
Type Acceptance Report

TAR 95/01 – Revision 1

ATR 42 and ATR 72 Series

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Executive Summary

New Zealand Type Acceptance has been granted to the ATR 42 and ATR 72 Series based on validation of EASA Type Certificate number A.084. 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).

1. Introduction

This report details the basis on which Type Acceptance Certificate No.95/01 was granted 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.

2. ICAO Type Certificate Details

Manufacturer: Aérospatiale – Alenia

 ATR – GIE Avions de Transport Régional

 (since 01.06.2001)

 See EASA TCDS for Production Certificate history

Type Certificate: A.084
Issued by: European Aviation Safety Agency

Model: ATR 42-500

MCTOW 18,600 kg (41,006 lb)

Max. No. of Seats: 60

Noise Standard: ICAO Annex 16 Volume 1 – Chapter 4/FAR Part 36 Stage 4

Engine: Pratt & Whitney Canada PW 127M or PW 127E
Pratt & Whitney Canada PW 127F (with SB PW No.21589)
Pratt & Whitney Canada PW 127F (with SB PW No.21667)
Type Certificate: E-19
Issued by: Transport Canada

Propeller: Hamilton-Standard 568F-1
Type Certificate: P8BO
Issued by: Federal Aviation Administration

Model(s): ATR 72-212, ATR 72-212A

MCTOW 21,500 kg (47,353 lb) [ATR 72-212]
22,000 kg (48,501 lb) [ATR 72-212 after Mod.3651 + M2055]
22,000 kg (48,501 lb) [ATR 72-212A]
22,500 kg (49,604 lb) [ATR 72-212A after Mod.4671 or 5213]
22,800 kg (50,265 lb) [ATR 72-212A after Mod.5555]
23,000 kg (50,706 lb) [ATR 72-212A after Mod.6219]

Max. No. of Seats: 74

Noise Standard: ICAO Annex 16 Volume 1 – Chapter 4/FAR Part 36 Stage 4

Engine: Pratt & Whitney Canada PW 127 [ATR 72-212] or
Pratt & Whitney Canada PW 127F (with SB PW No.21591)
Pratt & Whitney Canada PW 127M or PW 127F [ATR 72-212A]
Type Certificate: E-19
Issued by: Transport Canada

Propeller: Hamilton-Standard 247 F-1 or F-1E [ATR 72-212]
Type Certificate: P1BO
Issued by: Federal Aviation Administration

Hamilton-Standard 14 SFL-11 [ATR 72-212 with Mod.3560]
Type Certificate: P7NE
Issued by: Federal Aviation Administration

Hamilton-Standard 568F-1 [ATR 72-212A]
Type Certificate: P8BO
Issued by: Federal Aviation Administration

3. Type Acceptance Details

The application for New Zealand type acceptance of the ATR 72-212 was from the TC holder Aerospatiale, dated July 5th 1995, which was forwarded through the DGAC. Mount Cook Airline had initially ordered seven aircraft to replace their HS.748 fleet. The first-of-type example was MSN 453 registered as ZK-MCQ. The ATR 42/72 Series are high-wing twin-turboprop pressurised Transport Category airliners with typically 48 or 66 passengers.

Type Acceptance Certificate No. 95/01 was granted on 10 November 1995 to the Model ATR 72-212 based on validation of DGAC Type Certificate 176, and includes the PW 127 Series engine based on Transport Canada Type Certificate E-19. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

The application for type acceptance of the ATR 72-212A (marketed as the ATR “72-500”) was from the joint manufacturer, Aerospatiale, received on 3 May 1999. This variant has been ordered by Mount Cook Airline to replace their existing fleet of seven ATR 72-212 aircraft. Type Acceptance Certificate No.99/24 was granted on 18 October 1999, and includes the 568F-1 propeller based on FAA Type Certificate P8BO.

This report was raised to Revision 1 to add the ATR 42-500 aircraft and the ATR 42/72 “Variant 600”, after application by the manufacturer ATR. The opportunity was taken to combine the two previous reports, and note the change in State-of-Design NAA responsibility to EASA. Type acceptance was granted on 7 September 2012. The first-of-type example was MSN 1051, to be registered ZK-MVA. As part of the Type Acceptance process a team from the CAA Aircraft Certification Unit visited ATR for a validation visit.

The ATR 42 was an all-new design launched in October 1981 by Avions de Transport Regional, which was a consortium between Aerospatiale and Aeritalia. The prototype first flew in 1984 and entered airline service in December 1985. The initial ATR42-300 was the standard production version of the ATR-42 family until 1996 and features greater payload range and a higher takeoff weight than the ATR42-200 prototypes. The ATR42-320 was fitted with more powerful PW121 engines for better hot and high performance,

The ATR 72 is a stretched version of the ATR 42 and was originally available in two basic versions: the -100/200 series, which differ only in operating weights; and the -210 series, which is the “hot and high” version with the more powerful PW127 engine. Both series were available in two separate models which differed only in the type of doors, emergency exits and their distribution. For the ATR 72-210 series these were :

- ATR 72-211 which has a forward plug-type passenger door and no cargo door; and
- ATR 72-212 which has an aft pax door and forward cargo door. (Both hinged-type)

Few aircraft were ordered with the forward passenger door, and this option was dropped.

The ATR 42-500 version was a development of the earlier ATR 42 model using the new six-blade Hamilton Standard 568F propellers. Other improvements include an increase in MCTOW; an aileron spring tab and aerodynamic changes to improve low and high-speed performance; and modifications to improve noise and vibration including a revised cabin interior with noise reduction measures (active phase control system; and passive treatment

of the structure and cabin interior, involving stiffened frames with dynamic vibration absorbers in the propeller plane area, skin damping material and acoustic treatment on interior panels), TRU, and propeller controls (PEC [propeller electronic control] and PVM [propeller valve module] for optimum synchro-phasing).

