# Type Acceptance Report

## TAR 3/21B/18 – Revision 2

## AIRBUS A318/A319/A320/A321

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## Executive Summary

New Zealand Type Acceptance has been granted to the Airbus A318/A319/A320/A321 series based on validation of EASA Type Certificate number A.064. 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).

Due to the introduction of a New Engine Option (NEO) variant from 2015 with significant airframe modifications to accommodate the change, the previous models will be referred to as Conventional Engine Option (CEO) where applicable in this report.

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.3/21B/18 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 in New Zealand; and

(b) Identify any special conditions for import applicable to any model 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. Aircraft Certification Details

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

| | |
|---|---|
| Manufacturer: | Airbus |
| | Airbus Industrie (up to September 7, 2004) |
| Type Certificate: | A.064 |
| Issued by: | European Aviation Safety Agency |
| | Note: This replaced DGAC France Type Certificate No. 180 on 21 December 2005. The DGAC Type Certificate remains a valid reference for aircraft produced prior to 21 December 2005. |
| Production Approval: | P09/F.R.035/FR.21G.0035 (Blagnac – up to July 21, 2008)<br>DE.21G.009 (Hamburg – up to July 21, 2008) |
| | EASA.21G.001 (Blagnac, Hamburg, Tianjin, Mobile) |

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

(i) **Model:** A320-232

| | |
|---|---|
| MCTOW: | 73,500 kg – Basic<br>78,000 kg – Variants 015 [Mod 34047], 017 [Mod 151634] |
| Max. No. of Seats: | 195 “Max Pax” [Mod 156723]<br>180 Standard |
| **Engine**: | IAE V2527-A5 [Mod 23008] (26,500 lb. thrust) |
| | Type Certificate: E40NE<br>Issued by: Federal Aviation Administration |

(ii) **Model:** A321-271NX

| | |
|---|---|
| MCTOW: | 89,000 kg – Basic<br>97,000 kg – Variants 71 [Mod 160287], 72 [Mod 160288] |
| Max. No. of Seats: | 244 ACF [Mod 160766]<br>230 “Max Pax” [Mod 157272]<br>220 Standard |
| **Engine**: | IAE PW1133G-JM [Mod 161002] (33,110 lb. thrust) |
| | IAE PW1133GA-JM [Mod 160684] (33,110 lb. thrust) |
| | Type Certificate: E87NE<br>Issued by: Federal Aviation Administration |

(iii) **Model:** A320-271N

MCTOW: 73,500 kg – Basic
79,000 kg – Variants 054 [Mod 161381], 055 [Mod 161249]

Max. No. of Seats: 195 "Max Pax" [Mod 156723]
180 Standard
165 [Mod 164024]

**Engine**: IAE PW1127G-JM [Mod 161000] (27,075 lb. thrust)

IAE PW1127GA-JM [Mod 161562] (26,345 lb. thrust)

Type Certificate: E87NE
Issued by: Federal Aviation Administration

**Additional Models:**

| **Model** [1] | **Engines** | **Thrust (TO)** | **MTOW** [2] |
|---|---|---|---|
| A320-231 | V2500-A1[4] | 24,800 lb | 78,000 kg (015) |
| A320-214 | CFM 56-5B4, B4/P, B4/2P, B4/P1, B4/2P1, B4/3, B4-3B1[5] | 27,000 lb | 78,000 kg (015) |
| A320-233 | V2527E-A5 | 24,800 lb | 78,000 kg (015) |
| A320-215 | CFM 56-5B5/P, B5/3 | 22,000 lb | 75,500 kg (011) |
| A320-216 | CFM 56-5B6/P, B6/3 | 23,500 lb | 75,500 kg (011) |
| A320-271N | PW1127G-JM, PW1127GA-JM[6] | 27,075 lb | 79,000 kg (054) |
| A321-131 | V2530-A5 | 29,900 lb | 89,000 kg (008) |
| A321-112 | CFM 56-5B2, B2/P, B2/3 | 31,000 lb | 89,000 kg (008) |
| A321-111 | CFM 56-5B1/P, B1/2P, B1/3 | 30,000 lb | 89,000 kg (008) |
| A321-211 | CFM 56-5B3/P, B3/2P, B3/3, B3/P1, B3/2P1, B3/3B1 | 32,000 lb | 93,500 kg (011) |
| A321-231 | V2533-A5 | 31,600 lb | 93,500 kg (011) |
| A321-212 | CFM 56-5B1/P, B1/2P, B1/3 | 30,000 lb | 93,500 kg (011) |
| A321-213 | CFM 56-5B2, B2/P, B2/3 | 31,000 lb | 93,500 kg (011) |
| A321-232 | V2530-A5 | 29,900 lb | 93,500 kg (011) |
| A321-271N | PW1133G-JM, PW1133GA-JM | 33,110 lb | 93,500 kg (53) |
| A321-272N | PW1130G-JM, PW1130GA-JM | 33,110 lb | 93,500 kg (53) |
| A321-272NX | PW1130G-JM, PW1130GA-JM | 33,110 lb | 97,000 kg (72) |
| A319-111 | CFM 56-5B5/P, B5/3 | 22,000 lb | 75,500 kg (007) [3] |
| A319-112 | CFM 56-5B6/P, B6/2P, B6/3 | 23,500 lb | 75,500 kg (007) [3] |
| A319-131 | V2522-A5 | 23,040 lb | 75,500 kg (007) [3] |
| A319-132 | V2524-A5 | 24,480 lb | 75,500 kg (007) [3] |
| A319-115 | CFM 56-5B7, B7/P, B7/3 | 27,000 lb | 75,500 kg (007) [3] |
| A319-133 | V2527M-A5 | 24,800 lb | 75,500 kg (007) [3] |
| A318-111 | CFM 56-5B8/P, B8/3 | 21,600 lb | 68,000 kg (005) |
| A318-112 | CFM 56-5B9/P, B9/3 | 23,300 lb | 68,000 kg (005) |

Notes:

1. Airbus model designation convention is:

   A3xx-xxx(N)(X)
   x – first number is basic series, -100 or -200
   x – second number is Engine type (1 = CFM, 2= P/W, 3 = IAE, 5=CFM, 7=IAE)
   x – last number is Engine Thrust Rating
   N – indicates NEO 'New Engine Option'
   X – indicates Airbus Cabin Flex

2. There are numerous weight variants for each model. The standard and maximum weights and associated variants are listed. Weight variants are available in 500 kg intervals, but are only certified on request from a customer. See TCDS A.064 for details of all certified weight variants.
3. 76,500 kg is available for the A319 in Corporate Jet configuration.
4. The IAE V2500 Series is covered by Type Acceptance Certificate 11/21B/16.
5. The CFM56-5B Series is covered by Type Acceptance Certificate 19/21B/8.
6. The IAE PW1100G-JM Series is covered by Type Acceptance Certificate 17/21B/13. The IAE PW1127GA-JM and PW1133GA-JM engine variants incorporate the "alternate climb thrust" option.

**Noise Category:**

| **Model** | **Noise Certification basis and category** |
|---|---|
| A321 | ICAO Annex 16 Vol.I Part II Chapter 3<br>(Some CEO models are compliant with Chapter 4 when modifications are embodied. All NEO models are compliant with Chapter 4.) |
| A320 | ICAO Annex 16 Vol.I Part II Chapter 3<br>(Some CEO models are compliant with Chapter 4 when modifications are embodied. All NEO models are compliant with Chapter 4.) |
| A319 | ICAO Annex 16 Vol.I Part II Chapter 3<br>(All models are compliant with Chapter 4 when modifications are embodied.) |
| A318 | ICAO Annex 16 Vol.I Part II Chapter 3<br>(All models are compliant with Chapter 4 when modifications are embodied.) |

See EASA Noise Type Certificate Data Sheet A.064:
Volume 1 for A318
Volume 2 for A319
Volume 3 for A320
Volume 4 for A321

ETOPS – A318, A319, A320, and A321 series are certificated for 180 minutes ETOPS operations. Refer to TCDS for ETOPS capability and requirements for specific models.

