
Type Acceptance Report

TAR 10/21B/23 – Revision 1

CESSNA 501/551 CITATION

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
1. INTRODUCTION	1
2. AIRCRAFT CERTIFICATION DETAILS	2
3. APPLICATION DETAILS AND BACKGROUND INFORMATION	3
4. NZCAR §21.43 DATA REQUIREMENTS	4
5. NEW ZEALAND OPERATIONAL RULE COMPLIANCE	7
ATTACHMENTS	9
APPENDIX 1	9

Executive Summary

New Zealand Type Acceptance has been granted to the Cessna Models 501 and 551 Citation I and II based on validation of FAA Type Certificate number A27CE. There are no special requirements for import.

Applicability is currently limited to the Models and/or serial numbers detailed in Section 2, which are now eligible for the issue of an Airworthiness Certificate in the Standard Category in accordance with NZCAR §21.191, subject to any outstanding New Zealand operational requirements being met. (See Section 5 of this report for a review of compliance of the basic type design with the operating Rules.) Additional variants or serial numbers approved under the foreign type certificate can become type accepted after supply of the applicable documentation, in accordance with the provisions of NZCAR §21.43(c).

NOTE: The information in this report was correct as at the date of issue. The report is generally only updated when an application is received to revise the Type Acceptance Certificate. For details on the current type certificate holder and any specific technical data, refer to the latest revision of the State-of-Design Type Certificate Data Sheet referenced herein.

1. Introduction

This report details the basis on which Type Acceptance Certificate No.10/21B/23 was granted in the Standard Category in accordance with NZCAR Part 21 Subpart B.

Specifically, the report aims to:

- (a) Specify the foreign type certificate and associated airworthiness design standard used for type acceptance of the model(s) in New Zealand; and
- (b) Identify any special conditions for import applicable to any model(s) covered by the Type Acceptance Certificate; and
- (c) Identify any additional requirements which must be complied with prior to the issue of a NZ Airworthiness Certificate or for any subsequent operations.

The report covers all models included on the State-of-Design type certificate which have been granted type acceptance in New Zealand, which are listed in Section 2. The history of the Cessna Model 501/551 type acceptance in New Zealand under FAA type certificate A27CE is listed in Appendix 1.

2. Aircraft Certification Details

(a) State-of-Design Type and Production Certificates:

Manufacturer: Cessna Aircraft Company
Type Certificate Holder: Textron Aviation Inc. (since July 29, 2015)
Type Certificate: A27CE
Issued by: Federal Aviation Administration
Production Approval: FAA Production Certificates 312 and 4

(b) Models Covered by the Part 21B Type Acceptance Certificate:

- (i) **Model:** 501, Citation
MCTOW: 11,850 lb. [5375 kg]
Max. No. of Seats: 9
Noise Standard: FAR Part 36
Engine: Pratt & Whitney Canada JT15D-1A or -1B
Type Certificate: E-11
Issued by: Transport Canada
- (ii) **Model:** 551, Citation II
MCTOW: 12,500 lb. [5700 kg]
Max. No. of Seats: 11
Noise Standard: FAR Part 36
Engine: Pratt & Whitney Canada JT15D-4
Type Certificate: E-11
Issued by: Transport Canada

3. Application Details and Background Information

The application for New Zealand type acceptance of the Cessna Model 501 was from the manufacturer, dated 14 June 2010. The first-of-type example was serial number 501-0198, registered ZK-NBR. The Model 501 Citation I SP is a rear-mounted twin-turbofan 9-seat all-metal pressurised light business jet.

Type acceptance certificate number 10/21B/23 was granted on 24 June 2010 to the Cessna Model 501 Citation based on validation of FAA Type Certificate number A27CE. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

The report was raised to Revision 1 to include the Model 551 Citation II SP. Type Acceptance was granted on 30 October 2020.

The Model 501 is identical to the Model 500 except that it has been re-certificated under FAR Part 23 to enable single-pilot operations. One model can be converted to the other by embodiment of SB500-11-04 or SB500-11-05, which basically consists of some placard changes. The serial number remains the same, but the model prefix changes. (S/n 500-001 thru -0349 are known as the Citation. A block point change at s/n 500-350 introduced the JT15D-1A engine, which are then known as the Citation I.) The Model 501 is called the Citation I SP. SB500-11-04 only applies to the Citation I, unless earlier serials have been upgraded per SB500-57-12.

