
Type Acceptance Report

TAR 11/21B/8 – Revision 1

PIPER PA-46 Series

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	8
APPENDIX 1	8

Executive Summary

New Zealand Type Acceptance has been granted to the Piper PA-46 Malibu/Meridian Series based on validation of FAA Type Certificate number A25SO. There are no special requirements for import.

Applicability is currently limited to the Models and/or serial numbers detailed in Appendix 1, 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. 11/21B/8 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 also notes the status of all models included under the foreign type certificate which have been granted type acceptance in New Zealand. Models covered by the type acceptance certificate issued under Part 21B are listed in Section 2 of this report. Models which were accepted prior to that under NZCAR Section B.9 are listed in Appendix 1.

2. Aircraft Certification Details

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

Manufacturer: Piper Aircraft, Inc.
The New Piper Aircraft, Inc (until August 6, 2006)
Piper Aircraft Corporation (until July 13, 1995)

Type Certificate: A25SO
Issued by: Federal Aviation Administration

Production Approval: PC206

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

- (i) **Model:** PA-46-310P
- MCTOW: 4100 lb. (1860 kg)
- Max. No. of Seats: 6
- Noise Standard: FAR Part 36 Appendix F
- Engine:** Continental TSIO-520-BE
Type Certificate: E8CE
Issued by: Federal Aviation Administration
- Propeller:** Hartzell BHC-C2YF-1BF / F8052 ()
Type Certificate: P-920
Issued by: Federal Aviation Administration
- (ii) **Model:** PA-46-500TP
- MCTOW: 4850 lb. (2200 kg)
5092 lb. (2310 kg) – S/N 4697157 up and with Kit 767-360
- Max. No. of Seats: 6
- Noise Standard: FAR Part 36 Appendix G
- Engine:** Pratt & Whitney Canada PT6A-42A
Type Certificate: E-12
Issued by: Transport Canada
- Propeller:** Hartzell HC-E4N-3Q/E8501B-3.5
Type Certificate: P10NE
Issued by: Federal Aviation Administration

Note: Refer to Advisory Circular 21-1 Appendix 2 for the New Zealand type acceptance status of any engines and propellers listed above.

3. Application Details and Background Information

There has been one example of the PA-46-310P in New Zealand prior to 1995 when Part 21 was introduced, and that particular serial number range was therefore deemed to have a type acceptance certificate under the transitional arrangements of Part 21 Appendix A(c). The first application for New Zealand type acceptance under Part 21B was for the Model PA-46-500TP Malibu Meridian, from the importer Mr Simon Lusk, dated 20 September 2010. The first-of-type example was serial number 4697275, registered as ZK-OLY. The Piper PA-46 Malibu/Meridian Series is a single-engine six-seat pressurised all-metal low-wing retractable-undercarriage light aircraft.

Type Acceptance Certificate Number 11/21B/8 was granted on 7 February 2011 to the Piper Model PA-46-500TP based on validation of FAA Type Certificate A25SO. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

The PA-46-310P Malibu was an all-new model introduced in 1983, although it does have similarities with the earlier PA-33 Pressurised Comanche prototype. It used a specially-developed turbocharged Continental TSIO-520 engine. (There has been a single example on the NZ Civil Aircraft Register since 1993 as ZK-MBU.) The first derivative variant in 1988 was the PA-46-350P Malibu Mirage, which changed to the Lycoming TSIO-540 engine. In 2000 New Piper introduced the PA-46-500TP Malibu Meridian, with a PT6A-42 turbine engine de-rated to 500 shp. Significant changes included a redesign of the forward fuselage to accommodate the new propulsion system; beefed-up wing structure with wing root gloves (to maintain stall speed at the higher MAUW); larger area horizontal tail and modified vertical stabiliser incorporating a rudder trim tab; increased fuel capacity; and a new avionics suite with the Meggitt MAGIC (Meggitt Avionics next Generation Integrated Cockpit) EFIS package. The Meridian was subsequently upgraded in production to have the Avidyne full electronic displays, while the Garmin G1000 system, and still later the G1000NXi became standard. The latest version is marketed as the M500.

This report was raised to Revision 1 to add an additional serial number range. The first-of-type was serial number 4697190 registered ZK-UTE. The opportunity was taken to add all other serial number ranges of the two models on the TCDS which have been type accepted.

