

3.1.6 The validity of the foreign validation requires the holder to “exercise the privileges of the holder’s valid license issued by an ICAO contracting State in terms of Annex 1”. The statement gives the PIC’s FAA license precedence over the SA CARs requirements.

3.1.7 The pilot held an FAA class three medical certificate. This was issued on 19 December 2016 and expires on 31 December 2018 (see appendix A).

3.1.8 At the time of concluding the investigation, the pilot remained in serious condition in hospital and the investigation was unable to retrieve the pilot’s logbook. All information gathered in this report was provided from past records from the SACAA and the FAA. Pictures of the last four pages of the pilot’s logbook were found on his cellular phone and provided to the investigator.

3.2 Aircraft

3.2.1 The aircraft had a valid certificate of release to service (CRS), which was issued on 9 May 2018. The CRS lapses at 6650.2 tachometer hours or on 8 May 2019. The aircraft had a valid certificate of airworthiness, which expires on 31 December 2018.

3.2.2 The last mandatory periodic inspection (MPI) prior to the accident flight was carried out on 9 May 2018. The aircraft had flown a further 96.1 hours since the last MPI.

3.2.3 There were no recorded defects with the aircraft at the time of the accident.

3.2.4 It was found that the pilot complied with the requirements for a validation of a foreign license (South African Civil Aviation Regulation 2011: 61.01.13 (5) (a)) using a C172 aircraft for single engine piston land class rating

3.2.5 Due to this pilot license validation being based on the pilot’s FAA license, the pilot is allowed to fly any “aircraft single engine land (ASEL)” aircraft below 12500 lbs, with less than 200HP engine and which is not a turbojet.

3.2.6 According to the FAA, if the pilot holds a high performance and complex aircraft endorsement, the pilot is allowed to fly any “aircraft single engine land (ASEL)” aircraft below 12500 lbs as long as a turbojet does not power it. Based on this, the requirement to carry out familiarization or differences training on the C182 was not required according to the FAA regulation.

3.3 Organisation

3.3.1 According to the CARS 61.09.1 (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.)” (Please refer to Appendix C)

3.3.2 According to the South African Civil Aviation Technical Standards 61.09.8.1 (1) “Differences (D) training is required when converting to a different aircraft manufacturer or when converting to an aircraft which has an additional system as per Table 2.” Therefore, differences training would have been required to be carried out when moving from the C172 to the C182 if the pilot had been a holder of a South African pilots license. Due to the pilot being a holder of a foreign validation based on his FAA license, this was not a requirement.

Table 2

1	2	3	4
Manufacturer	**System**	**Training**	**Logbook endorsement**
All manufacturers	Variable pitch propeller(s)	(D)	VP
	Retractable undercarriage		RU
	Turbo/super charged engine(s)		T
	Cabin pressurisation		P
	Tail wheel		TW
	Turboprop engine(s)		TP
	Electronic flight instrument system		EFIS

3.3.3 With reference to paragraph 4.3.3 and 4.3.4, it can be deemed that the South African Civil Aviation regulations are stricter than those of what the FAA are. The above circumstance may be in contradiction of the regulation 61.01.13 which states: "(1) The Director may recognise, through temporary validation or permanent conversion, on the conditions prescribed in this Part, pilot licences and ratings issued by an appropriate authority of a Contracting State if the standard of such foreign licence or rating is deemed to be equivalent to, or higher than, the South African licence or rating."

3.4 Environment

3.4.1 The flight was conducted during daylight hours in visual meteorological conditions (VMC).

3.4.2 The runway at Leshiba Wilderness was approximately 610 m (2000 ft) in length and 20 m wide. The direction of landing was on a magnetic heading of 257° with a substantial upward gradient (see figure 3). The runway surface is composed of grass and sand.

3.4.3 The closest weather reporting station was Polokwane (FAPP). This station was approximately 54 nm to the south of the accident site. The METAR at the time was FAPP, wind: 060^0/06kt, Clouds: CAVOK, QNH: 1020.

3.4.4 Due to the location of the runway and the surrounding high ground, all landings are full stop landings using runway 26. All take-offs are done using runway 08.