## 3. Application Details and Background Information

The initial application for New Zealand type acceptance of the Airbus A320-232 was from the manufacturer, dated 14 November 2002. The first-of-type example was Manufacturer Serial Number (MSN) 2085, registered ZK-OJA. Air New Zealand received an initial batch of fifteen aircraft during 2003-2006 with MSN in the range 2085 to 2663, registered ZK-OJA through ZK-OJO. These aircraft were all configured for International operations with 8 Business and 138 Economy Class seats. This was followed by another four similar examples in 2011 with MSN in the range 4553 through 4926, and registrations ZK-OAB and ZK-OJQ through ZK-OJS. In 2013-2016 Air New Zealand took delivery of thirteen A320-232 aircraft configured for Domestic flight operations with 171 economy class seats and fitted with the Sharklet modification. MSN was in the range 5629 to 7362, registered ZK-OXA through ZK-OXM. The A320 is a narrow-body twin turbofan short-to-medium range Transport Category airliner originally approved for up to 180 passengers.

Type Acceptance Certificate No. 3/21B/18 was granted on 1 September 2003 to the Airbus A320-232 based on validation of DGAC Type Certificate No.180, and included the V2500 Series engine based on validation of FAA Type Certificate E40NE. Specific applicability was limited to the coverage provided by the operating documentation supplied.

Revision 1 was raised to add additional models and variants of the Airbus single-aisle family that have the certification basis as detailed in this report, except the PW6000 powered A318-121 and A318-122 models and all models powered by the CFM56-5A series engine, and change the applicable type certificate to the EASA.A.064. For all Airbus models, there are no special requirements for import into New Zealand.

Note: Because it is not practical to provide copies of all the operating documentation for all models and variants, and Airbus provides CAA access to the AirbusWorld website for all operators and aircraft serial numbers on the NZ Register, Type Acceptance has been granted to the Airbus single-aisle aircraft family covered by this report (See Section 2 and Appendix 1), subject to provision of access to the applicable operating documentation.

*Aircraft Type History:*

The A320 was a completely "clean-sheet" design by Airbus which incorporated a number of very advanced technology features with extensive use of electronics. These included the use of fly-by-wire flight controls with side-stick controllers and artificial envelope protection, electronic autothrottle and digital pilot's instrument displays. This resulted in a very complicated certification basis with multiple special conditions being agreed by the JAA and FAA, to take account of the novel design solutions. There are two basic variants of the A320, the Series 100 and the Series 200. The latter has a wing centre-section fuel tank and higher operating weights. The A320 prototype first flew in 1984.

The A321 was the next member of the Airbus single-aisle family, entering service in 1994. It has been stretched 6.94 m over the A320 with two plugs forward and aft of the wing centre section, and was originally certificated for up to 220 passengers.

The A319 was the third member of the single-aisle family, entering service in 1996. It has been reduced in length by 3.73m from the A320 and is certificated for up to 145 passengers (or 160 passengers when fitted with two extra overwing emergency exits).

The A318 is the smallest member of the Airbus single aisle family, being 2.39m shorter than the A319 and certificated for a maximum of 136 passengers. It entered service in 2003 and is also certificated for steep approaches. The V2500 engine series is not available on the A318, the second engine option being the Pratt & Whitney PW6000 series. However this engine option has only been selected by one operator and A318 models with this engine are not included under this Type Acceptance certificate.

The Airbus single-aisle family share a common type rating.

*Single-Aisle NEO:*
Revision 2 of this report was raised to add the New Engine Option (NEO) models for the A319/A320/A321. The NEO change introduces two new engine options, the IAE PW1100G-JM geared turbofan (GTF) and the CFM LEAP-1A turbofan for the A319, A320, and A321. The first NEO model was Type Certificated by EASA on 2 November 2015. The application for type acceptance was submitted by Airbus in March 2014, but was delayed by validation of the GTF engine and certification of the A321NEO ACF version.

The NEO engines represent an efficiency increase of approximately 15% over the CEO engines. Airframe changes to accommodate the new engines included new pylons and nacelles, enhanced structural provisions for increased windmilling loads and uncontained engine rotor failures and a small MCTOW increase for only the A320 NEO model. Part commonality between the NEO and CEO was maximised with 95% of the same part numbers retained. Engine electrical and bleed air interfaces were designed to ensure the airframe inputs did not change from the CEO.

Subsequent to the NEO application, Airbus requested validation of three EASA approved major changes (modifications), which had a changed certification basis, and therefore were not automatically accepted in accordance with Part 21 Appendix D(b)(2)(iii):

*Sharklet Installation:*
The Sharklet is Airbus's name for an extended vertical wing tip, which replaces the previous wing tip fence (WTF) design. The new wing tip increases wingspan by 1.70 m and reduces fuel burn by 3.5 %. Sharklets have become optional in production (FF, forward fit) and can also be retrofitted in service (ISR) to MSN1200 and above. The Sharklet installation is covered by a range of modifications, depending on the model type and whether it is FF or ISR. Major Change 160500 (Sharklets) Issue 1 (A320, CFM56) was EASA approved on 30 November 2012, while Major Change 160500 Issue 2 (A320, V2500) was approved on 21 December 2012.

For a production installation the centre-wingbox is modified and the wing structure reinforced [Mod 160001], the flight computer software revised and the Sharklets fitted. For an ISR only the outer wing is strengthened under retrofit modification 160080. The Sharklet retrofit modification can be installed by Airbus Service Bulletin. After review of the certification basis, the Sharklet modification was accepted by CAANZ by letter reference DW1326235-0 dated 23 February 2016.

*"Max Pax" Configuration:*
The Max Pax modification, which increases the maximum passenger seating capacity by 15, is achieved by increasing the number of permitted seats for the front and aft "Type I*" exits from 55 to 65 through installation of wider evacuation slides. This over-performing exit rating was justified by comparative testing, which showed a substantial improvement in egress performance of floor level exits fitted with wider slides. An ELOS was granted based on an evacuation analysis. Max Pax was accepted by CAA NZ by letter reference DW1307931-0 on 10 March 2015 based on EASA major change Modification 156723 approval for the A320.

*Aircraft Cabin Flex Configuration:*
The A321 NEO Airbus Cabin Flex (ACF), Modification 160766, allows greater flexibility in the forward cabin layout by removing the natural break point created by Door 2, which is completely removed and replaced by two oversize Type III overwing exits with fast-opening automatic doors. These characteristics permit a higher passenger rating of 39 per pair or 70 with both exit pairs. Door 3 is moved aft four frames to eliminate interference between the passenger evacuation slides. The A321 ACF can also be fitted with up to three Aircraft Centre Tanks (ACT), in which configuration it is marketed as the A321LR.

Type acceptance of the IAE GTF-powered Airbus Single Aisle NEO family, including the ACF option, was granted on 7 September 2018. The first-of-type example of the Model A321-271NX will be MSN 8496, scheduled to be registered ZK-NNA in October 2018. This aircraft is fitted with 217 Economy Class seats, utilising Modification 160907 Low Density LD-1A Configuration, which involves de-activation of the forward Type III exits. The first-of-type example of the A320-271N is scheduled to be MSN 8715, to be registered ZK-NHA in January 2019. This aircraft will be configured with 165 Economy Class seats.

## 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:

(1) State-of-Design Type certificate:

EASA Type Certificate A.064 issued 21 December 2005 (replacing DGAC Type Certificate No. 180 originally issued February 26, 1988)

EASA Type Certificate Data Sheet A.064 Issue 35 dated 7 August 2018

Model A320-231 approved April 20, 1989
Model A320-232 approved September 28, 1993
Model A320-214 approved March 10, 1995
Model A320-233 approved June 12, 1996
Model A320-215 approved June 22, 2006
Model A320-216 approved June 14, 2006
Model A320-271N approved 24 November, 2015

Model A321-131 approved December 17, 1993
Model A321-112 approved February 15, 1994
Model A321-111 approved May 27, 1994
Model A321-211 approved March 20, 1997
Model A321-231 approved March 20, 1997
Model A321-212 approved August 31, 2001
Model A321-213 approved August 31, 2001
Model A321-232 approved August 31, 2001
Model A321-271N approved December 15, 2016
Model A321-272N approved May 23, 2017
Model A321-271NX approved March 22, 2018
Model A321-272NX approved March 22, 2018

Model A319-111 approved April 10, 1996
Model A319-112 approved April 10, 1996
Model A319-131 approved December 18, 1996
Model A319-132 approved December 18, 1996
Model A319-115 approved July 30, 1999
Model A319-133 approved July 30, 1999

Model A318-111 approved May 23, 2003
Model A318-112 approved May 23, 2003

(2) Airworthiness design requirements:

*(i) Airworthiness Design Standards:*

A320 – The original certification basis of the Airbus A320 Series is JAR 25 Change 11 (except paragraph 25.207 which remains at Change 10) as elected by the Manufacturer, plus A320 Special Conditions (raised to cover novel or unusual features not addressed by the JAR), Experience Related Conditions (raised to record an agreed text for the A320 Joint Certification Basis when evolution of JAR was in progress under the NPA procedure) and Harmonization Conditions (to record, for the purpose of the A320 Joint Certification Basis, a common understanding with respect to National variant. This should not be confused with

the FAA/JAA harmonised regulations). Five Equivalent Safety Findings were granted. These have all been reviewed and accepted by the CAA.