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 A25SO

FAA Type Certificate Data Sheet no. A25SO at Revision 15 dated August 6, 2006

– Model PA-46-310P approved September 27, 1983

– Model PA-46-500TP approved September 27, 2000

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the PA-46-310P is FAR Part 23, including Amendment 23-25 effective March 6, 1980, plus two paragraphs at a later Amendment date as noted on the TCDS. One special condition was imposed. For the PA-46-500TP the same basic Amendment 23-25 status was used, but a large number of paragraphs were updated to a later Amendment date. There was one equivalent level of safety finding, and one further Special Condition. The individual paragraph Amendment date was further updated for installation specific items for aircraft with the Avidyne Entegra or the Garmin G1000 systems fitted, plus the special condition for HIRF.

This is an acceptable certification basis in accordance with NZCAR Part 21B paragraph §21.41 and Advisory Circular 21-1A, because FAR Part 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:*

PA-46-310P:

23-ACE-53 HERF for Electronic Displays – For all essential instruments and systems it must be shown that no single failure or combination would prevent continued safe flight and landing, or such failures are extremely improbable. Appropriate warnings must be provided and the EFIS displays must easily legible under all lighting conditions. Further each system that performs critical functions must be shown to not be adversely affected when exposed to high energy radiated fields.

PA-46-500TP:

23-123-SC and 23-154-SC – HIRF – Each system that performs critical functions must be designed and installed so that the operations and capability are not adversely affected when exposed to High Intensity Radiated electromagnetic Fields external to the aircraft.

(iii) *Equivalent Level of Safety Findings:*

PA-46-500TP:

Issue Paper F-2 – FAR 23.955(f)(3) Fuel System Pilot Action Required Following Engine Start – The FAA accepted the use of an ON position for the fuel pumps during takeoff, as this provided additional safety in the event of a fuel pump failure with insignificant pilot workload to select AUTOMATIC afterwards or if fuel imbalance occurs.

(iv) *Airworthiness Limitations:*

See Note 3 on the TCDS for wing, empennage and fuselage assembly life limits.

See also Chapter 4 – Airworthiness Limitations Section in the Maintenance Manual.

(3) Aircraft Noise and Engine Emission Standards:

(i) *Environmental Standard:*

The Model PA-46-500TP has been certificated under FAR Part 34.11 effective September 10, 1990, and FAR Part 36, Appendix G Amendments 36-22.

(ii) *Compliance Listing:*

See Noise Characteristics on TCDS:

Corrected Noise Level of the PA-46-310P is 74.8 dB(A) at maximum 2600 RPM.

Corrected Noise Level of the PA-46-500TP is 73.7 dB(A) at 4850 lb MAUW and 76.8 dB(A) at 5092 lb MAUW, with the standard 4-blade propeller at 2000 RPM.

(4) Certification Compliance Listing:

New Piper Report VB-1695 – FAR Part 23 Compliance Checklist for PA-46-500TP

New Piper Report VB-1899 Revision B – Project Specific Certification Plan – 700-00006-0XX Primary Flight Display & 700-00030-0XX-() Multi Function Display – PA-46-350P/500TP

New Piper Report VB-1956 Revision H – Project Specific Certification Plan – For the Garmin G1000 in the PA-46-500TP

(5) Flight Manual: Pilot’s Operating Handbook and FAA Approved Airplane Flight Manual – PA-46-310P Malibu S/N 46-8408001 through 8608067 and 4608001 through 4608007 – Piper Report VB-1200 – CAA Accepted as AIR 2306

Pilot’s Operating Handbook and FAA Approved Airplane Flight Manual – PA-46-310P Malibu S/N 4608008 through 4608140 – Piper Report VB-1300 – CAA Accepted as AIR 3948

Pilot’s Operating Handbook and FAA Approved Airplane Flight Manual – PA-46-500TP Meridian S/N 4697001, 4697003 thru 4697156 – Piper Report VB-1689 – CAA Accepted as AIR 3168

Pilot’s Operating Handbook and FAA Approved Airplane Flight Manual – PA-46-500TP Meridian (1999 kg) S/N 4697001, 4697003 thru 4697156 – Piper Report VB-1751 – CAA Accepted as AIR 3167