The Model 551 has the same relationship to the Model 550, being identical except the MAUW is reduced to fit into Part 23. The Cessna 550 was superseded in production by the Model S550, but was subsequently put back into production from serial number -0550. A further production break occurred at serial number -0627 when the maximum weight was increased. Only serial numbers -0002 thru -0626 can be converted to the Model 551 under SB550-11-03. This comprises predominately changes to markings and placards, although there is one small spares kit addition to the aft power junction box. The aircraft must have certain equipment fitted to be eligible for single-pilot operation.

4. NZCAR §21.43 Data Requirements

The type data requirements of NZCAR Part 21B Para §21.43 have been satisfied by supply of the following documents, or were already held by the CAA:

(1) ICAO Type certificate:

FAA Type Certificate Number A27CE

FAA Type Certificate Data Sheet no. A27CE at Rev. 18 dated July 29, 2015

- Model 501 approved January 7, 1977

- Model 551 approved June 30, 1978

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the Model 501 is FAR Part 23 effective February 1, 1965, as amended by Amendments 23-1 through 23-16, plus some paragraphs at a later Amendment status and some paragraphs from FAR Part 25 at Amendment 25-17, as detailed on the TCDS. For the Model 551 there were additional changes to individual paragraphs, again as detailed on the TCDS. One special condition was applied to the 501 and twelve equivalent level of safety findings granted for both. These have been reviewed and accepted by the CAA.

This is an acceptable certification basis in accordance with NZCAR Part 21B paragraph §21.41 and Advisory Circular 21-1, because FAR 23 is the basic standard for Normal Category Airplanes called up under Part 21 Appendix C. There are no non-compliances and no additional special conditions have been prescribed by the Director under §21.23.

(ii) *Special Conditions:*

Model 501:

25-25-CE-4 – The FAA originally imposed additional requirements on the Model 500 because as a small jet airplane with MCTOW of 10,350 lb. it had characteristics which were novel or unusual for the Transport Category. It included certification standards for operation without normal electrical power; increased limit load factor; turbulence criteria; vibration and buffeting; and propulsion aspects (including installation fault analysis and precautions against rotor failure or engine case burn through). This Special Condition was carried across to the Model 501.

(iii) *Equivalent Level of Safety Findings:*

FAR §23.903(e)(2) Engine Rotation – Compliance was by showing that continued rotation at windmilling speed after engine shut down would not jeopardise the safety of the aircraft.

FAR §23.951(c) Fuel System Icing – An ELOS was granted based on the required use of a Fuel System Icing Inhibitor MIL-I-27686, as specified in the Airplane Flight Manual (AFM).

FAR §23.995(f) Fuel System Check Valves – The FAA accepted that the intent of this requirement is met by the system design, whereby incorrect assembly or connection of the check valves would result in an annunciator panel indication following engine start.

FAR §23.1019(a)(3) Oil Strainer Indicator – It was accepted that a bypass valve operation indicator is not needed because PWC affirmed that filters on time expired engines and those removed due to bearing failures were never contaminated to the extent that filter bypass occurred.

FAR §23.1439(b) Protective Breathing Equipment – This ELOS was continued over from the Model 500, based on compliance with the FAR 25 provision. (During testing for smoke detection and removal it was satisfactorily demonstrated that PBE is not required for crew members.

FAR §23.1563(a) Maneuvering Speed Placard – The FAR Part 23 requirement for a single V_A placard was accepted as impractical and instead information is presented in the AFM as a function of weight and altitude in a graphical form. Type rating should ensure pilot familiarity.

Model 501 Only:

FAR §23.471 thru 511 Ground Loads

FAR §23.723 thru 727 Landing Gear

FAR §23.729(e) Retracting Mechanism

FAR §23.731 thru 735 Wheels, Tires and Brakes

A determination of ELOS for the four sets of provisions above relating to landing gear requirements was made based on compliance with the equivalent FAR 25 paragraphs, including the fatigue criteria of FAR 25.573. The trouble-free service history of the Model 500 landing gear was also considered.

FAR §23.1335 Flight Director Disconnect – An ELOS was made based on the isolation provided in the Model 501 installation by the separate power inputs and signal outputs from the Sperry VG-14 vertical gyro to the attitude indicators, autopilot and Flight Director computers.