The certification basis of the A320 has been subsequently updated. For weight variants 007 and subsequent and for all models from and including A320-232, the JAR 25 paragraphs defined above are modified following the elect-to-comply to OP 91/1 (NPA 25C205) by Airbus (DGAC letter 60667/SFACT/N.AT). (See TCDS for affected JAR paragraphs.) This also resulted in deletion of three Special Conditions and Interpretive Materials.

In addition, for all models of A320-200 series, the JAR 25 paragraphs were modified following the elect-to-comply with the new discrete gust requirements of JAR 25 Change 14 as amended by NPA 25C-282, by application of the major change titled "Flight Controls - deletion of LAF features from A320", modifications 26334/26335.

For the A320-233 and all A320-200 with OCTOPUS AFM (computerised performance data – see CRI F2013), the JAR 25 certification basis is further modified following the elect-to-comply with SC-F11 and SC-S79. This results in the deletion of five JAR 25 Change 11 paragraphs and three harmonisation special conditions, plus seven JAR 25 paragraphs are upgraded to Change 13 and amended by two other special conditions.

A321 – The certification basis of the A321 is JAR 25 change 11, with selected paragraphs as identified on the TCDS at change 13 effective November 30, 1989, with selected paragraphs at change 11 as noted on the TCDS deleted at change 13; JAR 25 paragraphs at change 13 as identified on the TCDS and amended by NPA 25C205 (Unified Discrete Gust Requirements introduced by Orange Paper 91/1); JAR 25 paragraphs at change 13 as identified on the TCDS and amended by NPA 25 BDG 244 (Accelerate Stop Distance and Associated Performance); JAR AWO 1 for autoland and low visibility operations; and AMC 20-6 for ETOPS operations.

A large number of A320 Special Conditions, as identified on the TCDS, were retained. Seventeen A320 Special Conditions were deleted by the changed certification basis or new A321 Special Condition. Eighteen new Special Conditions were adopted, plus one additional Special Condition for operations at high altitude airports. Three Equivalent Safety Findings were made, plus one additional ESF post-certification.

A319 – The certification basis of the A319 is JAR 25 change 11, except for Subpart BB and all National Variants, and except for selected paragraphs as identified on the TCDS which are upgraded at change 13 and amended by Orange papers 90/1 or 91/1, and except for selected paragraphs as identified on the TCDS which are upgraded at Change 13 and amended by SC-F11 and SC-S79; JAR AWO 1 for autoland and low visibility operations; and AMC 20-6 for ETOPS operations.

For A319 weight variant 002 and any further certification after Aug 10, 1998 JAR §25.493(d) at change 14. For A319-115 and -133 variants, JAR 25 selected paragraphs as identified on the TCDS which are upgraded at change 14 and amended by Orange paper 96/1.

Twenty-four A320 Special Conditions, as identified on the TCDS, were retained, three A321 Special Conditions and three new A319 Special Conditions were adopted, plus one additional Special Condition for operations at high altitude airports. Three Equivalent Safety Findings were made, plus one additional ESF post-certification.

A318 – The certification basis of the A318 is JAR 25 change 11, except for Subpart BB and all National Variants, and except for selected paragraphs as identified on the TCDS which are upgraded at changes 13, 14 and 15, with some additionally amended by Orange paper 96/1; JAR AWO 1 for autoland and low visibility operations; and AMC 20-6 for ETOPS operations.

Twenty-two A320 Special Conditions, as identified on the TCDS, were retained, five A319 Special Conditions and six new A318 Special Conditions were adopted. Eight Equivalent Safety Findings were made, plus one additional ESF given post-certification.

All single-aisle CEO models – For all models, four additional Special Conditions were developed post-certification.

For the Sharklet modification the certification basis is that of the A320 CEO amended to CS25 at amendment 8 for the changed areas, with selected paragraphs at earlier amendments of CS-25 and JAR 25 as listed in the TCDS.

For the "Max Pax" modification the certification basis is that of the aircraft equipped with Sharklets, amended to CS25 at amendment 13 (or higher depending on issue status) for selected paragraphs as listed on the TCDS for the affected areas. In addition there was 1 Equivalent Level of Safety Finding.

For the Single Aisle NEO models, the certification basis for changed areas is CS-25 at amendment 11, with selected paragraphs at earlier amendments of CS-25 and JAR 25 as listed in the TCDS. The EASA changed product rule was applied to determine the amendment level of each changed area. There were 9 Special Conditions and 5 Equivalent Safety Findings raised specifically for the NEO models in addition to the applicable legacy Special Conditions and Equivalent Safety Findings from the CEO certification.

For the A321-xxxNX ACF (Airbus Cabin Flex) modification, the certification basis for changed areas is CS-25 at amendment 15, with selected paragraphs at earlier amendments of CS-25 and JAR 25 as listed in the TCDS. In addition there were five Equivalent Level of Safety Findings.

These are an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41 and Advisory Circular 21-1A, as JAR 25 and CS 25 are equivalent to FAR 25, which is the basic standard for Transport Category aircraft 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:*

EC-G11 (All models) – General Definitions – JAR 1 maximum take-off power and/or thrust, which includes five minutes maximum continuous period, was extended to ten minutes in the case of engine failure.

(DGAC-F) SC-G17 (All models) – Operational proving flights – (CRI G1001) Airbus were required to carry out an intensive flying program under airline type conditions to show the aircraft, components and equipment was safe for airline operations. (FAA and DGAC require 300 hours of flight testing by a production standard aircraft.) Another 100 hours is required plus 50 hours airline route proving.

(CAA-UK) SC-G17 (All models) – Operational flight before certification – The UK CAA required 200 hours of route proving plus some additional specific requirements as detailed in Appendix 1.

SC-A1 (A318, A319, A321) – Interaction of Systems and Structure. (§25.301(10), §25.302, §25.305(f), §25.629(d)(9), §25.629(d)(10)) – Airbus was required to account for any systems failure or malfunction which could affect structural performance.

SC-A2 (A318, A319, A321) – Stalling Speed for Structural Design – As the stall protection system controls elevator motion as the aircraft approaches the stall speed, to ensure that conventional levels of design speed are used in the structural justification, $0.94V_{S1g}$ is used in place of $V_{S1}$.

IM-A3 (A321) – Rapid Decompression – CRI A3003 – This adds additional interpretive material for compliance with the rapid decompression requirements of JAR §25.365(e).

IM-A4 (A321) – Fuel Tank Crashworthiness – CRI A3004 – Replaces the A320 IM 4/7 requirements for fuel tank crashworthiness with JAR §25.963(d) ACJ at change 12.

SC-A5003 (A318) – Design Dive Speed $V_D$ – Revises the JAR §25.335(b) definition of $V_D$ to account for the aircraft's operating conditions.

SC-F1 (A319, A320, A321) – Stalling and scheduled operating speeds – Because of the low speed stall protection, which cannot be overridden by the pilot, there is no possibility to demonstrate minimum speeds below $V_{Slg}$. Strict interpretation of this would result in performance penalties. Therefore a compensating formula was accepted, recognising the value of the stall protection safety system.

SC-F3 (All models) – Cockpit control – motion and effect of cockpit control – JAR §25.143(c) forces are not appropriate for a side-stick controller. Suitable loads derived from simulator studies were agreed.

SC-F4 (A319, A320, A321) – Static longitudinal stability – The longitudinal control laws used for the A320 provide neutral stability within the normal flight envelope, which is not in strict literal compliance. The control laws have been written to provide positive static longitudinal stability outside the normal flight envelope, to ensure a tendency to return within that envelope.