The ATR “72-500” (officially the ATR 72-212A) is a development of the ATR72–212 with the same basic improvements pioneered on the ATR 42-500. These two -500 models became the standard production versions of the ATR42 and ATR72 from 1996.

The latest ATR “42/72-600” is not an official model, but is the commercial name for the ATR 42-500 and ATR 72-212A incorporating the “New Avionics Suite” (NAS) embodied under Major Modification 5948. The “ATR72-600” was approved first in May 2011, with the “ATR42-600” following in June 2012. The new “glass cockpit” features five Integrated Avionics Displays (IAD); Two Core Avionics Cabinets (CAC); improved communication, navigation and monitoring systems; new Standby Instrument IESI; new Automatic Flight Control System (AFCS) with ILS instrument approach CAT II capability; Integration with NAS of existing ACSS’s T²CAS installation providing TCAS and TAWS capabilities with provisions for steep slope approach capability; new Air Data Computer and reference platform; and updated GPS and flight management system (FMS). In conjunction with Mod 5948 there are also a number of other associated design changes:

- ATR Mod 6164 – Enhanced MPC (Multi Purpose Computer);
- ATR Mod 6298 – Mechanical quadrant for aileron flight surfaces;
- ATR Mod 6368 – Cockpit integrated LED lighting system (CILLS);
- ATR Mod. 5977 (ATR72) or Mod. 6233 (ATR42) FCU (Fuel Control Unit) – Fuel Gauging System in kilograms;
- ATR Mod 6230 – Activation of “Glass Cockpit” avionics suite on ATR42-500;
- ATR Mod 6521 – New Avionics Suite software upgrade “L2B2”.

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:

EASA Type Certificate Number A.084

EASA Type Certificate Data Sheet number A.084 at Issue 02 dated 21 Dec 2007

- Model ATR 42-500 approved 28 July 1995
- Model ATR 72-212 approved 15 December 1992
- Model ATR 72-212A approved 14 Janvier 1997

EASA Major Change Approval 10040137 New Avionics Suite “Glass Cockpit” in ATR42-500 and ATR 72-212A aircraft – Date of Issue 14.06.2012

Modification Approval Sheet No. 5948 Issue 7 dated 8 June 2012

Modification Approval Sheet No. 6230 Issue 1 dated 7 June 2012

EASA TC Supersedes:

DGAC Certificate de Navigabilite de Type Numéro : N 176

DGAC Type Certificate Data Sheet No 176 Issue No. 13 August 1998

Transport Canada Type Certificate E-19 dated January 4, 1999

Type Certificate Data Sheet E-19 at Issue No.44 dated December 7, 2007

- Model PW 127 approved February 4, 1992
- Model PW 127E approved December 16, 1994
- Model PW 127F approved August 30, 1996
- Model PW 127M approved December 7, 2007

FAA Type Certificate No. P8BO Model 568F-1 issued April 5, 1995

Type Certificate Data Sheet P8BO at Revision 9 dated July 31, 2007

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the original ATR 42-200/-300/-320 models was JAR 25, including the French National Variants Change 8 and Amendment 81/2, plus various Special Conditions as noted on the TCDS. (See also Document GATR/C 0001/82.) For the first ATR 72-100/-200/-210 Series this was updated to JAR 25, Change 11 dated March 7th 1986, including French national variants, plus various paragraphs amended by orange paper, plus various Special Conditions as noted on the TCDS. (See also Document No.GATR/C-No.0001/87).

For the ATR 42-500 the certification basis was further updated to include various paragraphs at JAR 25 Change 13 including amendments 90/1, 91/1 and 93/1, plus additional Special Conditions and DGAC Notice Proposal Amendment as detailed on the TCDS and in CRI A01. For the ATR “72-500” version (ATR 72-212A) the certification basis is essentially the same except that JAR 25 Subparts B and E were assessed at change 14 dated May 27, 1994, plus two JAR 25 paragraphs at change 15 on an elect to comply basis.. (See DGAC ATR72-210A CRI A01)

For Major Modification 5948, which produced the “Version 600”, the certification basis was CS25 at Amendment 3 for applicable paragraphs (reversion to JAR 25 Change 13 for structure); plus CS AWO Subpart2 for CAT II demonstrations; plus a List of CRI covering various Acceptable Means of Compliance (AMC) and Interpretative Material (IM) submitted by EASA (See CRI A-1001 ATR 42-500/72-212A Major Change Number 5948 Avionics Suite Upgrade “Glass Cockpit” – Determination of Certification Basis – Issue 4.)

These are acceptable certification basis in accordance with NZCAR Part 21B Para §21.41 and Appendix C, because JAR25 and CS25 are alternative standards to FAR25 for Transport Category Airplanes under Advisory Circular 21-1A. There are no non-compliances and no additional special conditions have been prescribed by the Director under §21.23.

The certification basis of the PW127 engine is FAR Part 33 including Amendments up to 33-9, plus Canadian Special Requirements per Transport Canada letter dated September 20, 1983. This is the basic airworthiness design standard for aircraft engines called up under Part 21 Appendix C.

The certification basis of the 568F propeller is FAR 35 Amendment 6 dated August 15, 1989, and two Special Conditions with an effective date of February 5, 1996. This is the basic standard for propellers called up under Part 21 Appendix C.