FAR §23.1545 Airspeed Indicator Markings – Use of IAS in lieu of CAS was accepted provided both types are in the AFM and placard values are consistent with ASI markings.

Model 551 Only:

FAR §23.207(c) Stall Warning – A margin less than 5 knots was accepted because there was always heavy buffet and the elevator control forces became heavy. Further, controllability was always good and V_{min} usually occurred rather than an aerodynamic stall. The Model 550 has also been found safe under Part 25, which is identical to the Model 551 and requires the same type rating.

FAR §23.773(b)(2) Use of Clear Vision Area of Windscreen – For the Citation family Cessna has demonstrated alternate compliance in lieu of an openable window (the Citation has a small openable cockpit window but it is not properly located for forward vision) considering rain, ice, hydraulic fluid, hail and bird impingement, through natural clearing resulting from the shape of the windscreen and the plexiglass surface and a bleed air rain removal system.

FAR §23.807(d) Emergency Exit Ditching – An ELOS was granted for the use of a Type III exit in lieu of an overhead hatch, after analysis showed it would be above the water line in all loading situations and provided easier and quicker access to both sides of the aircraft.

FAR §23.1199(b) and (c) Fire Bottle Pressure Relief Valve – In lieu of relief lines which discharge outside the aircraft and have visual discharge indicators, the FAA accepted compensating factors that the extinguishing agent is non-corrosive; the valve is located so equipment or structure will not be damaged by impingement; the aft fuselage discharge area is completely separated from the pressurised cabin and sized and ventilated such that over-pressurisation cannot occur; and there is easy access to the container pressure gauges to check the valve charge status.

FAR §23.1549(a) and (b) N₂ Digital Indicator Markings – An ELOS was granted for the use of digital displays which give less effective trend and limit proximity indications on the grounds the engine has no defined cautionary range for N₂, can temporarily exceed the maximum N₂ safely up to 2% for 20 seconds, and the display changes from green to red when an exceedance occurs.

(iv) *Airworthiness Limitations:*

See the Maintenance Manual Chapter 4 Airworthiness Limitations.

(3) Aircraft Noise and Engine Emission Standards:

(i) *Environmental Standard:*

The Model 501 Citation I has been certificated for fuel venting under SFAR 27, and for noise under FAR Part 36, including Amendments 36-1 through 36-5. (Stage 3), For the Model 551 these standards were updated to Amendments 36-6, and 27-3.

(ii) *Compliance Listing:*

Model 501:

AFM Section IV Performance – Noise Characteristics – Takeoff weight 11,850 lb.
Takeoff: 78.0 EPNdB Approach: 87.9 EPNdB Sideline: 86.2 EPNdB

Model 551:

AFM Section IV Performance – Noise Characteristics – Takeoff weight 12,500 lb.
Takeoff: 80.1 EPNdB Approach: 86.7 EPNdB Sideline: 90.5 EPNdB

(4) Certification Compliance Listing:

Cessna Report No. 501-7733-019 – Model 501 Master Compliance Check List

Cessna Report No, 551-7833-093 – Model 551 Master Compliance Check List

(5) Flight Manual:

FAA-Approved Airplane Flight Manual for the Model 501 Cessna Citation I/SP – Document No. 501FM – CAA Accepted as AIR 3133

FAA-Approved Airplane Flight Manual for the Model 551 Cessna Citation II/SP – Document No. 551FM – CAA Accepted as AIR 3874

FAA-Approved Airplane Flight Manual for the Model 551 Cessna Citation II (Unit -550 thru -626) – Document No. 551FMA – CAA Accepted as AIR 3875

(6) Operating Data for Aircraft:

(i) *Maintenance Manual:*

Apart from the AFM, all Model 500 Service Data is applicable to the Model 501, and all Model 550 Service Data is applicable to the Model 551.