3.4.5 There was only one windsock at the aerodrome, which was located abeam the threshold of runway 08. Trees (see figure 8) obscure it, especially when on approach to land on runway 26. The witness stated that a light tail wind of approximately 5 kts variable between 030° and 120° prevailed on the day.

3.4.6 The aircraft drifted to the left of the runway centreline and impacted trees with the left wing.

Figure 8: Direction of landing, approximate heading of 257°, and the red circle shows the location of the windsock (Google Earth)

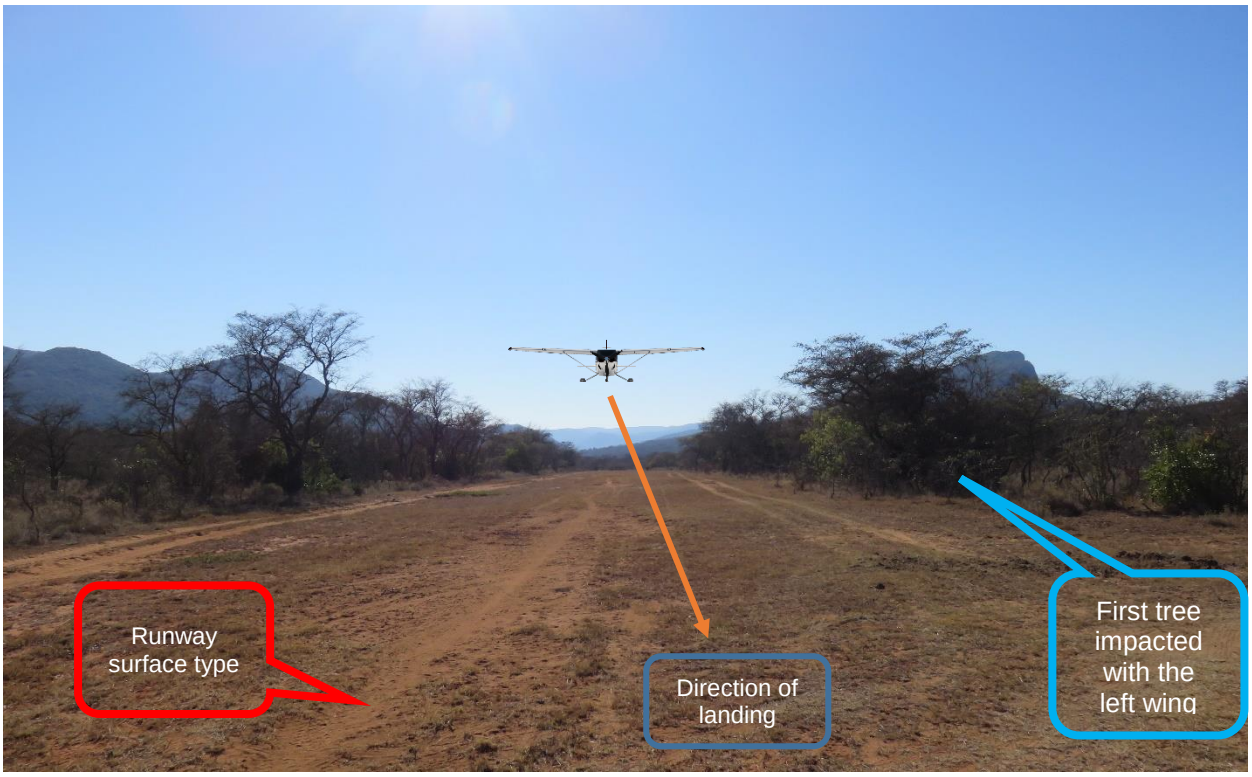

Figure 9: Runway surface and direction of landing

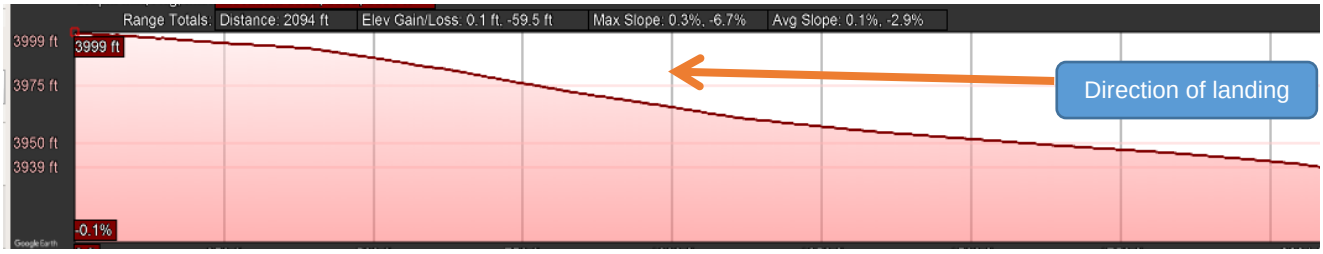

Figure 10: Runway gradient. The aircraft landed from right to left. (Google Earth)

5. PROBABLE CAUSE

5.1 The pilot failed to maintain runway centreline on final approach and allowed the aircraft to drift to the left, without taking corrective action the left wing collided with trees span along the left hand side of the runway and the pilot lost control of the aircraft.

6. CONTRIBUTING FACTOR

6.1 None

7. REFERENCES USED IN THE REPORT

7.1 South African Weather Services (SAWS) weather report

7.3 South African Civil Aviation Regulations 2011

7.4 South African Civil Aviation Technical Standards 2011

7.5 Federal Aviation Administration (FAA) Regulations 2018

7.6 Federal Aviation Administration FAA Class 3 medical validity: https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/app_process/general/validity/

8. SAFETY RECOMMENDATION

8.1 None

9. SAFETY MESSAGE

9.1 None

10. APPENDICES

10.1 Appendix A: FAA Medical validity extract

10.2 Appendix B: Part 61.01.13 of the Civil Aviation Regulations of 2011 (Validation of a foreign pilot licence)

10.3 Appendix C: Part 61.09.1 of the Civil Aviation Regulations of 2011 (Class and type ratings)

APPENDIX A

An airman medical certificate is valid only with the original signature of the AME who performed the examination or digital signature of an authorized FAA physician (e.g., Regional Flight Surgeon, manager of the Aerospace Medical Certification Division, Federal Air Surgeon).

- Copies are NOT valid.