(ii) *Special Conditions:*

ATR 42-500, ATR 72-212 and ATR 72-212A:

B5: Stick Pusher – Specified technical requirements for System Design (arming and disarming, failures and malfunctions, indicating and warning devices); Handling Characteristics; System Tolerances and the Airplane Flight Manual.

B7: Stall and Stall Warning Speeds and Manoeuvre Capability – This accepted an equivalent level of safety to JAR 25 Subpart B with the use of a new definition of stall speed based on 1-g stall speed as the basis for scheduled speeds, with some adjustment of multiplying factors.

D7: Lightning Protection Indirect Effects – Specified lightning strike models to be used for critical system justification for both Severe Strike (first return stroke) and Multiple Stroke Flash (cloud to ground strikes).

F2: Low Altitude Automatic Pilot Engagement After Takeoff – Based on JAR AWO Paper 13 this specified how to determine the min. engagement height if greater than 100 ft., when system malfunction was not shown as extremely improbable, plus some associated handling limits.

F3: Effect of External Radiations Upon Aircraft Systems – This specified the threat levels from HIRF to be evaluated for critical aircraft systems functionality testing.

O1: Demonstration of Endurance – Specified interpretations of “reasonable assurance” and “reliability” which must be demonstrated by flight test as part of the certification program.

ATR 42-500 and ATR 72-212A:

B10: Clever Stall Warning/Stick Pusher – Because the MFC allows for adjustment of the stall warning sticker shaker (SWSS) and sticker pusher (SP) settings, according to engine torque and Icing AOA election, additional tests were prescribed to ensure appropriate operational margins.

Requirements related to general aircraft experience and applied by the DGAC as an improvement of safety levels:

NPA 25F-219: Flight Characteristics in Icing Conditions – Provided guidance for the flight test review of performance and handling qualities, including: Conditions to be Considered (Types of artificial ice, Ice accumulation, Protected parts with operative systems/following failure); Demonstration of Compliance; Flight Testing; and Flight Manual.

NPA 25DF-179: Operation Without Normal Electrical Power – Adds some changes to JAR 25.1351(d) plus completely replaces the associated interpretative material under specified ACJ. Requires provision of alternate (or emergency) electrical supplies to those services vital for continued safe flight, descent and landing (such as fly-by-wire) in the event of loss of normal generated power. Includes provision for time-limited dispatch.

NPA 25DF-191: Miscellaneous Electrical Requirements – Added a range of additional provisions for: inter-deck communication; galley equipment; electric overheat protection equipment; power source disconnection systems; external power; over-temperature warning devices; electrical cable/wire installations and insulation fire protection; electrical supplies for emergency conditions.

NPA 25D-181: Resistance to Fire Terminology – Revises the definitions of “fireproof” and “fire-resistant” for certain cases where the original use was inappropriate or over severe, based on equivalence to the resistance to fire capability of certain materials.

NPA 25D-206: Emergency Exit Marking – Provides that the red arrow indicating direction of the unlocking motion may reflect the actual movement type, which may be linear and non-rotary.

NPA 25D-227: Compartment Interiors (cabin fire protection) – Revised JAR 25.853(f) to require self-contained removable ashtrays both inside and outside the toilet, with placards.

ATR 72-212:

B6: Flight in Icing Conditions : Handling Characteristics and Performance Aspects – This provided Interpretative Material on the effects of ice accumulation on the flight surfaces during continuous and intermittent icing conditions which must be demonstrated.

XX: Propeller – All Composite Blades – GATR/CNo.0001/87 – This called up requirements for bird strike, lightning protection, fatigue evaluation and material qualification.

Major Modification 5948:

CRI F-018 “HIRF” Protection – The aeroplane electrical and electronic systems, equipment, and installations must be designed and installed so that the failure of any function which would prevent the continued safe flight and landing of the aeroplane is not adversely affected when exposed to the certification HIRF environment. (Per interim policy INT/POL/25/2 Issue 2.)

CRI F-035 Flight Recorder/Data Link Recording – The Flight Recorder (CVR or FDR) must record Data Link communications related to air traffic services (ATS) Communications to or from the aircraft, in compliance with the latest ICAO Annex 6 Chapter 6.3.1.8, (Type 1a FDR).

CRI E-010 Fuel Quantity Indicating System – To address recent in-service experience from several accidents caused by all engine flame-out due to fuel exhaustion this SC requires a FQIS that provides for adequate fuel system information and alerting to the crew, including a specific low fuel level warning, to provide early notice of abnormal situations that may result in fuel starvation.

EASA CRI-H01 ICA for EWIS – This requires development of Instructions for Continued Airworthiness (ICA) derived from the Enhanced Zonal Analysis Procedure (EZAP) for the aircraft’s Electronic Wiring Interconnection System (EWIS) in accordance with CS25 at amendment 5 Appendix H paragraph H25.5 and associated AMC.

NPA 25BDF-244: Accelerate-Stop Distances and Related Performance Matters – This introduced changes to the definition of Take-off Decision Speed and Screen Height plus various associated changes to the Rule and interpretive material. The purpose was to implement changes recommended by the joint industry/authorities task force and to harmonise with the FARs.

The following Special Conditions have subsequently been applied for particular specialised operations:

EASA CRI-B9 Steep Slope Approach – This provides requirements for landing at an angle up to 4.5 ° (7.9%). Additional provisions were added for Performance; Safe Operational and Flight Characteristics; Icing Conditions; Automatic Pilot System; Systems; Flight Manual; and Structure.

EASA CRI-C01 Operations on Unpaved Runways – In lieu of specific requirements in the Rules ATR proposed criteria using MIL8862 for static justification (vertical load factor) and a fatigue spectrum based on operation at a combination of representative and most damaging unpaved runways. Some additional protection for the airframe and shock absorber was also required.