SC-F6 (All models) – Static directional and lateral stability – (CRI F1001) Because of the A320 roll axis design feature in which aileron force commands roll rate, the stabilised portion of constant heading sideslips may result in zero aileron force. However this was accepted because the requirement is for non-negative yaw and roll stability and JAR §25.177(c) allows some discretion in the proportionality between aileron force (or movement) and sideslip.

SC-F7 (All models) – Flight envelope protection – It was agreed that the JAR §25.399 paragraph on dual control systems is not appropriate to the A320 flight control system with dual side-stick controllers.

SC-F8 (All models) – Normal load factor limiting – Because of the high speed protection function limiting increases by decreasing pilot nose-down control authority and providing a progressive nose-up command, $V_D$ was determined by a specified upset manoeuvre, plus atmospheric variations.

SC-F9 (All models) – Dual control system – Reserved for possible issues.

SC-F10 (A321) – Accelerate Stop Distances – Revised various definitions in JAR 1 and JAR 25, including Take-off decision speed; Decision height; Accelerate-stop distance; and adds provision for worn brakes.

SC-F11 (A320-233, A318, A319) – Accelerate Stop Distances – Amendments to Accelerate-Stop distance and related matters to permit the use of advanced versions of NPA 25,B,D,G-244 but taking into account wet runway braking agreements reached during the development of the final Rule.

IM-F12 (A321) – Computerised AFM – CRI F3004 – Proposes the same AFM as the A330/340 series using a computer data base and program for a PC, using AMJ 25.1581 guidance material.

IM-F13 (A321) – Landing Distance Extrapolation – CRI F3005 – Proposes the use of NPA 25B-242 for extrapolation of landing distances for altitudes above that tested.

AMC F-14 (A321) – Flight in Icing Conditions – CRI F3006 – Proposes the means of compliance for flight in icing conditions, largely based on NPA 25B-219 Issue 2 with amendments proposed by Airbus.

HC-F103 (A320 up to -233) – Accelerate Stop Distance, Take-Off Distance and Take-Off Run on a Wet Runway – Wet runway performance will be established in accordance with the rules specified in the appendix. Subject to satisfactory demonstration of reliability and controllability credit may be taken for the use of reverse thrust in an accelerate-stop on a wet runway.

HC-F114 (A320) – Approach and Target Threshold Speeds – Airbus was required to accept the UK National Variant (NV) which introduces additional conditions to the steady gliding approach speed.

SC-F5001 (A318) – Stalling and Scheduled Operating Speeds – Introduces changes to definitions of minimum speeds and operating speeds to account for the effect of the High Incidence Protection System and the Alpha-Floor system.

SC-F5004 (A318) – Static Longitudinal Stability and Low energy Awareness – As the aircraft flight control laws provide neutral longitudinal stability below normal operating speeds there must be adequate awareness for the pilot of a low energy state.

SC-A.2.1.1 (A320) – Certification Criteria of Aircraft Designed with Systems Interacting with Structural Performance – (CRI A1001) There is a need to provide warnings of the existence of failure conditions which can affect the structural capability of the aircraft, and for which the associated reduction in airworthiness can be reduced by suitable operational limitations.

SC-A.2.2.2 (A318, A319, A320) – Design manoeuvre requirement – The existing requirements need a special interpretation in cases when the relevant flight control laws (due to fly-by-wire) are implemented.

SC-A.2.2.3 (A319, A320) – Design dive speed – The introduction of High Speed Protection raised the problem of application of the manoeuvre in JAR §25.335(b)(1) in order to determine $V_D$.

EC-A.3.6.1 (A320) – High Lift Devices – The existing JAR §25.345 requirement needed clarifying, especially for the phases of flight definitions of en-route, procedure flight, approach etc.

(CAA-UK) SC-A.4.3 (A320) – Tuned Gust Loads – The existing British NV special condition needed some interpretation (tuning law) to be used for vertical gust calculations.

HC-A.4.4 (A320) – Manoeuvre Loads – High lift devices deployed – UK CAA required a checked manoeuvre to be considered in conjunction with high lift devices deployed. However it was subsequently accepted it was not a limiting case for the A320.

HC-A.4.5 (A319, A320, A321) – Braked roll conditions – (CRI A7) This is equivalent to JAR §25.493(d) at Change 13 for dynamic braking. For Project J1W002 (A319 Weight Variant 002 [Mod. 27112]) and all further A320 family variants Airbus elected to comply with Change 14 plus amendment 25/96/1.

HC-A.4.6 (All models) – Speed control device – Clarification of UK CAA National Variant for JAR 25.373 was needed.

SC-S11 (All models) – Limit pilot forces and torques – JAR 25.397(c) is based on a stick and not a wrist-applied side-stick. Simulator investigation established an acceptable level of limit pilot forces.

HC-S23 (All models) – Standby gyroscopic horizon – The French National Variant was used for JAR §25.1303(b)(4), which is consistent with the FAR and requires a third attitude instrument usable through 360° of pitch and roll. (Gyro precession is not prohibited but should not occur at a pitch attitude closer to the horizontal than 70° and should be completed within an attitude change of 15°.)

HC-S24 (All models) – $V_{MO}/M_{MO}$ Warning (setting) – The French National Variant (and FAR) limit $V_{MO}/M_{MO}$ warning to +6.0 kt and +0.01 was adopted, inclusive of equipment and adjustment tolerances.

EC-S30 (All models) – Autoflight system – Criteria was needed to cover the highly integrated Flight Management System and the delayed flap approach function.

SC-S33 (All models) – Autothrust system – Certification criteria was required to be established for autothrottle synchronisation. See also CRI F2001, which added it must be shown by test or analysis that adequate cues are provided to the crew to monitor thrust changes during autothrottle operation.

SC-S52 (All models) – Operation without normal electrical power – The JAR was amended to take into account all possible electrical power sources when those dependent on the engines are lost.

EC-S54 (All models) – Circuit protective devices – Only fuses which are essential for the safety of flight are replaceable, based on the probability that all CBs or fuses will be blown is low.

HC-S61 (A320 up to -233) – Design Landing Brakes Kinetic Energy – JAR does provide for alternative means of retardation other than wheel brakes, but this option is deleted by the French National Variant.

HC-S62 (A320 up to -233) – Rejected Take-Off Brakes Kinetic Energy – French National Variant deletion of retardation other than wheel brakes provides a higher margin of safety than residual temperature before taxiing.

HC-S72 (All models) – Flight recorder – UK National Variant requires a validity check of data. It was agreed to accept an aural or visual means of pre-flight checking that a recording has been properly done.

SC-S74 (All models) – Abnormal attitudes – (CRI F2009) The electronic flight control system fitted to the A320 introduces changes to typical aircraft handling, pilot techniques, and man-machine interface, and a list of issues was developed in an Appendix. These were subsequently covered in other papers.

SC-S75 (All models) – Lightning protection indirect effects – (CRI S4) Special assessment of the effects of lightning on digital signals for essential systems was required, including partial tests on equipment, global tests on one aircraft, and extrapolation of the results to the "limit case".

SC-S76 (All models) – Effect of external radiations up on aircraft systems – (CRI SE2001) Each essential system must be designed and installed to ensure the aircraft operation is unaffected by exposure to external radiations. Threat frequency bands and average and peak levels were defined.

SC-S77 (All models) – Integrity of control signal – (CRI SM2006) A new criteria was required to ensure the integrity of electrical digital control signal transmission to the flight control surfaces.

SC-S79 (A318, A319, A320 from -233, A321) – Brakes Requirements, Qualifications and Testing – Amendments to brake requirements, qualifications and related matters to permit the use of advanced versions of NPA 25,B,D,G-244 but taking into account wet runway braking agreements reached during the development of the final Rule.

SC-SE5002 (A318) – AFM RVR Limits – Revises JAR-AWO so RVR limits are to be set by the responsible national authority in accordance with the applicable operating requirements.

SC-P01 (All models) – Full Authority Engine Control System (FADEC) – A guide was produced to cover certification of engines with electronic computers and the integration of such engines on the airframe. This included consideration of significant failures from common problems.

IM-P2 (A321) – Nacelle Cowling Fire Resistance – CRI P3003 – Clarifies cowling fire resistant requirements, taking into account external airflow ventilation to ensure fire in one zone cannot propagate to another zone.