Pilot’s Operating Handbook and FAA Approved Airplane Flight Manual – Meridian PA-46-500TP (5092 lb. MTOGW) S/N 4697157 through 4697173 (and aircraft that have installed Kits 767-360 and 767-361) – Piper Report VB-1835 – CAA Accepted as AIR 3949

Pilot’s Operating Handbook and FAA Approved Airplane Flight Manual – Meridian PA-46-500TP SN 4697174 and up – Piper Report VB-1888 – CAA Accepted as AIR 3950

Pilot’s Operating Handbook and FAA Approved Airplane Flight Manual – Meridian PA-46-500TP S/N 4697198, 4697216 and up Equipped with standard Avidyne Entegra System – Piper Report VB-1912 – CAA Accepted as AIR 3166

Pilot's Operating Handbook and FAA Approved Airplane Flight Manual – Meridian PA-46-500TP S/N 4697198, 4697216 and up (1999 kg) – Piper Report VB-1948 – CAA Accepted as AIR 3165

Pilot's Operating Handbook and FAA Approved Airplane Flight Manual – Meridian PA-46-500TP S/N 4697340, 4697399 and up Equipped with Garmin G1000 System and GFC700 FCS – Piper Report VB-1993 – CAA Accepted as AIR 3951

Pilot's Operating Handbook and FAA Approved Airplane Flight Manual – Meridian M500 PA-46-500TP S/N 4697549, 4697569, 4697582 and up Equipped with Garmin G1000 Phase III System and Enviro Cabin Pressure Control System – Piper Report VB-2543 – CAA Accepted as AIR 3952

Pilot's Operating Handbook and FAA Approved Airplane Flight Manual – M500 PA-46-500TP S/N 4697626, 4697631 and up with Garmin G1000 System and GFC700 FCS – Piper Report VB-2748 – CAA Accepted as AIR 3953

Pilot's Operating Handbook and FAA Approved Airplane Flight Manual – M500 PA-46-500TP (1999 kg) S/N 4697626, 4697631 and up with Garmin G1000 System and GFC700 FCS – Piper Report VB-2872 – CAA Accepted as AIR 3954

(6) Operating Data for Aircraft, Engine and Propeller:

(i) *Maintenance Manual:*

P/N 761-783 Airplane Maintenance Manual for Piper PA-46-310P Malibu (All) and PA-46-310P Malibu Mirage (S/N 4622001 through 4622200)

P/N 767-005 Airplane Maintenance Manual PA-46-500TP S/N 4697001, 4697003 through 4697398 less 4697340 (with Meggitt or Avidyne EFIS)

P/N 767-072 Airplane Maintenance Manual PA-46-500TP S/N 4697340, 4697399 and up (with Garmin G1000 / G1000 Nxi Integrated Avionics System)

(ii) *Current service Information:*

Part Number 762-332 Service Bulletins and Service Letters

(iii) *Illustrated Parts Catalogue:*

P/N 761-782 Airplane Parts Catalog for PA-46-310P Malibu (All) and PA-46-310P Malibu Mirage (S/N 4622001 through 4622200)

P/N 767-004 Airplane Parts Catalog PA-46-500TP S/N 4697001, 4697003 through 4697398 less 4697340 (with Meggitt or Avidyne EFIS)

P/N 766-882 Airplane Parts Catalog PA-46-500TP Meridian G1000 / M500 Serial Numbers 4697002, 4697340, 4697399 and up