- An AME may only issue ONE originally signed certificate to an airman. A replacement for a lost or destroyed certificate must be issued by the FAA.

A. First Class Medical Certificate: A first class medical certificate is valid for the remainder of the month of issue; plus
- 6 calendar months for operations requiring a first class medical certificate if the airman is age 40 or over on or before the date of the examination, or
- 12-calendar months for operations requiring a first-class medical certificate if the airman has not reached age 40 on or before the date of examination, or
- 12 calendar months for operations requiring a second class medical certificate, or
- 24 calendar months for operations requiring a third class medical certificate if the airman is age 40 or over on or before the date of the examination, or
- 60 calendar months for operations requiring a third class medical certificate if **the airman has not reached age 40 on or before the date of examination**. *

B. Second Class Medical Certificate: A second class medical certificate is valid for the remainder of the month of issue; plus
- 12 calendar months for operations requiring a second class medical certificate, or
- 24 calendar months for operations requiring a third class medical certificate, if the airman is age 40 or over on or before the date of the examination, or
- 60 calendar months for operations requiring a third class medical certificate if **the airman has not reached age 40 on or before the date of examination**. *

C. Third Class Medical Certificate: A third-class medical certificate is valid for the remainder of the month of issue; plus
- 24 calendar months for operations requiring a third class medical certificate, if the airman is age 40 or over on or before the date of the examination, or
- 60 calendar months for operations requiring a third class medical certificate if **the airman has not reached age 40 on or before the date of examination**. *

(2) The Director may approve any other device for a purpose not provided for in sub-regulation (1).

(3) The Director may approve any of the devices, referred to in sub-regulations (1) and (2) on the basis of a similar approval by the regulatory body of a Contracting State.