SC-E1 (A319, A321) – Resistance to Fire Terminology – Revision to definitions under §25.853(d), §25.863(b)(4) and §25.867(a).

AMC-E2 (A321) – Emergency Evacuation Demonstration

SC-E3 (A321) – Exit Configuration – Under §25.807(c) the use of oversized Type I exits to cover a passenger increase greater than 45 must be demonstrated by tests. The passenger assist means under §25.809(f) must erect within 10 seconds.

IM-E4 (A321) – Reclassification of Doors – CRI E3002 – Provides requirements to classify doors 2 and 3 to Type III to allow a revised seating arrangement around the exits.

SC-E10 (A319, A320) – High Altitude Airport Operations – Provides additional requirements not included in existing regulations to allow operations at airports up to 14,100 ft. pressure altitude.

*Post-Type Certification Special Conditions:*

SC-H01 (All models) – ICA on EWIS – CRI H-01 – Adds the requirements of CS25 Amdt 5 Appendix H para H25.5 (equivalent to FAR §26.11) to provide ICA (Instructions for Continued Airworthiness) for EWIS (Electrical wiring interconnection system).

SC-E34 (All models) – Seats with Inflatable Restraints – CRI E-34 – Provides requirements and interpretative for when inflatable lap-belts are installed.

SC-D0306 (All models) – Seat Material Heat Release and Smoke Density – CRI D-0306 – Adds the requirements of CS 25 Appendix F Parts IV and V, heat release and smoke emission, for seats that incorporate large non-traditional non-metallic panels.

SC-P27 (All models) – Flammability Reduction System – CRI P-27 – Provides requirements for a fuel-tank inerting system for aircraft manufactured after January 2012 and fitted with a centre wing fuel tank.

*Major Design Change Special Conditions:*

SC-F16 (160500 – Sharklets) – Static Directional and Lateral Stability – As the flight control system provides neutral stability, removes §25.177(b) and provides an alternative §25.177(c) to ensure the curve of lateral surface deflection against sideslip is conventional and proportional to control input.

*NEO Specific Special Conditions:*

B-01 (All NEO models) – Stalling and Scheduled Operating Speeds – Introduces changes to stall and minimum speed requirements to account for the low speed protection system which protects against stall that cannot be overridden by the pilot.

B-03 (All NEO models) - Motion and effect of cockpit control – JAR §25.777 and CS §25.143 adapted for the side stick controls.

B-04 (All NEO models) – Static Directional, Lateral and Longitudinal Stability and Low energy awareness - As the aircraft flight control laws provide neutral longitudinal stability below normal operating speeds there must be adequate awareness for the pilot of a low energy state. In addition, regulation and guidance is amended in line with CS §25.177 Amendment 11.

B-07 (All NEO models) – Flight Envelope Protection was SC F-7- For SA NEO, in the frame of Change Product Rule assessment, paragraph §25.143 is applicable at CS25 Amendment 2.

B-08 (All NEO models) – Normal Load Factor limiting System – Replaces SC F-8 for the NEO – Load factors adapted in CS §25.143 to account for the load factor limiting feature of the flight control laws.

E-37 (All NEO models) – Water/Ice in Fuel System – Special condition to address the potential for water/ice accumulation and sudden release causing blockage in the fuel system.

E-45 (All NEO models) – Engine Cowl Retention – Introduction of requirements to ensure the fan cowls have adequate latching, are minimized against the risk of inflight opening, and have a reliable means for effectively verifying their security prior to take-off.

F-13 (All NEO models) – Fuel System Low Level Indication – Fuel Exhaustion – Special condition to amend CS §25.1305(a)(2) to ensure more robust fuel flow and quantity monitoring, fault detection, and alerting.

*(iii) Equivalent Level of Safety Findings:*

CRI SM2005 – ESF §JAR 25.783(e) (A320) – Inspection of the cargo door locking mechanism is by the position of the handle and vent positions rather than directly, on the basis it can only be operated when the door is fully closed and the vent door can only be closed when all the locks are secured.

CRI SM2007 – ESF JAR §25.783(f) (All models) – No means to prevent pressurisation is incorporated in the A320 bulk door on the basis that when it is open there is sufficient gap between the door and the aircraft structure (at the bottom and sides) to prevent overpressure, and also when it is nearly closed it will be forced closed by cabin pressure so there is no unsafe pressurisation level.

CRI E 2105 – ESF §JAR 25.813(c) (A320) – Because of the positioning of the sill height to meet the step down requirements of JAR §25.807(a)(3) and preclude the need for an external supplementary step the outboard seat cushion encroaches on the exit outline. This was accepted on the basis the exit is larger than the minimum, the encroachment will not interfere with the effective opening of the hatch and the cushion can be compressed to the exit outline level. (It is restricted to 18.8" height.)

CRI E2107 – ESF JAR §25.807 (A318, A319, A320) – Maximum permitted seating capacity of A320 based on exit types would be 179 passengers. This was extended to 180 on the basis that the front and rear doors are oversize Type I for which tests have shown a capacity of 55 passengers is appropriate.

CRI E4105 – ESF JAR §25.813(c)(1) (A318, A319) – The Type III emergency exit sill height is designed to preclude the need for an external supplementary step, but the seat cushion now protrudes into the exit area. Airbus showed by test that a minimum exit aisle width of 10" combined with an oversized exit was satisfactory.

CRI E5006 – ESF JAR §25.831(a) (A318) – On certain operations such as take-off the air-conditioning packs are off-operation, and there is no direct ventilation to the cockpit. Airbus showed that the crew is advised of off-operation by EICAM, the ventilation system provides an acceptable environment, and the flight manual has specific procedures for turning the packs on and off.

CRI P1002 – ESF JAR §25.933(a) (All models) – For the A320 the thrust reverser restow is automatically activated by the FADEC upon detection of an unlocked or deployed condition, and the in-flight restow function is deleted. This was accepted because inadvertent in-flight deployment is extremely improbable plus deletion improves protection against it, safety assessments do not depend on the in-flight restow function and failure on the ground will be covered or alerted to crew.

CRI SE 5005 – ESF JAR AWO.236 (A318) – Excess Deviation Alerts – The A318 design inhibits excess localiser deviation alerts under all autoland operations. Airbus showed by simulation that a pilot decision to disconnect the autopilot and manually land was safer than a go-around.

CRI SE 4005 – ESF JAR AWO.313 (A318, A319) – Minimum Approach Break-off Height – The MABH of JAR-AWO is replaced by the concept of providing go-around height loss guidance in the AFM plus a demonstration that a go-around can be accomplished from any point up to touchdown.

CRI SE 5002 – ESF NPA AWO.10 (A318) – AFM RVR Limits – Established to avoid conflict between JAR.OPS and JAR-AWO, by removing the RVR limitations from the AFM.

*Post-Type Certification Equivalent Safety Decisions:*

ESF §25.856(b) (All models) – Improved Flammability Requirements for Thermal/Acoustic Insulation Materials – CRI E-28 – Airbus "elects to comply" with FAR §25.856(b) at Amendment 25-111 for aircraft manufactured after September 2009.

*Major Design Change Equivalent Safety Decisions:*

ESF F-19 – §25.1419(c) (160500 – Sharklets) – Flight in Icing Conditions – The sharklet has no icing protection and Airbus showed it needs no protection. The demonstration by simulation and flight test used artificial ice shapes rather than natural ice.

CRI D-01 through D-03 ESF – §25.807(g) (Max Pax) – Over-performing Type I exit – Forward and aft exits are oversized Type I exits with wider slides which provide an increased performance (65 passenger seats). An equivalent level of safety was demonstrated by evacuation comparative and partial evacuation testing and analysis.

*NEO specific Equivalent Safety Decisions:*

E-43 – §25.934/CS-E 890 – Thrust reverser testing – The thrust reverser is required to be installed for the engine endurance testing, however, an equivalent level of safety was demonstrated by the use of slave C-ducts which provide an aerodynamic and mechanical equivalent, with the required reverser cycles to be carried out on an installed engine.

E-44 – §25.1181(a)(6) (IAE models only) – Fan Zone as non-fire zone – The fan zone was not designated as a fire zone and thus does not contain fire detection and extinguishing systems. This zone still meets the intent of CS §25.1181(a)(6) as its architecture and operating environment inherently protects against the start and continued propagation of a fire.

