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# **Type Acceptance Report**

**TAR 99/5**

**Eurocopter EC 120B**



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## Introduction

This report details the basis on which Type Acceptance Certificate No.99/5 was granted in the standard category in accordance with NZCAR Part 21 Subpart B.

Specifically the report aims to:

- (a) Record the airworthiness certification standard used for type acceptance of the applicable model in New Zealand;
- (b) Summarise any outstanding requirements, which must be complied with for the issue of a NZ Airworthiness Certificate to any models covered by the Type Acceptance Certificate.

## Foreign Type Certificate Details

Type Certificate: Certificat de Navigabilite de Type Numéro 189

Issued by: Direction Generale de L'Aviation Civile – Republique Francaise

Manufacturer: Eurocopter

Model: EC 120 B

Engines: Turbomeca Arrius 2F (with TU1 change)

MCTOW 1680 kg. (3700 lb.)

Noise Category: N/A

The certification basis of the EC 120B is JAR 27 First Issue dated September 06, 1993. Special Conditions were imposed with respect to HIRF and equivalent safety findings were made relating to the main gearbox oil filter bypass and on the powerplant instrument markings. This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41, as JAR 27 is equivalent to FAR 27 which is the basic standard for normal category helicopters called up under Appendix C. (The EC120B is also FAA type certificated under FAR Part 27.) There are no non-compliances and no special conditions have been prescribed by the Director under §21.23.

## Type Acceptance Application

The application for New Zealand type acceptance was from the manufacturer dated 30 June 1998. The first-of-type example was serial number 1015 registered as ZK-HEC.

Type Acceptance Certificate No.99/5 was granted on 16 October 1998.

The EC120B has been type certificated by both the JAA and FAA. Eurocopter advise that “no special requirement nor specific special condition was added by the FAA...”.

## Type Data

The type data requirements of NZCAR Part 21B Para §21.43 have been satisfied by supply of the following documents:

(1) Type certificate:

DGAC Type Certificate No.189 for EC 120B dated 19 June 1997  
JAA Data Sheet No. JAA/27/97/002 – EC 120B at Issue No.2 April 1998  
JAA Data Sheet No. JAA/27/97/002 – EC 120B at Issue No.4 June 1999  
JAA Environmental Data Sheet No. E/27/97/002 – EC 120B at Issue 2 June 1999  
FAA TCDS No.R0001RD for EC120B issued January 28, 1998  
Certificat de Type Moteur Numéro M22 for Arrius 2F dated 22 January 1997  
Fiche de Caracteristiques Moteur N° M22 Edition N° 1 Janvier 97  
Engine Data Sheet N° M22 Issue N° 3 – May 1998 with Courtesy Translation  
FAA Type Certificate No.E34NE Arrius 1A, 2B and 2F amended Sept 26, 1997

(2) Airworthiness design requirements:      Already held by the CAA.

(3) Certification compliance listing (helicopter):

Doc: QDC000A0820E01 – EC 120 Certification Plan at Indice b dated 28/11/95  
Certification Review Item n°: A1 – JAA Certification Basis at Issue 10 11/06/97  
CRI n°: E-2 Main Gearbox Oil Filter Bypass (JAR 27.1027(b)(2) Equivalent Safety Finding) at Issue 14 dated 17/06/97 – Accepted on basis of very high trapping capacity of oversized filter, adequate replacement periods and tests showing it will operate with bypass closed.  
CRI n°: E-8 Powerplant Instrument Markings (JAR 27.1549(b)(c) Equivalent Safety Finding) at Issue 5 dated 24/01/97 – Electronic screens fitted without green arcs or lines approved on the basis of evaluation of the VEMD cautionary indications.  
CRI n°: E-9 Protection from the Effects of High Intensity Radiated Fields (HIRF) (INT/POL/25/2 Special Condition) at Issue 4 dated 24/01/97 – HIRF Protection required to be demonstrated at the level appropriate to essential digital electronic systems.

(4) Certification compliance listing (engine):

Arrius 2F Compliance Check List Doc. N° X 319 L6 003 2 – Issue 11 May 1997  
Arrius 2F CRI-A1 – Type Certification Basis at issue 3 dated 21/11/96 JAR-E  
CRI-A2 – Additional National Requirement – Environmental Requirement – at Issue 1 dated 21/11/96 – Ref: ICAO Annex 16, Volume II Issue 2 (Fuel venting only)  
CRI-T1 – Compressor and Turbine Rotor Integrity Tests – JAR-E 840 Equivalent Safety Finding – Issue 2 dated 20/11/96 – Compliance shown by similarity with Arrius 2B  
CRI-T2 – Oil System – JAR-E 570 Exemption – Arrius 2F has a ground pre-clogging indicator only – Accepted on the basis the JAR-E requirements appear to be more stringent than the equivalent aircraft requirements with no apparent justification from service experience.