Recognition, validation and conversion of foreign pilot licences and ratings

61.01.13 (1) The Director may recognise, through temporary validation or permanent conversion, on the conditions prescribed in this Part, pilot licences and ratings issued by an appropriate authority of a Contracting State if the standard of such foreign licence or rating is deemed to be equivalent to, or higher than, the South African licence or rating.

(2) (a) A person who holds a current and valid pilot licence issued by another Contracting State in accordance with ICAO Annex 1 to the Convention, may apply for a validation or conversion of such licence and associated ratings, for use on aircraft registered in South Africa.

(b) A foreign licence or rating shall only be validated or converted provided the minimum experience requirements for the issue of the applicable South African licence or rating have been met.

(3) Where the country of issue is not a Contracting State or does not comply with Annexes 1 and 6 to the Convention, then the foreign licence holder must undergo bridging training to the extent determined by the Director in individual cases and thereafter further assessment of competence to ensure compatibility with the relevant South African licensing standards.

(4) Before the Director validates or converts a foreign licence or rating for a commercial air transport operation or a PPL with Instrument Rating (PPL/IR), he or she must confirm the validity of the foreign licence or rating with the appropriate authority of the issuing Contracting State.

(5) Notwithstanding the provisions of sub-regulations (1) and (2), any applicant for the validation of a foreign licence or rating must undergo the appropriate skills test and –

(a) in the case of validation for use as a private pilot under VFR conditions (PPL/VFR), must –

(i) have attended a tutorial, conducted by at least a Grade III flight instructor at an approved Part 141 ATO on the differences in airspaces and terminology within South Africa;
(ii) have received a briefing on performance planning, taking into account the effect of density altitude; and
(iii) write an Authority approved examination in South African Air Law conducted by an approved Part 141 ATO; or

(b) in the case of validation for use as a private pilot under IFR conditions (PPL/IFR) must –

(i) have attended a tutorial, conducted by at least a Grade II flight instructor at an approved Part 141 ATO on the differences in airspaces and terminology within South Africa;
(ii) have received a briefing on performance planning taking into account the effect of density altitude; and
(iii) pass an examination on South African Air Law and Procedures at an approved Authority Examination Centre; or

(c) in the case of validation for use as a commercial pilot under VFR conditions (CPL/VFR), must have passed an examination in South African Air Law at CPL level at an approved Authority Examination Centre; or

(d) in the case of validation for use as a commercial pilot under IFR conditions (CPL/IFR) or as an airline transport pilot, must have passed an examination in South African Air Law and Procedures at an approved Authority Examination Centre; and

(6)(a) Notwithstanding the provisions of regulation 61.01.14(20), a certificate of validation of a foreign licence for commercial purposes may only be issued for a particular purpose.

(b) The expiry date of such certificate of validation shall coincide with the date of expiry of the medical certificate of the applicant but shall not exceed a period of twelve months.

(c) If the medical certificate expires within the initial 12 month period, then the certificate of validation may be revalidated for a further period not exceeding 12 months from original date of issue of the certificate of validation.

(d) Under exceptional circumstances, the Director may extend the period of validation by one further period of 12 months.

(e) The certificate of validation for a PPL is valid for a period of 60 months from date of successful completion of the applicable skills test.

(f) The privileges of the validation may only be exercised if the holder has a current and valid foreign licence and complies with the recency and maintenance of competency requirements of Subpart 3 of this Part as applicable.

(7) In the case of validated foreign pilots flying South African registered aircraft in a foreign country, a certificate of validation for commercial purposes may be re-issued annually, provided that the operation is flown exclusively outside the borders of South Africa and that any flying carried out in South Africa is for the purpose of a ferry flight for pre- or post-maintenance purposes or for the purpose of a revalidation check.

(8) The purposes for which a certificate of validation may be issued include any or a combination of the following –

(a) to exercise the privileges of a private pilot in a South African registered aircraft;

(b) to ferry a South African registered aircraft from one foreign country to another, or from a foreign country to South Africa;

(c) to conduct demonstration flights in South African registered aircraft;

(d) to conduct familiarisation, difference training or route training of South African flight crew;

(e) to provide its holder with time to complete prescribed bridging training for the conversion of the foreign licence or rating while acting as a flight crew member on a South African registered aircraft during commercial operations; and

(f) in case of a dry- or wet-lease agreement in terms of Part 48.