EASA CRI-B11 Operation on Narrow Runways – In the absence of specific mention under JAR25 requirements were defined to determine the minimum runway width (based on maximum lateral deviation demonstrated); minimum control speed on ground V_{MCG} ; directional and lateral control; Take-off performance; Flight Manual data; and MMEL implications.

PW100:

TCDS refers to Canadian Special Conditions in Transport Canada letter dated September 20, 1983. Effectively this called up a number of different paragraphs which include the provisions of NPRM 80-21. (See PWC Engineering Report 4014 PW100 Series Type Approval Basis “Blue Book”.)

Hamilton Sundstrand 568F:

Special Condition No.35-ANE-02 (Docket No.94-ANE-60) Electronic Propeller and Pitch Control System – This specified additional requirements to prevent potential failures in the electronic control system or software which could result in hazardous conditions.

Special Condition No.35-ANE-03 (Docket No.94-ANE-61) All-Composite Blades – This defined a hazardous condition and specified additional requirements for Bird Strike, Lightning Strike, and Fatigue Evaluation for propellers with novel (composite) design features.

(iii) Equivalent Level of Safety Findings:

ATR 42-500, ATR 72-212 and ATR 72-212A:

JAR 25.103, 107, 119, 125, 143 and 207 – Stall and stall warning speeds and manoeuvre capability «1g stall speeds» (ref SC B7) – For the ATR72 fitted with a stick pusher the JAR Subpart B stall speeds were re-defined as the 1-g stall speed according to JAR 25.103(c) in lieu of the minimum speed in the stall manoeuvre V_S .

JAR 25.853(f) – No Smoking Placard (ref DGAC letter n' 953117 dated 21/07/95) Pictograms are used in lieu of required placards stating “no smoking” or “no smoking in lavatory”, as a pictogram was felt to be more self-explanatory because not all pax on an aircraft speak English.

JAR 25.811(e)(3) – Type III Exit Handle (ref DGAC letter n' 953117 dated 21/07/95) The handles are not self illuminated as required, but are painted with a self electro-luminescent paint (Mod. 4407) and conspicuously located so they are well illuminated by the exit signs.

ATR 72-212 and ATR 72-212A:

JAR 25.785(h) – Flight Attendant Seat – The requirement for a restraint system with single-point release and a direct view of the cabin area was accepted by visual inspection.

Major Modification 5948:

CRI F-017 New Harmonised CS 25.1329 for Flight Guidance System – This specified compliance with CS25 Amdt 4, which addresses integration of new functionality and technology and expands the scope past autopilot systems to include guidance for manual control.

CRI F-025 Integrated Modular Avionics (IMA) – Compliance with Requirements for Individual Circuit Protection – To address airworthiness concerns for Modular Avionics Systems requirements were established to ensure electrical power source diversity was provided for every card/module on the CAC, and they have their own individual circuit breaker protection.

General:

EASA ESF D1 – Reinforced Security Cockpit Door – ATR elected to comply with the latest rules under FAR 25 Amendment 106 (introduced technical standards for resistance to bullet penetration and unauthorised intrusion), which was accepted as equivalent safety to JAR 25.772.

(iv) Airworthiness Limitations:

ATR42-400/-500 Time Limits Document – Ref. DT/CA-2302/12
ATR72 Time Limits Document – Ref. DO/TC-2922/11

See the Airworthiness Limitations section of the PW127 Maintenance Manual

(3) Aircraft Noise and Engine Emission Standards:*(i) Environmental Standard:*

The ATR42/72 have been certificated under ICAO Annex 16 Volume II and FAR Part 34 for exhaust emissions, and ICAO Annex 16 Volume 1 Chapter 4** and FAR Part 36 Stage 4 for noise. ** since December 2010

(ii) Compliance Listing:

EASA Type-Certificate Data Sheet for Noise – Issue 6 dated 21 December 2010

ATR42-500 at MCTOW 18,600 kg with Mod.4540 (Deletion of the flap vanes):
Lateral: 80.6 EPNL Flyover: 76.6 EPNL Approach: 92.4 EPNL

ATR72-212 at MCTOW 23,000 kg with PW127/247F-1(-E):
Lateral: 84.7 EPNL Flyover: 82.3 EPNL Approach: 92.4 EPNL

ATR72-212A at MCTOW 23,000 kg with PW127/568F:
Lateral: 82.5 EPNL Flyover: 80.5 EPNL Approach: 92.2 EPNL

(4) Certification Compliance Listing:

Document GATR/C No. 422.269/89 “ATR 72 Compliance Checklist Model 102/202”, Edition P du 15-12-1989.

Document GATR/C No. 422.004/92 – Issue 2: ATR 72-210 – Compliance Checklist with DGAC Certification Basis.

ATR 72-210A Compliance Record (JAR 25) – Report A/RT/C 425.0770/96 Issue 1 – January 13th, 1997

CR A 01 Issue 5 – 27/02/98 – Type Certification Basis – Aerospatiale application to the DGAC was dated 15 February 1996. The agreed standard was JAR 25 at Change 14 dated May 27, 1994 for subparts B and E, and JAR 25 at Change 11 dated March 17, 1986, plus some additional paragraphs at a later Amendment status.

Document A/RT/C 425.0377/95 Issue 2 July 95 – ATR 42-500 Compliance Record
DO/TY-302/09 Certification Plan for New Avionics Suite (NAS) Installation on
ATR 72-212A – Project No. 5948 – Edition 06 dated 30-May-2011.

