
Type Acceptance Report

TAR 96/06 – Revision 1

BOEING (STEARMAN) 75 Series

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Executive Summary

New Zealand Type Acceptance has been granted to the Boeing Stearman Model 75 Series based on validation of FAA Type Certificate A-743. 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 §21.177, 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).

1. Introduction

This report details the basis on which Type Acceptance Certificate No.96/06 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. ICAO Type Certificate Details

Manufacturer: Boeing Airplane Company

Type Certificate: A-743
Issued by: Federal Aviation Administration

Model: E75 (Army PT-13D, Navy N2S-5)

Engine: Lycoming R-680-B4B/C/D/E
Type Certificate: 108
Issued by: Federal Aviation Administration

Model: A75J1 (Army PT-18)

Engine: Jacobs R-755-7
Type Certificate: 5E-11
Issued by: Federal Aviation Administration

Applicable to all Models:

MCTOW 2950 lb. [1338 kg.]
3200 lb. [1451 kg.] – Normal Category. See TCDS Note 6.

Max. No. of Seats: 2

Noise Standard: Not Applicable

Propellers: Curtiss 55501-5 (Only with R-680-B4 engine)
FAA Type Certificate 539

Sensenich 98AA64 or 98AA66
FAA Type Certificate 546 (now P-170)

Fahlin D760-68-94
FAA Type Certificate 534

McCauley D-1093/SS-135-6M or SS138-6 (W-670 or R-680)
FAA Type Certificate 815

McCauley 41D5926/SS-135-6
FAA Type Certificate 781

Hamilton Standard 5404/11C1 (W-670 or R-680)
FAA Type Certificate 250

3. Type Acceptance Details

The application for New Zealand type acceptance of the Boeing E75 was from Jon Anda, dated 27 May 1996. The first-of-type example was serial no. 75-5907, registered ZK-XAF. The Model 75 Series is a single-engine tandem seat biplane training aircraft.

Type Acceptance Certificate No. 96/06 was granted on 18 June 1996 to the Model E75 based on validation of FAA Type Certificate A-743. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

NOTE: There are three basic models of Boeing Stearman, all largely similar apart from the engine type installed (Lycoming R-680, Continental W-670 or Jacobs R-755). When the first A75N1 Stearman was imported in 1994 an extensive investigation was carried out as part of the type acceptance, and engineering data and manuals covering all three models was obtained from FAA Archives. The type acceptance of another Stearman model, the

E75, was therefore a reduced exercise, especially in this case where the first example had an engine change which effectively gave it the same configuration as the A75N1 Stearman model previously type accepted.

This report was raised to Revision 1 to include the E75 with the Jacobs R-755-7 installed (A75J1 configuration). The applicant was the importer, Mr R D King, and the first-of-type example was serial number 75-5164 registered ZK-RDK. Effectively this provided the data required to type accept all the remaining models covered under Sections I, II and III of FAA Aircraft Specification A-743. Type acceptance was granted on 20 July 2009.

First flown in 1936, the Stearman Model 75 is the classic American biplane training aircraft from World War Two, which was produced in the thousands in a range of variants. (Boeing acquired Stearman as a wholly owned subsidiary in 1934.) After postwar civilian conversion many were used for crop dusting. Nowadays they have generally been restored to an original configuration and are used for joyriding, airshow and private operations.

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 Aircraft Specification number A-743 at Revision 15 dated October 15, 1967
 - Models 75, A75, A75L3, B75, E75 approved April 21, 1945
 - Models A75N1, B75N1, D75N1 approved April 21, 1945
 - Model A75J1 approved May 28, 1945

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the 75 Series is Type Certificate A-743 (CAR 4a). This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41 and Advisory Circular 21-1A, as CAR 4a was the basic airworthiness standard for aircraft in the US at the time, and was the predecessor of CAR3/FAR23. There are no non-compliances and no additional special conditions have been prescribed by the Director under §21.23. (The certification basis of the Jacobs R-755 engine is not stated on the brief type certificate data sheet.)

(ii) *Special Conditions:*

Nil

(iii) *Equivalent Level of Safety Findings:*

Nil

(iv) *Airworthiness Limitations:*

Nil

(3) Aircraft Noise and Engine Emission Standards:

Not Applicable

(4) Certification Compliance Listing:

See microfilm of FAA certification records for Boeing Model 75 Series.