This includes the following publications:

Model 500 Maintenance Manual – Publication 500MM

Model 500 (0001 - 0274) Wiring Diagram Manual – Publication 500WD

Model 500 (0275 & On) Wiring Diagram Manual – Publication 500WDA

Model 500 and 501 Weight & Balance Manual – Publication 500WB

Model 550 Maintenance Manual – Publication C55MM

Model 550 (0002 - 0505) Wiring Diagram Manual – Publication C55WD

Model 550 and 551 (0550 & On) Wiring Diagram Manual – Pub. C55WDA

Model 550 & 551 Weight and Balance Manual – Publication 55WB

Model 500 Series Structural Repair Manual – Publication 5056SR

Model 500 Series Component Maintenance Manual – Publication 5056CM

Model 500 Series Non-destructive Testing Manual – Publication 5056ND

Model 500 Series Illustrated Tool and Equipment Manual – Publication 5056TE

(ii) *Current service Information:*

Service Bulletins and Service Letters

(iii) *Illustrated Parts Catalogue:*

Model 500 Illustrated Parts Catalog – Publication 500PC

Model 550 Illustrated Parts Catalog – Publication 55PC

(7) Agreement from manufacturer to supply updates of data in (5), and (6):

CAA 2171 for Model 501 from Manager Airworthiness dated 14 June 2010

Textron Aviation Publications are now available through the Textron Aviation Technical Publications website at <https://ww2.txtav.com>

5. New Zealand Operational Rule Compliance

Compliance with the retrospective airworthiness requirements of NZCAR Part 26 is a prerequisite for the grant of a type acceptance certificate.

Civil Aviation Rules Part 26

Subpart B – Additional Airworthiness Requirements

Appendix B – All Aircraft

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
B.1	Marking of Doors and Emergency Exits	<i>To be determined on an individual aircraft basis</i>
B.2	Crew Protection Requirements – CAM 8 Appdx. B # .35	Not Applicable – Agricultural aircraft only

Compliance with the following additional NZ operating requirements has been reviewed for the Model 501 and were found to be covered by either the original certification requirements or the basic build standard of the aircraft, except as noted:

Civil Aviation Rules Part 91

Subpart F – Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
91.505	Seating and Restraints – Safety belt/Shoulder Harness	FAR Part 23 para §23.785
91.507	Pax Information Signs – Smoking, safety belts fastened	Not Applicable – Less than 10 passenger seats
91.509 Min. VFR	(1) ASI (2) Machmeter (3) Altimeter (4) Magnetic Compass (5) Fuel Contents (6) Engine RPM (7) Oil Pressure	FAR §23.1303(a) FAR §23.1303(e) FAR §23.1303(b) FAR §23.1303(c) FAR §23.1305(a) FAR §23.1305(d)(e) FAR §23.1305(b)
91.511 Night	(1) Turn and Slip (2) Position Lights	(8) Coolant Temp (9) Oil Temperature (10) Manifold Pressure (11) Cylinder Head Temp. (12) Flap Position (13) U/C Position (14) Ammeter/Voltmeter
91.513	VFR Communication Equipment	N/A – Turbojet FAR §23.1305(c) N/A – Turbojet FAR §23.699(a)(2) FAR §23.729(e) FAR §23.1351(d)
91.517 IFR	(1) Gyroscopic AH (2) Gyroscopic DI (3) Gyro Power Supply (4) Sensitive Altimeter	(3) Anti-collision Lights (4) Instrument Lighting
91.519	IFR Communication and Navigation Equipment	FAR §23.1401 FAR §23.1381
91.523 Emrgcy Eqpmt.	(a) More Than 10 pax – First Aid Kits per Table 7 – Fire Extinguishers per Table 8 (b) More than 20 pax – Axe readily acceptable to crew (c) More than 61 pax – Portable Megaphones per Table 9	Dual VHF-20A Comms Fitted as Standard *
91.529	ELT – TSO C126 406 MHz after 22/11/2007	(5) OAT (6) Time in hr/min/sec (7) ASI/Heated Pitot (8) Rate of Climb/Descent
91.531	Oxygen Indicators – Volume/Pressure/Delivery	Fitted as Standard * Fitted as Standard * Fitted as Standard * Fitted as Standard *
91.535 Press. A/c	(1) Flight Crew Member On-Demand Mask; (2) Pax mask, Portable oxygen equipment (3) Crew Member – Pax Oxygen Mask and Portable (4) Minimal Supplemental Oxygen Quantity (5) Specified supplemental/therapeutic oxygen quantity Above FL250 (1) Quick-Donning Crew On-Demand Mask (2) Supplemental O ₂ Masks for all Pax/Crew and Toilets (3) 15 Minutes Therapeutic Supply Above FL300 (1) Total Outlets Exceed Pax Seats by 10% (2) Extra Units Uniformly Distributed throughout Aircraft (3) Automatically Presented if Cabin Altitude ≥ 14000 ft. (4) Manual Means of Deploying Pax Masks Available	Standard Avionics Package on Citation I/SP is Sperry SPZ500 Flight Director/Autopilot; Dual VIR-30A VOR/Nav; DME-40; ARC846A ADF; RDR-1100 Wx
91.541	SSR Transponder and Altitude Reporting Equipment	<i>Operational requirement – compliance as applicable</i> <i>Operational requirement – compliance as applicable</i> Not Applicable – Less than 20 passenger seats Not Applicable – Less than 61 passenger seats
91.543	Altitude Alerting Device – Turbojet or Turbofan	<i>Operational requirement – compliance as applicable</i>
91.545	Assigned Altitude Indicator	FAR §23.1441, FAR §23.1443 and FAR §23.1447
A.15	ELT Installation Requirements	Quick-donning diluter demand crew masks fitted as std. Continuous flow passenger masks fitted. (One or two fitted per stowage/dropout box.) Boxes distributed along the cabin roof and in the toilet. There are 3x optional O ₂ cylinder sizes: 22, 60 or 64 cu.ft. Cessna advise the larger size is required for a full passenger load of nine to comply with §91.535. (Otherwise occupancy would be limited to five.) Minimum eight pax masks required for 7 pax cabin layout Maximum Operating Altitude is 41,000 feet. Masks drop if cabin altitude exceeds 13,500 ± 600 feet Manual selection switch is installed in the cockpit
91.541	SSR Transponder and Altitude Reporting Equipment	Fitted as Standard (TDR-90 installed s/n -0275 and on) *
91.543	Altitude Alerting Device – Turbojet or Turbofan	V-NAV Computer/Controller gives altitude alert function
91.545	Assigned Altitude Indicator	Not Applicable – Altitude Alerting Device fitted
A.15	ELT Installation Requirements	<i>To be determined on an individual aircraft basis</i>