E-49 – §25.997 (CFM models only) Engine Fuel Filter Location – The LEAP-1A engine fuel system has a fuel strainer upstream of the HP pump inlet and a fuel filter downstream. The filter meets the capacity requirements but is not in the required position. An equivalent level of safety is provided by this architecture and proven through dedicated engine testing.

E-51 – §25.1549(a) – Oil temperature Indication – The indicator is provided on the ECAM as amber rather than a red radial or red line. Based on similar legacy indication and oil temperature exceedance being also annunciated by master caution and aural chime, an equivalent level of safety is provided.

E-52 – §25.1181 (CFM), §25.1182 (IAE) – Nacelle area adjacent to fire – Areas adjacent to a designated fire zone and a flammable fluid leakage zone on the IAE are not all strictly compliant to CS §25.1182 as no fire detection and extinguishing systems will be installed in these areas. The design features preclude the initiation of a fire which provides compensating factors to demonstrate an equivalent level of safety.

*ACF (Airbus Cabin Flex (A321-xxxNX) specific Equivalent Safety Decisions:*

D-09 – CS §25.807(g) – Increase of seats' credit for oversized Type I (qualified to Type C) floor level exits – Justification is based on similar credited increase in equivalent safety findings CRI D-01 through D-03.

D-11 – CS §25.813[c(4)(i)] and CS §25.813[c(2)(i)] – Over wing Type III exit interior arrangement – The Type III emergency exit sill height is lower than the prescribed opening and the passageway leading to the forward Type III exit is offset. Airbus showed by test that passenger seat cushion deformation combined with an oversized exit was satisfactory.

D-12 – JAR §25.785(h) – Single cabin attendant seat at door #3. Testing performed on A321 legacy aircraft demonstrated that there were no significant difficulties for the cabin attendant to reach the useable exit side before the first passengers when coming from the opposite side. Evidence was required for all foreseen combinations of passageways and exit types/deratings.

D-13 – CS §25.807(g) – Increase of seats' credit for Type III exit – Over wing type III exits have increased credit from 35 to 39 in single configuration and 65 to 73 in dual configuration based on showing an equivalent level of safety is maintained by emergency exit tests.

D-14 – CS §25.807(c)(g), §25.813(c) and JAR §25.785(h) – De-rating of Door #3 – The de-rating from 55 to 45 or 35 passengers allows more flexible seating around the exit providing seating arrangement conditions around the exit are met.

*(iv) Airworthiness Limitations:*

Safe Life Airworthiness Limitation Items are detailed in A318/A319/A320/A321 Airworthiness Limitations Section (ALS) sub-parts 1-2 and 1-3.

Damage Tolerant Airworthiness Limitation Items are detailed in the A318/A319/A320/A321 Airworthiness Limitations Items document (ALS) Part 2.

Certification Maintenance Requirements are detailed in A318/A319/A320/A321 Airworthiness Limitations Section (ALS) Part 3.

System Equipment Maintenance Requirements are detailed in the A318/A319/A320/A321 Airworthiness Limitations Section (ALS) Part 4.

Fuel Airworthiness Limitations are provided in A318/A319/A320/A321 Fuel Airworthiness Limitations document (ALS) Part 5.

(3) Aircraft Noise and Engine Emission Standards:

*(i) Environmental Standard:*

ICAO Annex 16 Vol I Part II – Noise Requirements.

ICAO Annex 16 Vol II Part II – Fuel Venting.

ICAO Annex 16 Vol 1 Part III Chapter 2 – Emissions.

*Compliance Listing:*

See the applicable model Certification Compliance Checklist, or EASA Noise Type Certificate Data Sheet A.064.

(4) Certification Compliance Listing:

| | | |
|---|---|---|
| Airbus A318-111 | Compliance Checklist | D03008035 |
| Airbus A318-112 | Compliance Checklist | D03008036 |
| Airbus A319-111, -112 | Compliance Checklist | AI/EA-S 413.716/96 |
| Airbus A319-115 | Compliance Checklist | AI/EA-S 413.1409/99 |
| Airbus A319-131, -132 | Compliance Checklist | AI/EA-S 413.3249/99 |
| Airbus A319-133 | Compliance Checklist | AI/EA-S 413.1410/99 |
| Airbus A320-214 | Compliance Checklist | 415.364/95 |
| Airbus A320-231 | Compliance Checklist | Program TCR30032 |
| Airbus A320-232 | Compliance Checklist | 414.630/93 |
| Airbus A320-233 | Compliance Checklist | AI/EA-S 413.1478/96 |
| Airbus A320-271N | Compliance Checklist | SA02RQ1601918 |

| | | |
|---|---|---|
| Airbus A321-111 | Compliance Checklist | 413.106/94 |
| Airbus A321-112 | Compliance Checklist | 413.119/94 |
| Airbus A321-131 | Compliance Checklist | 414.876/93 |
| Airbus A321-212 | Compliance Checklist | Project E2-212 |
| Airbus A321-213 | Compliance Checklist | Project E2-213 |
| Airbus A321-211, -231 | Compliance Checklist | AI-EA-S 413.0533/97 |
| Airbus A321-232 | Compliance Checklist | Project E2-232 |
| Airbus A321-271N | Compliance Checklist | SA00RP1646181 |
| Airbus A321-272N | Compliance Checklist | SA00RP1716270 |
| Airbus A321-271NX | Compliance Checklist | SA02RP1807640 |
| Airbus A321-272NX | Compliance Checklist | SA02RP1807640 |

(5) Flight Manual:

EASA approved Airbus Industrie A320 Flight Manual:
Model 320-232 (ANZ Fleet) – CAA Accepted as AIR 2836

EASA approved Airbus A321 Airplane Flight Manual:
Model A321-271NX (ANZ Fleet) – CAA Accepted as AIR 3853

EASA approved Airbus A320 Airplane Flight Manual:
Model A320-271N (ANZ Fleet) – CAA Accepted as AIR 3854

Notes: 1. Airbus produces an "envelope" Flight Manual for each model which includes all approved documentation units. From this is prepared a Fleet Flight Manual for each operator, which includes data covering all configurations.

2. Aircraft Fleets or Models other than those detailed above will need to have a new AIR number assigned. Consult the CAA for details of any flight manuals issued after the date of this Type Acceptance Report.

(6) Operating Data for Aircraft:

*(i) Maintenance Manual:*
Airbus A318/319/320/321 Airplane Maintenance Manual (AMM)

*(ii) Current service Information:*
Airbus A318/319/320/321 Service Bulletins (SB) *
Airbus A318/319/320/321 Service Information Letters (SIL) *
Airbus A318/319/320/321 Service Bulletin Information Telex (SBIT) *
Airbus A318/319/320/321 Operator Information Telex (OIT) *
Airbus A318/319/320/321 Flight Operations Telex (FOT) *
Airbus A318/319/320/321 All Operator Telex (OIT) *
Airbus A318/319/320/321 Technical Follow-up (TFU) *

*(iii) Illustrated Parts Catalogue:*
Airbus A318/319/320/321 Illustrated Parts Catalog (AIPC) *

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

CAA 2171 form C Willier, Airbus dated 01/04/2014*

* Access is now provided to all Airbus publications through the Airbusworld customer portal at *w3.airbus.com*
Like the flight manual, other technical publications are customised to the operator.