DT/Y-340/12 Certification Plan for the Adaptation of New Avionics Suite (NAS)
on ATR 42-500 – Project NAS on ATR42-500 – Edition 03 dated 7-June-2012.

(5) Flight Manual:

EASA-Approved Airplane Flight Manual ATR 72 Models 101 - 201 -
102 - 202 - 211 - 212 - 212 – CAA Accepted as AIR 2542

EASA-Approved Airplane Flight Manual ATR 72 Model 212A
– CAA Accepted as AIR 2665

EASA-Approved Airplane Flight Manual ATR 42 Models 400 - 500
– CAA Accepted as AIR 3218

Notes: The Flight Manual is provided as an “Envelope” document, with
individual pages specific to Fleet or Modification configuration.
“-600” version dedicated content is identified through Mod. 5948.

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

(i) *Maintenance Manual:*

ATR Maintenance Documentation *:

AC – Aircraft Characteristics
CCC – Crash Crew Charts
CLM – Component Location Manual
MPD – Maintenance Planning Document
MRB – Maintenance Review Board Report
NDTM – Non Destructive Testing Manual
QEC – Quick Engine Change
SRKM – Structural Repair Kit Manual
SRM – Structural Repair Manual

ATR Maintenance Documentation (Customised Air New Zealand)*:

ASM – Aircraft Schematic Manual
AWL – Aircraft Wiring List
AWM – Aircraft Wiring Manual
DO – Aircraft Maintenance Manual/Description Operation
JIC – Aircraft Maintenance Manual/Job Instruction Cards
TSM – Trouble Shooting Manual

The PW127F on the ATR 72-212 is to Build Spec. 774, while on the ATR 72-212A
it is to PWC Build Spec. 918. The technical documentation covers both versions.

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|--|---------------------|
| PW124B/PW127 Series Maintenance Manual | Part Number 3037332 |
| PW124B/PW127 Series Overhaul Manual | Part Number 3037333 |
| PW120 Worksopce Planning Guide | Part Number 3040879 |

| | |
|--|----------|
| Propeller Maintenance Manual 568F-1 | P5206 |
| Propeller Component Maintenance Manual P/N 815500-2, 3 | 61-13-12 |
| Electronic Propeller Control Component Maint. Manual | 61-25-01 |
| Propeller Valve Module Component Maintenance Manual | 61-26-02 |

(ii) *Current service Information:*

ATR 42/72 Service Bulletins *

PWC Service Bulletins and Service Information Letters

Service Bulletins – Hamilton Sundstrand 568F-1 model Propeller

(iii) *Illustrated Parts Catalogue:*

IPC (Customised) – Air New Zealand ATR 72 *

PW124B/PW127/PW127E/PW127F Illustrated Parts Catalog – P/N 3037334

(7) Agreement from manufacturer to supply updates of data in (4), (5) (6) and (8):

CAA 2171 form from ATR Type Certification Manager dated 24 Sept. 99

CAA 2171 form from Hamilton Sundstrand Corporation dated 4 Oct 99

* Documentation now provided to the CAA through the www.atrdoc.com website

(8) Other information:

Operational Documentation *:

FCOM – Flight Crew Operating Manual ATR 72-212A

WMB – Weight and Balance Manual ATR 72-212A

FCOM – Flight Crew Operating Manual ATR 72-212A “Version 600”

Technical Specification ATR 72-210 With Front Cargo Door – Document ATR 497 210/91 dated June 1991.

ATR 72-500 Technical Specification – DC/E 323/98 July 1998

List of SCNs/Options agreed by the Customer Air New Zealand

Technical Specification ATR 72-600 – Document DO/T 3864/07, May 2008

ATR List DC/AC-691/11 Indice A: ATR 72 600 – Definition Air New Zealand (Annex 1 lists Options and SCNs additional to the Technical Specification.)

Alenia Engineering Note No.52S92028 Electrical Load Analysis ATR 72-210

Alenia Engineering Note No.52S95015 Electrical Load Analysis ATR 42-500

Alenia Engineering Note No.52S95030 ELA for ATR 72 MOUNT COOK Airplane

DO/TY-1536/11 Certification ELA ATR 72-212A Integrating New Avionic Suite

DO/TY-3572/10 New Avionic Suite – ATR72-212A Emergency ELA

DT/Y-1031/12 Certification ELA of ATR 42-500 Integrating New Avionic Suite

DT/Y-1163/12 New Avionic Suite – ATR42-500 – Emergency ELA

ATR 72-210 Compliance Check List to Civil Aviation Safety Order Nr 11.

542.2104/99 ATR 42 and ATR 72 – Oxygen System Justification ATA35

Compliance with NZCAR Requirements – ATR Note 540.0590/99 Issue 1

ATR 72-212 Type Modifications List

Modification Approval Sheet No.4406 Operation on Narrow Runways – Ed. 3
covers validation for ATR 72-212A model. (approved by similarity with -212)
Document 542.5037/97 ATR 72-210A – Handling qualities on narrow runways
542.5042/97 ATR 72-210A Operation on narrow runways – VMCG determination

PW127F Installation Manual – PWC Engineering Report No. 3775

5. Additional New Zealand Requirements

Compliance with the NZ requirements below has been reviewed (for the ATR72-500, except as individually specified) and was found to be covered by either the original certification design requirements or the basic build standard of the aircraft, except as noted:

CAR Part 26 – Subpart B – Additional Airworthiness Requirements

Appendix B – All Aircraft

| PARA: | REQUIREMENT: | MEANS OF COMPLIANCE: |
|-------|--|---|
| B.1 | Marking of Doors and Emergency Exits | JAR §25.811(a) |
| B.2 | Crew Protection Requirements - CAM 8 Appendix. B # .35 | Agricultural Aircraft – <i>Not Applicable</i> |