(9) The privileges of a validated foreign licence may not be exercised for commercial air transport operations, except when issued for the purpose referred to in sub-regulation (7) and paragraphs (e) and (f) of sub-regulation (8), and except by written permission of the Director for the purposes of route training.

(10) A South African licence, issued wholly or in part on the strength of a foreign licence, must indicate the Contracting State that issued the licence upon which the conversion was based.

(11) For the issuing of a South African pilot licence or rating, the Director may not recognise foreign examination credits in isolation; i.e., for a conversion the applicant must be the holder of the appropriate valid licence or rating. If such is not the case, the applicant must pass all the relevant South African examinations.

(12) A foreign licence, if qualifying for the issue of a certificate of validation in terms of these Regulations, or for which a certificate of validation has been issued, may be accepted as the entry requirement for the issue of a higher South African pilot licence.

Validation of a foreign pilot licence and ratings

(13) The application for a certificate of validation of a pilot licence or rating issued by the appropriate authority of a Contracting State should be made to the Director on the appropriate prescribed form.
(14) The Director may validate a pilot licence and ratings issued by an appropriate authority of a Contracting State –

(a) subject to the same restrictions which apply to such foreign pilot licence and ratings;
(b) subject to such conditions and limitations as the Director may deem necessary in the interest of aviation safety;
(c) in accordance with, and subject to, the requirements and conditions as prescribed in these Regulations;
(d) on condition that the privileges may not exceed that of the South African pilot licence or rating.

(15) The application for a certificate of validation must be accompanied by –

(a) the appropriate fee as prescribed in Part 187;
(b) a certified true copy of the pilot licence and ratings for which the validation is requested;
(c) a certified true copy of a valid foreign or local medical certificate;
(d) a summary of the applicant's logbook, certified by the applicant to be a true reflection of the hours flown;
(e) proof of English language proficiency compliance in terms of regulation 61.01.7; and
(f) any other document prescribed in Document SA-CATS 61.

(16) The minimum knowledge, experience and skill requirements for the issuing of a certificate of validation for the various pilot licences and ratings are those prescribed in Document SA-CATS 61 for the equivalent South African licences or ratings.

(17) Where a practical flight test is required, such test must be undertaken in an aircraft of the category, class or type, appropriate to the pilot licence for which a certificate of validation is sought, or in a FSTD approved for the purpose.

(18) The holder of a certificate of validation must comply with all the applicable provisions of these Regulations.

(19) Before the privileges of an additional rating may be exercised in terms of the certificate of validation, such additional privileges must have been endorsed on the foreign pilot licence by the appropriate foreign authority.

(20) The period of validity of a certificate of validation issued for the purposes of a lease agreement in terms of Part 48, shall be the duration of the lease agreement.

(21) A certificate of validation shall become invalid as soon as the corresponding foreign licence or rating/s has or have been suspended or revoked by the issuing authority.

(22) Except when issued for the purpose referred to in sub-regulation (7), a certificate of validation for commercial purposes may only be reissued once, at the discretion of the Director and only in exceptional cases, on condition that the applicant provides sufficient proof that he or she has complied with all requirements of the country of issue of the foreign licence or rating in respect of maintenance of competency.

(23) In order to meet short-term operational requirements, the Director may, in exceptional cases, exempt the applicant from all or some of the requirements of this Part, subject to conditions set by him or her in each particular case.

Conversion of a foreign pilot licence and ratings

(24) The holder of a valid South African validation issued in terms of the Air Navigation Regulations, 1976, or the holder of a pilot licence and rating issued by an appropriate authority

APPENDIX C

SUBPART 9:
CLASS AND TYPE RATINGS

General

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.

(4) (*a*) Class ratings are—

(i) SEA (L): single-engine aeroplanes (land) certificated for single pilot operation;