(8) Other information:

Airbus A318/319/320/321 Flight Crew Operating Manual (FCOM)
Airbus A318/319/320/321 Master Minimum Equipment List (MMEL)
Airbus A318/319/320/321 Quick Reference Handbook (QRH)
Airbus A318/319/320/321 Cabin Crew Operating Manual (CCOM)
Airbus A318/319/320/321 Maintenance Review Board (MRB)
Airbus A318/319/320/321 Trouble Shooting Manual (TSM)
Airbus A318/319/320/321 Aircraft Schematic Manual (ASM)
Airbus A318/319/320/321 Aircraft Wiring Manual (AWM)
Airbus A318/319/320/321 Aircraft Wiring List (AWL)
Airbus A318/319/320/321 Electrical Standard Practices Manual (ESPM)

# 5. New Zealand Operational Rule 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 | JAR §25.0811 |
| B.2 | Crew Protection Requirements – CAM 8 Appdx. B # .35 | Not Applicable – Agricultural Aircraft only |

Appendix C - Air Transport Aircraft - More than 9 Pax

| PARA: | REQUIREMENT: | MEANS OF COMPLIANCE: |
|---|---|---|
| C.1 | Doors and Exits | JAR Part 25 §25.0809(b) and (d) |
| C.2.1 | Additional Emergency Exits – per FAR 23.807(b) @ 10.5.93 | Meets JAR Part 25 Certification requirements (The A320 is also certificated to FAR Part 25 with minimal differences) |
| C.2.2 | Emergency Exit Evacuation Equipment – Descent means | JAR Part 25 §25.0809(f) |
| C.2.3 | Emergency Exit Interior Marking – Size/self-illuminating | JAR Part 25 §25.0811(e) and JAR Part 25 §25.0812(b) |
| C.3.1 | Landing Gear Aural Warning – Automatic Flap Linking | JAR Part 25 §25.0729(e) |

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 Part 25 §25.0807 |
| D.1.2 | Floor Level Exits – Definition | JAR Part 25 §25.0807(a) |
| D.2.1 | Additional Emergency Exits – Must meet requirements | Not Applicable – No ventral exits fitted |
| D.2.2 | Emergency Exit Access – All Required Exits must have:<br>Passageway unobstructed 500m wide between areas and leading to a Type I or II Exit; Crew assist space;<br>Access to Type III or IV Exit is unobstructed<br>Internal doors must be able to be latched open – placarded<br>Except for curtains each passageway between pax. cabins must be unobstructed; No door may be installed. | <br>JAR Part 25 §25.0813(a)<br>JAR Part 25 §25.0813(b)<br>JAR Part 25 §25.0813(c)<br>JAR Part 25 §25.0813(d)<br>JAR Part 25 §25.0813(f)<br>JAR Part 25 §25.0813(e) |
| D.2.3 | Emergency Exit Operating Handles – Markings/Lighting | JAR Part 25 §25.0811(e) |
| D.2.4 | Emergency Exit Evacuation Equipment – Descent means | JAR Part 25 §25.0809(f) |
| D.2.5 | Emergency Exit Escape Route – Must be slip resistant | JAR Part 25 §25.0803(e) |
| D.2.6 | Emergency Lightning<br>(a) Switch Provisions; Uninterrupted Power; Last 10 min.<br>(b) Descent Illumination - Automatic and Independent | <br>JAR Part 25 §25.0812(e)<br>JAR Part 25 §25.0812(g) |
| | NOTE: See CRI E8 for special conditions applied to photoluminescent EEPMS (Emergency Escape Path Marking System) | |
| D.2.7 | Emergency Interior Lighting – independent supply; min. illumination; incl. floor proximity escape path markings | JAR Part 25 §25.0812(c)<br>JAR Part 25 §25.0811(c) |
| D.2.8 | Emergency Exterior Lighting – In effect 30.04.72 or later | JAR Part 25 §25.0812 |
| D.2.9 | Emergency Exit Interior Marking – Clear; instructions<br>Location signs above routes, by exits, on bulkheads – Meets provisions in effect 30 April 1972, or later<br>Minimum brightness 250 microlamberts | JAR Part 25 §25.0811(b) and (d) **<br><br><br>JAR Part 25 §25.0812(b)(1)(i) |
| D.2.10 | Emergency Exit Exterior Markings – 2" contrasting band; opening instructions in red or bright chrome yellow; | JAR Part 25 §25.0811(f) |
| D.3 | Lavatory Fire Protection – Placards; Exterior ashtray; Waste Bin – Sealed door; built-in fire extinguisher; smoke detector system with external warning | AD DCA/GEN/7A (FAA AD 74-08-09R2); DCA/GEN/16<br>JAR Part 25 §25.0791(d)<br>JAR Part 25 §25.0853(d) and (e) |
| D.4 | Materials for Compartment Interiors – T/C after 1.01.58:<br>(b) Manufactured 20/8/88 - 20/8/90 – Meet heat release requirements of FAR 25 at 20.08.86 increased to 100/100<br>Manufactured after 20/8/90 – Meet heat release rate and smoke tests of FAR Part 25 in effect 26.09.88<br>(c) Seat cushions (except flightdeck) must be fireblocked | DCA/GEN/15 [FAR 25 §25.853(c) Amdt 59 Eff 26/11/84];<br>DCA/GEN/21 [FAR §121.312(a) Amdt 121-198 Eff 26/9/88]<br>Airbus advise all aircraft with complete interiors installed by the factory will meet these requirements. |
| D.5 | Cargo and Baggage Compartments – T/C after 1.01.58:<br>(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<br>(c) Liners shall be separate from the aircraft structure | DCA/GEN/22 [FAR Part 25.§855 Amdt 25-32 Eff May 1, 1972 & Part §121.314 Amdt 121-202 Eff Mar 20, 1989]<br>See CRI E2005 – Cargo compartments are all Class C. All cargo hold panels are constructed of glass fibre satisfying FAR 25 Amdt 60 and UK CAA AN 80. |

** Airbus has requested and CAANZ has granted an Equivalent Level of Safety decision covering the use of green pictogram emergency exit identifiers in place of the red/white signs required by the applicable requirements. See CRI C-1 dated 13 January 2011.