Appendix C – Air Transport Aircraft – More than 9 Pax

| PARA: | REQUIREMENT: | MEANS OF COMPLIANCE: |
|-------|---|--|
| C.1 | Doors and Exits | JAR §25.809(b) and JAR §25.809(d) |
| C.2.1 | Additional Emergency Exits - per FAR 23 in effect 10.5.93 | Meets JAR 25 Change 11 exit certification requirements |
| C.2.2 | Emergency Exit Evacuation Equipment – Descent means | JAR §25.809(f) |
| C.2.3 | Emergency Exit Interior Marking - Size/self-illuminating | JAR §25.811(e) and JAR §25.812(b) |
| C.3.1 | Landing Gear Aural Warning - Automatic Flap Linking | JAR §25.729(e) subparagraphs (2) through (4) |

Appendix D – Air Transport Aircraft – More than 19 Pax

| PARA: | REQUIREMENT: | MEANS OF COMPLIANCE: |
|--------|--|--|
| D.1.1 | Exit Types - Shall be per FAR 25.807 @ 29.03.93 | JAR §25.807(c) |
| D.1.2 | Floor Level Exits – Definition | JAR §25.807(a) |
| D.2.1 | Additional Emergency Exits - Must meet requirements | All exits comply with JAR 25 – There are no ventral exits |
| D.2.2 | Emergency Exit Access - All Required Exits must have: Passageway unobstructed 500m wide between areas and leading to a Type I or II Exit; Crew assist space; Access to Type III or IV Exit is unobstructed Internal doors must be able to be latched open – placarded | JAR §25.813(a) – See Detailed Specification Fig. 25-20A for standard cabin layout JAR §25.813(b) – Forward fuselage exits are Type III JAR §25.813(c) – Only internal door is to fwd baggage bay |
| D.2.3 | Emergency Exit Operating Handles - Markings/Lighting | JAR §25.811(e) |
| D.2.4 | Emergency Exit Evacuation Equipment – Descent means | JAR §25.809(f) |
| D.2.5 | Emergency Exit Escape Route - Must be slip resistant | Meets JAR 25 Change 11 exit certification requirements |
| D.2.6 | Emergency Lighting (a) Switch Provisions; Uninterrupted Power; Last 10 min. (b) Descent Illumination - Automatic and Independent | JAR §25.812(f) and JAR §25.812(i) JAR §25.812(h) |
| D.2.7 | Emergency Interior Lighting - independent supply; min. illumination; incl. floor proximity escape path markings | JAR §25.812(c) JAR §25.812(e) |
| D.2.8 | Emergency Exterior Lighting - in effect 30.04.72 or later | Meets JAR 25 Change 11 exit certification requirements |
| D.2.9 | Emergency Exit Interior Marking – (a) identity and location clearly visible across cabin (b) exit locations shall be visible approaching along aisles (c) aircraft shall meet certification requirements at 30-4-72 (d) Aircraft certificated after 1-5-72 shall meet requirements in force at the time (e) Each emergency exit marking and sign shall have a minimum brightness of 250 microlamberts | (a) JAR §25.811(b) (b) JAR §25.811(d) (c/d) Meets JAR 25 at Change 11 exit requirements (e) Meets JAR §25.811(e)(2)(ii) – Aerospatiale advise they “anticipate” compliance by reason of illumination measurements in the areas around the exits show a lighting intensity in the range 917 to 1360 microlamberts – see Note 540.0590/99 and 417.0126/95-A |
| D.2.10 | Emergency Exit Exterior Markings - 2” contrasting band; opening instructions in red or bright chrome yellow; | JAR §25.811(f)(1) and (2) JAR §25.811(f)(3) |
| D.3 | Lavatory Fire Protection – Shall be conspicuously marked with No Smoking/No Cigarette Disposal”; Exterior ashtray; Waste Bin - Sealed door; built-in fire extinguisher; smoke detector system with external warning | JAR §25.853(e) and (f) and NPA 25D-227 – <i>See Detailed Specification §26-24-02</i> – equivalent safety finding was made against JAR§25.853(f) permitting the use of pictograms in lieu of wording |
| D.4 | Materials for Compartment Interiors - T/C after 1.01.58: (b) Manufactured 20/8/88 - 20/8/90 - Meet heat release requirements of FAR 25 at 20.08.86 increased to 100/100 Manufactured after 20/8/90 - Meet heat release rate and smoke tests of FAR Part 25 in effect 26.09.88 (c) Seat cushions (except flightdeck) must be fireblocked | ATR 72-212A complies with FAR 25.853(d) at Amendment 25-83. (requires compliance with FAR 25 Appendix IV [heat-release rate] and Appendix V [smoke emission] Test Methods.) – See Note 540.0590/99 JAR §25.853(c) at Amendment 86/1 – <i>See DS §25-21-07</i> |
| D.5 | Cargo and Baggage Compartments - T/C after 1.01.58: (a) Each C or D compartment greater than 200 cu ft shall have liners of GFRS or meet FAR 25 in effect 29.03.93 (c) Liners shall be separate from the aircraft structure | JAR §25.855(a)(1)(i) N/A – Front and rear cargo compartments are designed as category B – <i>See Detailed Specification §25-50-05</i> JAR §25.855(a)(1) |