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

Piper provides CAANZ access to all publications through the FTP Server

5. New Zealand Operational Rule Compliance

Compliance with the retrospective airworthiness requirements of NZCAR Part 26 has been assessed as they are a prerequisite for the grant of an airworthiness 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 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) N/A – No mach no. limitations FAR §23.1303(b) FAR §23.1303(c) FAR §23.1305(a) FAR §23.1305(d)(e) FAR §23.1305(b)
(8) Coolant Temp (9) Oil Temperature (10) Manifold Pressure (11) Cylinder Head Temp. (12) Flap Position (13) U/c Position (14) Ammeter/Voltmeter	N/A – Turbine-powered FAR §23.1305(c) N/A – Turbine-powered N/A – Turbine-powered FAR §23.699(a)(2) FAR §23.729(e) FAR §23.1351(d)	
91.511 Night	(1) Turn and Slip (2) Position Lights	Fitted as Standard * FAR §23.1385
(3) Anti-collision Lights (4) Instrument Lighting	FAR §23.1401 FAR §23.1381	
91.513	VFR Communication Equipment	<i>Operational requirement – compliance as applicable</i>
91.517 IFR	(1) Gyroscopic AH (2) Gyroscopic DI (3) Gyro Power Supply (4) Sensitive Altimeter	Fitted as Standard * Fitted as Standard * Fitted as Standard * Fitted as Standard *
(5) OAT (6) Time in hr/min/sec (7) ASI/Heated Pitot (8) Rate of Climb/Descent	Fitted as Standard * Fitted as Standard * Fitted as Standard * Fitted as Standard *	
91.519	IFR Communication and Navigation Equipment	<i>Operational requirement – compliance as applicable</i>
	NOTE: The aircraft is approved for Day and Night, VFR and IFR Operations, when appropriately equipped. (See POH Section 2.29 Kinds of Operations Equipment List) * Initial production aircraft were fitted with the Meggitt MAGIC system, which included electronic ADI and HSI and primary and secondary Engine Display Units, plus dual GNS-530 Nav/Comm/GS/GPS.	
91.523 Emrgcy Eqpmt.	(a) More Than 9 pax – First Aid Kits per Table 7 – Fire Extinguishers per Table 8 (b) More than 20 pax – Axe readily accessible to crew (c) More than 61 pax – Portable Megaphones per Table 9	<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
91.529	ELT – TSO C126 406 MHz after 22/11/2007	<i>Operational requirement – compliance as applicable</i>
91.531	Oxygen Indicators – Volume/Pressure/Delivery	FAR §23.1441, §23.1443 and §23.1447 (See POH §7.27)
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:	The pilot diluter demand emergency oxygen system consists of a quick-donning mask, stowage box, pressure gauge, and bottle with pressure regulator and shutoff valve assembly. The passenger emergency oxygen system consists of three “two man” oxygen generators and six masks. There are two major assemblies, one double-unit under the co-pilot’s seat and two under the rear pax seat. The oxygen generators provide sufficient flow for six people for a 15 minute period. (Minimum 800 psi oxygen required for flight above FL250) N/A – Maximum operating altitude is 30,000 ft.
91.541	SSR Transponder and Altitude Reporting Equipment	Garmin GTX-330 fitted as standard
91.543	Altitude Alerting Device - Turbojet or Turbofan	S-Tec Magic 1500 AFCS includes altitude alerter function
91.545	Assigned Altitude Indicator	N/A – Altitude Alerting Device fitted as standard
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 and Restraints – Shoulder harness flight-crew seats	FAR §23.785
135.357	Additional Instruments (Powerplant and Propeller)	FAR §23.1305
135.359	Night Flight	Landing light, Pax compartment
135.361	IFR Operations	Speed, Alt, spare bulbs/fuses
135.363	Emergency Equipment (Part 91.523 (a) and (b))	<i>Operating Rule – Compliance to be determined by Operator</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	Not Applicable – Not turbo jet or turbofan powered

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. (In the example above this was the PA-46-500TP with Meggitt EFIS installation.) 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:

Photographs first-of-type example PA-46-500TP s/n 4697275 ZK-OLY
 Three-view drawing Piper Model PA-46-500TP Malibu Meridian
 Copy of FAA Type Certificate Data Sheet Number A25SO

Sign off

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 David Gill
 Team Leader Airworthiness

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 Checked – Greg Baum
 Acting Team Leader Product Certification

Appendix 1

List of Type Accepted Variants:

<i>Model:</i>	<i>Applicant:</i>	<i>CAA Work Request:</i>	<i>Date Granted:</i>
PA-46-310P	AC 21-1.2/NZCAR Part 21 Appendix A(c)		
PA-46-500TP (aircraft fitted with the Meggitt or Avidyne avionics installation option.)	S S Lusk	11/21B/8	7 February 2011
PA-46-500TP (All)	Andy Stevenson Aviation Ltd	20/21B/5	31 October 2019