Civil Aviation Rules Part 135

Subpart F – Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
135.355	Seating & Restraints – Shoulder harness flight-crew seats	FAR §23.785
135.357	Additional Instruments (Powerplant and Propeller)	FAR §23.1305
135.359	Night Flight	<i>Operational requirement – compliance as applicable</i>
	Landing light, Pax compartment	
135.361	IFR Operations	<i>Operational requirement – compliance as applicable</i>
	Speed, Alt, spare bulbs/fuses	
135.363	Emergency Equipment (Part 91.523 (a) and (b))	<i>Operational requirement – compliance as applicable</i>
135.367	Cockpit Voice Recorder	N/A – Only for 2-crew helicopters with more than 10 pax
135.369	Flight Data Recorder	Not Applicable – Less than 10 passenger seats
135.371	Additional Attitude Indicator	Fitted as Standard *

‡ See Cessna 500/501 Master Equipment List Report 500-7147-086 and the Citation I/SP Operating Manual 500OMF06

- NOTES: 1. A Design Rule reference in the Means of Compliance column indicates the Design Rule was directly equivalent to the CAR requirement, and compliance is achieved for the basic aircraft type design by certification against the original Design Rule.
2. The CAR Compliance Tables above were correct at the time of issue of the Type Acceptance Report. The Rules may have changed since that date and should be checked individually.
3. Some means of compliance above are specific to a particular model/configuration. Compliance with Part 91/119 operating requirements should be checked in each case, particularly oxygen system capacity and emergency equipment.

Attachments

The following documents form attachments to this report:

Cessna Drawing Number 550002 – Three Views – Model 501
Copy of FAA Type Certificate Data Sheet Number A27CE

Sign off



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David Gill
Team Leader Airworthiness



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Checked – Gaetano Settineri
Certification Engineer

Appendix 1

List of Type Accepted Variants:

<i>Model:</i>	<i>Applicant:</i>	<i>CAA Work Request:</i>	<i>Date Granted:</i>
501 (Citation I SP)	Cessna Aircraft Company	10/21B/23	24 June 2010
551 (Citation II/SP)	M J Mullins	19/21B/14	30 October 2020