CAR Part 91 – Subpart F – Instrument and Equipment Requirements

| PARA: | REQUIREMENT: | MEANS OF COMPLIANCE: |
|-----------------------|---|---|
| 91.505 | Shoulder Harness if Aerobatic; >10 pax; Flight Training | JAR §25.785 |
| 91.507 | Pax Information Signs - Smoking, safety belts fastened | JAR §25.791 |
| 91.509 Min. VFR | (1) ASI JAR §25.1303(b)(1) – <i>See Detailed Spec. §34-12-03</i> (2) Machmeter JAR §25.1303(c)(2) (3) Altimeter JAR §25.1303(b)(2) – <i>See Detailed Spec. §34-12-02</i> (4) Magnetic Compass JAR §25.1303(a)(3) – <i>See Detailed Spec. §34-20-09</i> (5) Fuel Contents JAR §25.1305(a)(2) (6) Engine RPM JAR §25.1305(c)(3) – <i>See Detailed Spec. §77-01-05</i> | (7) Oil Pressure JAR §25.1305(a)(4) – <i>See Detailed Spec. §77-01-07</i> (8) Coolant Temp N/A – Not air-cooled (9) Oil Temperature JAR §25.1305(a)(6) – <i>See Detailed Spec. §77-01-07</i> (10) Manifold Pressure N/A – Turbine powered (11) Cylinder Head Temp. N/A – Turbine powered (12) Flap Position JAR §25.699 (13) U/c Position JAR §25.729(c) <i>DS §32-60-00</i> (14) Ammeter/Voltmeter JAR §25.1351(b)(6) |
| 91511 Night | (1) Turn and Slip JAR §25.1303(F)(4)(France) (2) Position Lights JAR §25.1385 | (3) Anti-collision Lights JAR §25.1401 (4) Instrument Lighting JAR §25.1381 |
| 91.517 IFR | (1) Gyroscopic AH JAR §25.1303(b)(5) (2) Gyroscopic DI JAR §25.1303(b)(6) (3) Gyro Power Supply JAR §25.1331(a) (4) Sensitive Altimeter JAR §25.1303(b)(2) | (5) OAT JAR §25.1303(a)(1) (6) Time in hr/min/sec JAR §25.1303(a)(2) (7) ASI/Heated Pitot <i>See Detailed Spec. §30-30-01</i> (8) Rate of Climb/Descent JAR §25.1303(b)(3) |
| 91.519 | IFR Communication and Navigation Equipment JAR §25.1307(d) JAR §25.1307(e) | Dual VHF Transceivers fitted as standard (Collins or King) – <i>See Detailed Specification §23-21-00 (ATR 497 210/91)</i> Single ADF fitted as standard – <i>See Detailed Spec. §34-50-30</i> Dual VOR fitted as standard – <i>See Detailed Spec. §34-55-01</i> |
| | Air NZ ATR72-500 aircraft have optional second ADF and DME and dual Honeywell/Trimble HT 1000 GNSS installations The NAS on the Variant 600 comprises the Collins Proline 21 navigation suite, Thales GPS (2nd GPS optional) and two Thales FMS. The aircraft is capable of EASA AMC20-4 BRNAV +/-5nm, JAA TGL10 Rev 1 PRNAV +/-1nm and EASA AMC20-27 RNP Approach (excluding APV BARO VNAV) operations. The aircraft is not approved for RNP AR or ADS-B Out. Note this is just the aircraft technical capability and specific approvals must be granted for these navigation operations. | |
| 91.523 | Emergency Equipment: (a) More Than 10 pax – First Aid Kits per Table 7 – Fire Extinguishers per Table 8 Required: – 1 in each Class B cargo compartment – 1 on flight deck, 3 in pax. cabin (b) More than 20 pax – Axe readily acceptable to crew (c) More than 61 pax – Portable Megaphones per Table 9 | Fitted as standard – <i>See Detailed Specification §25-63-07</i> JAR §25.851(a)(5) Note: Fire Extinguishers not fitted in cargo compartments Compliance to be determined on an individual basis Fitted as standard – <i>See Detailed Specification §25-62-07</i> Fitted as standard – <i>See Detailed Specification §25-63-08</i> |
| 91.529 | ELT – TSO C91a after 1/4/97 (or replacement) | SOCATA ELT97 (TSO C91A and C126) can be fitted in accordance with ATR optional modification n°. 4265. Mod. 5786 installs an ADT-406-S or ADT-406-AF 406Hz TSO C126 as BFE in accordance with CS 25.1415 |
| 91.531 | Oxygen Indicators - Volume/Pressure/Delivery | JAR §25.1439, JAR §25.1441, 1443, 1445, 1447 |
| 91.535 | Oxygen for Pressurised Aircraft: (1) Flight Crew Member On-Demand Mask; 15 min PBE (2) 1 Set of Portable 15 min PBE (3) Crew Member - Pax Oxygen Mask; Portable PBE 120l (4) Spare Oxygen Masks/PBE (5) Min Quantity Supplement Oxygen (6) Required Supplemental/Therapeutic Oxygen Above FL250 - Quick-Donning Crew On-Demand Mask Above FL300 - Total Outlets Exceed Pax by 10% | Each crew member supplied with EROS quick-donning mask In combination with smoke goggles, meet TSO C99 PBE std A Portable O ₂ bottle is fitted at each of the two Flight Attendant seats, plus 3 sets of TSO C116 PBE in the cabin. ATR 72-212A complies with recent JAR-OPS 1.770 & 1.780 §91.535(6)(i) applies: 2 “new look” configurations possible (100% pax supply, or 25% pax supply.) Mount Cook has 77.1 cu.ft. supply (25%) – FCOM provides compliance data N/A – Maximum operating altitude is 25,000 ft. |
| 91.541 | SSR Transponder and Altitude Reporting Equipment | Fitted as standard – <i>See Detailed Specification §34-50-20</i> |
| 91.543 | Altitude Alerting Device - Turbojet or Turbofan | Fitted as standard – <i>See Detailed Specification §34-50-22</i> |
| 91.545 | Assigned Altitude Indicator | N/A – see above |
| A.15 | ELT Installation Requirements | <i>To be determined on an individual aircraft basis</i> |