Compliance with the following additional NZ operating requirements has been reviewed for the production initial series of A320-232 delivered to Air New Zealand starting in 2003, 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 | Shoulder Harness if Aerobatic; >10 pax; Flight Training | | JAR Part 25 §25.0785(g) – *See SS Section 25-10.11.07* | |
| 91.507 | Pax Information Signs – Smoking, safety belts fastened | | JAR Part 25 §25.0791 Amdt 25-51 Eff Mar 6, 1980 | |
| 91.509 Min. VFR | (1) ASI<br>(2) Machmeter<br>(3) Altimeter<br>(4) Magnetic Compass<br>(5) Fuel Contents<br>(6) Engine RPM<br>(7) Oil Pressure | JAR §25.1303(b)(1) - *§34-13.11.00*<br>JAR §25.1303(c)(2) - *§34-13.11.00*<br>JAR §25.1303(b)(2) - *§34-13.10.00*<br>JAR §25.1303(a)(3)) - *§34-22.00.00*<br>JAR §25.1305(a)(2) - *§28-42.00.00*<br>JAR §25.1305(c)(3) - *§77-00.01*<br>JAR §25.1305(a)(4) - *§77-00.02* | (8) Coolant Temp<br>(9) Oil Temperature<br>(10) Manifold Pressure<br>(11) Cylinder Head Temp.<br>(12) Flap Position<br>(13) U/c Position<br>(14) Ammeter/Voltmeter | N/A – Turbojet<br>JAR §25.1305(a)(6) *§77-00.02*<br>N/A – Turbojet<br>N/A – Turbojet<br>JAR §25.0699 - *§27-85.00.00*<br>JAR §25.0729(e) - *§32-60.00.00*<br>JAR §25.1351 (b)(6) *§24-04.03.00* |
| 91.511 Night | (1)Turn and Slip<br>(2) Position Lights | See HC-S23<br>JAR §25.1389 - *§33-41.00.00* | (3) Anti-collision Lights<br>(4) Instrument Lighting | JAR §25.1401 - *§33-48.00.00*<br>JAR §25.1381 - *§33-13.00.00* |
| 91.517 IFR | (1) Gyroscopic AH<br>(2) Gyroscopic DI<br>(3) Gyro Power Supply<br>(4) Sensitive Altimeter | JAR §25.1303(b)(5)<br>JAR §25.1303(b)(6)<br>JAR §25.1331(a)<br>JAR §25.1303(b)(2) | (5) OAT<br>(6) Time in hr/min/sec<br>(7) ASI/Heated Pitot<br>(8) Rate of Climb/Descent | JAR §25.1303(a)(1) *§34-13.12.00*<br>JAR §25.1303(a)(2) *§31-21.00.00*<br>JAR §25.1323(e) *§30-31.01.00*<br>JAR §25.1303(b)(3) *§34-13.13.00* |
| 91.519 | IFR Communication and Navigation Equipment | JAR Part 25 §25.1307(d) and (e)<br>*See Standard Specification (SS) for further details:* | Dual Collins HF900 installed by Mod.s 25618/9<br>*§23-12.01.00 Aircraft shall have 3x VHF Data Radio System*<br>*§34-10.00.00 Triplicated Air Data/IRS system iaw ARINC 738*<br>*§34-51.00.00 2x DME interrogators fitted iaw ARINC 709*<br>*§34-53.00.00 ADF Receiver fitted generally iaw ARINC 712*<br>*§34-55.00.00 2x VOR Receiver fitted iaw ARINC 711* | |
| 91.523 Emrgcy Eqpmt. | (a) More Than 10 pax – First Aid Kits per Table 7<br>– Fire Extinguishers per Table 8<br>(b) More than 20 pax – Axe readily acceptable to crew<br>(c) More than 61 pax – Portable Megaphones per Table 9 | | Three first aid kits fitted under Cabin Mod. 33063<br>JAR Part 25 §25.851(a) – 6 fire extinguishers fitted per Mod. 33063 (1 in cockpit, 5 in cabin [3x halon, 2x water])<br>Fitted as standard – *See Standard. Spec. Section 25-61.01.01*<br>2 Megaphones fitted under Cabin Mod. 33063 | |
| 91.529 | ELT - TSO C91a after 1/4/97 (or replacement) | | RESCU 406AF P/N 115268-1 installed by Mod. 32015 | |
| 91.531 | Oxygen Indicators - Volume/Pressure/Delivery | | JAR Part 25 §25.1441 through §25.1450 | |
| 91.535 Press. A/c | (1) Flight Crew Member On-Demand Mask; 15 min PBE<br>(2) 1 Set of Portable 15 min PBE<br>(3) Crew Member - Pax Oxygen Mask; Portable PBE 120l<br>(4) Spare Oxygen Masks/PBE<br>(5) Min Quantity Supplement Oxygen<br>(6) Required Supplemental/Therapeutic Oxygen<br>Above FL250 – Quick-Donning Crew On-Demand Mask<br>– Supplemental $O_2$ Masks for all Pax/Crew<br>– Supplemental Mask in Washroom/Toilet<br>Above FL300 – Total Outlets Exceed Pax by 10%<br>– Extra Units Uniformly Distributed<br>– Automatically Presented Above FL140<br>– Manual Means of Deploying Pax Masks | | EROS quick-donning full-face masks fitted by Mod. 31458/9<br>Second set of Portable PBE fitted in cockpit by Mod. 33065<br>9 Scott Aviation portable $O_2$ bottles are installed by Cabin Mod. 33063, on quick release attachments, for use by FA.<br>115 cu. ft (3256 litre) Scott cylinder fitted by Mod. 31112. Provides >120 min for cockpit crew; designed for following flight profile after de-pressurization – 1 min at FL398, 4 min to descend to FL180, 7 min at FL180 and 1 min to descend to FL100. (See D03013732)<br>Cabin Mod. 33063 installs a total of 216 masks in the cabin.<br>TC Maximum Altitude is 39,100 feet (pressure altitude)<br>Mod. 30748 extends this to 39,800 ft. (Standard on ANZ01)<br>Masks deploy automatically when cabin altitude exceeds 14,000 ft. There is a manual override button in the cockpit. | |
| 91.541 | SSR Transponder and Altitude Reporting Equipment | | Dual Gables ATC/TCAS control panel fitted per Mod. 26670<br>*§34-52.00.00 2x Mode S Transponders fitted iaw ARINC 718* | |
| 91.543 | Altitude Alerting Device – Turbojet or Turbofan | | Installed as part of Central Warning System (CWS) – Auto call-outs covered by Mod.33061 – *See SS Section 34-13.20.00* | |
| 91.545 | Assigned Altitude Indicator | | Not applicable when altitude alerter fitted | |
| A.15 | ELT Installation Requirements | Airbus confirms Honeywell ELT RESCU 406AF P/N 1152682-1, capable to send a distress signal on 121.5, 243 and 406 MHz frequencies and installed by Mod 32015 on ANZ fleet, is compliant with applicable requirements from NZCAR 91 Appendix A.15 (See email 21.08.03) | | |

## Civil Aviation Rules Part 121

## Subpart F - Instrument and Equipment Requirements

| PARA: | REQUIREMENT: | | MEANS OF COMPLIANCE: |
|---|---|---|---|
| 121.355 | Additional Instruments (Powerplant and propeller) | | 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); Air NZ aircraft have a reinforced cockpit door fitted in accordance with Mod. 32088 |
| 121.359 | Night Flight - Landing Light, Light in each pax cabin | | JAR §25.1385 – *See SS Sections 33-25.00.00, 33-42.00.00* |
| 121.361 | IFR Operations | Speed, Alt, spare bulbs/fuses | JAR §25.1357(f) |
| 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 | JAR §25.1439 – EROS MF20-534 full-face masks fitted per Mod. 31458/9 meet TSO C99<br>2x Essex MR100 PBE fitted per Mod. 28706 and 33065 meet TSO C116 | |
| 121.369 | Pax Address, Intercom | Meets FAR § 121.318 and 319 | Cabin Intercommunication Data System incorporating crew intercom and pa installed in accordance with Mod. 33069 |
| 121.371 (App B.5) | Cockpit Voice Recorder | JAR §25.1457 – Honeywell SSCVR P/N 980-6022-001 installed in accordance with Mod. 30308 meets TSO C123 – *§23-71.01.00 Solid State CVR iaw ARINC 757 shall be installed* | |
| 121.373 (App B.6) | Flight Data Recorder | JAR §25.1459 – Honeywell SSFDR P/N 980-4700-042 installed in accordance with Mod. 26701 meets TSO C124 (Upgraded to 88-parameter per Mod.31335 – equivalent to compliance with FAR 121.344(f) effective August 19, 2002) – *A mandatory recording system consisting of FDIU, SSDFDR and LA (linear accelerator) shall be installed meeting ARINC 747* | |
| | NOTE: FAR 121 Appendix M accepted as an alternative spec. to NZCAR 121 Appendix B Table 2 (See DW1057045) | | |
| 121.375 | Additional Attitude Indicator | Air NZ aircraft have the single Thales Integrated Standby Instrument System (ISIS) fitted in accordance with Mod. 27620 | |
| 121.377 (App B.8) | Weather Radar | Collins P/N 622-5132-623 X-band Weather Radar with Doppler mode (turbulence detection) fitted per Mod.32740 meets TSO C63c – *§34-41.00.00 Single X-band weather radar system generally in accordance with ARINC 708 shall be fitted* | |
| 121.379 (App B.9) | Ground Proximity Warning System | Allied Signal P/N 965-1676-001 EGPWS fitted per Mod.31374 meets TSO C92c and C151a – Peaks, Geometric Altitude, and Obstacle functions are activated respectively by Mod.s 31367, 31426 and 31375 – *§34-48.00.00 Enhanced GPWS generally iaw ARINC 723 shall be installed* | |

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:

Photographs first-of-type example A320-232 MSN 2085 ZK-OJA
Three-view drawing Airbus Industries Model A320-200 Series
Three-view drawing Airbus Model A321-271NX
Copy of EASA Type Certificate Data Sheet Number A.064

### Sign off

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Greg Baum — Checked – David Gill

Airworthiness Engineer — Team Leader Airworthiness

# Appendix 1

## List of Type Accepted Variants:

| *Model:* | *Applicant:* | *CAA Work Request:* | *Date Granted:* |
|---|---|---|---|
| A320-232 | Airbus | 3/21B/18 | 1 September 2003 |
| *A318-111, -112 | Airbus | 10/21B/30 | 6 June 2013 |
| *A319-111, -112, -115, -131, -132, -133 | | 10/21B/30 | 6 June 2013 |
| *A320-214, -215, -216, -231, -233 | | 10/21B/30 | 6 June 2013 |
| *A321-111, -112, -131, -211, -212, -213, -231, -232 | | 10/21B/30 | 6 June 2013 |
| *A320-271N | Airbus | 14/21B/18 | 7 September 2018 |
| *A321-271N, -272N | Airbus | 14/21B/18 | 7 September 2018 |
| *A321-271NX, -272NX | Airbus | 18/21B/1 | 7 September 2018 |

* Note: Type Acceptance has been granted to all the Airbus Single-Aisle aircraft models and variants listed above, subject to the CAA being provided with access to the applicable operating documentation prior to entering service on the NZ register.