(5) Flight Manual: CAA Flight Manual AIR 2510

Note: The CAA originally specified the use of the military Pilot's Flight Operating Instructions for the equivalent model, in conjunction with a Supplement calling up the limitations in Aircraft Specification A-743. During this revision of the type acceptance report it was decided it would be more appropriate to use a dedicated civil Flight Manual, which is based on the same A-743 limitations. (The previous Flight Manual for the Model E75, AIR 2563, has also been replaced.)

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

(i) *Maintenance Manual:*

AN 01-70AC-4 Erection & Maintenance Instructions – Army PT-13D, Navy N2S-5
Overhaul Manual – Jacobs Aircraft Engine Models R-755A and R-755B

(ii) *Current service Information:*

Boeing Service Bulletin 75-1 covers conversion to civil configuration
Service Bulletins included in rear of Jacobs Overhaul Manual

(iii) *Illustrated Parts Catalogue:*

AN 01-70AC-2 Airplane Parts Catalog – Army Model PT-13D, Navy Model N2S-5
Parts Catalog – Jacobs Aircraft Engine Models R-755A and R-755B

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

TCDS states “*Complete maintenance instructions, including detailed rigging information, may be purchased from the Boeing Airplane Company, Wichita Division*”. However this is no longer the case. The Model 75 is a mature design for which continuing airworthiness issues will be addressed by AD action.

5. Additional New Zealand Requirements

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	Not Applicable – Open cockpit biplane with no doors or exits
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	<i>Operational requirement – Compliance as applicable</i>
91.507	Pax Information Signs – Smoking, safety belts fastened	Not Applicable – Less than ten passenger seats
91.509	Minimum Instruments and Equipment	
	(1) ASI (2) Machmeter (3) Altimeter (4) Magnetic Compass (5) Fuel Contents (6) Engine RPM (7) Oil Pressure	CAR 04a.510(a) Not Applicable CAR 04a.510(b) CAR 04a.511(a) CAR 04a.510(h) CAR 04a.510(c) CAR 04a.510(d)
		(8) Coolant Temp (9) Oil Temperature (10) Manifold Pressure (11) Cylinder Head Temp. (12) Flap Position (13) U/c Position (14) Ammeter/Voltmeter
		Not Applicable (air-cooled) CAR 04a.510(f) CAR 04a.510(g) Not Applicable (<250 bhp) Not Applicable (Not fitted) Not Applicable (Fixed u/c) <i>Ops. requirement – tbd</i>
91.511	Night VFR Instruments and Equipment	<i>Operational requirement – Compliance as applicable</i>
91.513	VFR Communication Equipment	<i>Operational requirement – Compliance as applicable</i>
91.517	IFR Instruments and Equipment	Not Applicable – Not approved for IFR flight
91.519	IFR Communication and Navigation Equipment	Not Applicable – Not approved for IFR flight
91.523	Emergency Equipment	
	(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	Not Applicable – Less than 10 passenger seats Not Applicable – Less than 10 passenger seats 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	<i>Operational requirement – Compliance as applicable</i>
91.533	Oxygen for No-Pressurised Aircraft	Not fitted as standard
91.541	SSR Transponder and Altitude Reporting Equipment	<i>Operational requirement – Compliance as applicable</i>
91.543	Altitude Alerting Device - Turbojet or Turbofan	Not Applicable – Not approved for IFR flight
91.545	Assigned Altitude Indicator	Not Applicable – Not approved for IFR flight
A.15	ELT Installation Requirements	<i>To be determined on an individual aircraft basis</i>

Attachments

The following documents form attachments to this report:

- Photographs first-of-type example Model E75 s/n ZK-RDK
- Three-view drawing Boeing Stearman Model E75
- Copy of FAA Aircraft Specification Number A-743

Sign off

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David Gill
Team Leader Airworthiness

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Checked – Peter Gill
Airworthiness Engineer

Appendix 1

List of Type Accepted Variants:

<i>Models:</i>	<i>Applicant:</i>	<i>CAA Work Request:</i>	<i>Date Granted:</i>
A75N1	AC 21-1.2/NZCAR Part 21 Appendix A(c)		
E75, 75, A75, A75L3, B75	J W Anda	96/21B/24	18 June 1996
A75J1, B75N1, D75N1	R D King	9/21B/20	20 July 2009