CAR Part 121 – Subpart F – Instrument and Equipment Requirements

| PARA: | REQUIREMENT: | MEANS OF COMPLIANCE: |
|---------|--|--|
| 121.355 | Additional Instruments (Powerplant) | JAR Part 25 is equivalent to a Part 21 Appendix C standard |
| 121.357 | Additional Eqpt – Windscreen Wiper, Door, Key, Placard | JAR §25.1307(f) and JAR §25.772(a) |
| 121.359 | Night Flight - Landing Light, Light in each pax cabin | JAR §25.1383 |
| 121.361 | IFR Operations | Speed, Alt, spare bulbs/fuses Fitted as std – <i>See Detailed Spec. §30-30-01 and §34-12-08</i> |
| 121.363 | Flights Over -water | Liferafts Operating Rule – Compliance to be determined by Operator |
| 121.365 | Emergency Equipment | Per §91.523 and EROPS kit Operating Rule – Compliance to be determined by Operator |

| | | | |
|---------|--|---|---|
| 121.367 | Protective Breathing Equipment (PBE) | TSO C99 cockpit equipment TSO C115 cabin equipment | Cockpit PBE fitted in accordance with ATR Optional Modification n ^o .3234. (Eros MC10/MXP210 combination) Fitted as std – <i>See Detailed Spec. §35-32-04 and Fig. 25-10</i> Type is Puritan Bennett P/N 119003 – (see e-mail 21-9-99) |
| 121.369 | Pax Address, Intercom | Meets FAR § 121.318 and 319. | Fitted as std – <i>See Detailed Spec. §23-30-00 and §23-41-00</i> |
| 121.371 | Cockpit Voice Recorder Appendix B.5 requires TSO C84/C123 | | JAR §25.1457 – Loral A200-5 solid state fitted to ARINC 557 standard – <i>See Detailed Specification §23-70-00</i> |
| 121.373 | Flight Data Recorder Appendix B.6 requires TSO C124 | | JAR §25.1459 – Fairchild Type F-800 fitted to ARINC 573 specification – <i>See Detailed Specification §31-22-02</i> Air NZ has SCN/Option NM 31-1056 meeting FAR 121.344 Mod.5957 Indicating/recording system ATR72-600 complies with FAR 121.344 – <i>See DT/CC/T-1417/12 (88 parameters)</i> |
| 121.375 | Additional Attitude Indicator | | Fitted as standard – <i>See Detailed Specification §34-20-07</i> |
| 121.377 | Weather Radar - Appendix B.8 requires TSO C63 | | Sperry Primus 800 fitted as std – <i>See Detailed Spec. §34-40-01</i> |
| 121.379 | Ground Proximity Warning System Appendix B.9 requires TSCO C92 | | Sundstrand MARK II GPWS meeting ARINC 594 specification fitted as standard – <i>See Detailed Spec. §34-40-03</i> |
| 121.381 | Terrain Awareness and Warning System (TAWS) Appendix B.10 requires TSO C151a or b | | The New Avionics Suite installed under Mod. 5948 includes ACSS T ² CAS as standard, which combines the functions of TCAS and ACAS. Note Mod. 6521 introduces the NAS software upgrade “L2B2”. |
| 121.383 | Airborne Collision Avoidance System (ACAS II) Appendix B.11 requires TSO C119b | | |

* For confirmation of Airworthiness Standard applicability see Document GATR/C-No 0001/87 ATR 72 Airworthiness Requirements

Certification Issues

Narrow Runway Approval

Mount Cook Airline required approval for the ATR72 to operate on narrow runways. (14.3m) This was done via an agreed Special Condition, flight test programme and issued in the form of a Production Option (04-1020) and Flight Manual Supplement.

DCA/GEN/35A

The Air NZ ATR72-600 aircraft will be delivered with the Harmony interior and Option 25-3173 GEVEN Prestige passenger seats, approved under Mod.s 6593 and 6594. The certification basis for this included on an elect to comply basis: CS25 at Amendment 5 for §25.562 for dynamic landing conditions compliance, plus EASA CRI C-010 ‘Improved seats in Air Carrier Transport Category Airplanes (CS 25.562)’ and EASA CRI D-016 ‘Heat release and smoke density requirements to seat materials (JAR 25.853)’.

Attachments

The following documents form attachments to this report:

- Photographs ATR 72-212 serial number 464 ZK-MCC
- Three-view drawings Models ATR 42 and ATR 72
- Copy of EASA Type Certificate Data Sheet Number A.084

Sign off

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David Gill
Team Leader Airworthiness

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Checked – Ray Harvey
Airworthiness Engineer

Appendix 1

List of Type Accepted Variants:

| <i>Model:</i> | <i>Applicant:</i> | <i>CAA Work Request:</i> | <i>Date Granted:</i> |
|---------------------------|-------------------|--------------------------|----------------------|
| ATR 72-212 | Aerospatiale | 95/21B/01 | 10 November 1995 |
| ATR 72-212A | Aerospatiale | 99/21B/24 | 18 October 1999 |
| ATR 42-500 | ATR – GIE | 12/21B/12 | 7 September 2012 |
| ATR 42-500 “Version 600” | ATR – GIE | 12/21B/12 | 7 September 2012 |
| ATR 72-212A “Version 600” | ATR – GIE | 12/21B/12 | 7 September 2012 |