(5) Flight manual:      DGAC Approved Flight Manual EC 120 B  
                                 CAA Accepted as AIR 2630

(6) Illustrated Parts Catalogue:

                                 Eurocopter EC120B Colibri Illustrated Parts Catalog

(7) Maintenance manual and service data for aircraft and engine:

Eurocopter EC120B Colibri Aircraft Maintenance Manual  
Turbomeca Arrius 2F Maintenance Manual Doc. X 319 L6 3002

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

CAA 2171 form from Eurocopter Head of Airworthiness Dept. dated 30.06.98  
CAA 2171 form from Turbomeca Head of Airworthiness Dept. dated 03.07.98

(9) Other information:

Doc: TNC00A0412E01 – EC120 General Description (Certification Application)  
Doc: DMDC000A0761 – EC120 Version B Initial Certified Configuration  
Doc: TNC520A0403 F01 – EC120 Descriptif Mecanismes de Porte  
Doc: TNC520A0402 E01 – EC 120 Cabin and Cargo Doors Technical Description  
  
Turbomeca Arrius 2F Installation Manual – Document X 319 L6 0012  
Turbomeca Arrius 2F Performance Booklet – Document X 319 L6 0029

## Additional New Zealand Certification requirements

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

### Civil Aviation Rules Part 26

#### Subpart B - Additional Airworthiness Requirements

##### Appendix B - All Aircraft

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
B.1	Marking of Doors and Emergency Exits	JAR §27.783(b) – See FM Section 2 Placards
B.2	Crew Protection Requirements - Agricultural Aircraft	CAM 8 Appendix B Section .35 – N/A

##### Appendix E - Helicopters

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
E.1	Doors/Exits – (1) Operable inside and out, (2) unobstructed; (3) prevent inadvertent operation, indicates if not closed	JAR §27.783 and JAR §27.807(b)(2) – Complies –see fax from Eurocopter Ref. E/TN935 98 dated 01 October 98
E.2	Emergency Exit Marking – Identity and Location; operation	JAR §27.807(b)(3)

### 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 §27.785(b)
91.507	Pax Information Signs - Smoking, safety belts fastened	N/A – Less than ten passenger capacity
91.509	(1) ASI	JAR §27.1303(a)
Min.	See FM Figure.7-1 Item 16	(7) Oil Pressure JAR §27.1305(h) *
VFR	(2) Machmeter	N/A
	(3) Altimeter	JAR §27.1303(b)
	(4) Magnetic Compass	See FM Figure.7-1 Item 21
	(5) Fuel Contents	JAR §27.1303(c)
	(6) Engine RPM	JAR §27.1305(d) *
	See FM Figure.7-1 Item 17	(8) Coolant Temp N/A – Turbine engine
		(9) Oil Temperature JAR §27.1305(j) *
		(10) Manifold Pressure N/A – Turbine engine
		(11) Cylinder Head Temp. N/A – Turbine engine
		(12) Flap Position N/A – Helicopter
		(13) U/c Position N/A – Fixed skids
		(14) Ammeter/Voltmeter JAR §27.1351(d) *
		* These parameters are presented on the electronic Vehicle and Engine Management Display (VEMD)
91511	(1) Turn and Slip	AI is Optional Equipment
Night	(2) Position Lights	See FM Section 7.9.2
	NOTE: The helicopter is approved for Night VFR when SB 34.001 has been embodied (See JAA Data Sheet Note [b])	(3) Anti-collision Lights See FM Section 7.9.2
91.517	(1) Gyroscopic AH	N/A – Not IFR Approved
		(4) Instrument Lighting See FM Section 7.9.1 General
		(5) OAT Fitted as standard on VEMD

IFR	(2) Gyroscopic DI	Optional -FM Fig..7-1 Item 20	(6) Time in hr/min/sec	See FM Figure.7-1 Item 18
	(3) Gyro Power Supply	N/A – Not IFR Approved	(7) ASI/Heated Pitot	N/A – Not IFR Approved
	(4) Sensitive Altimeter	Fitted as standard	(8) Rate of Climb/Descent	Optional - FM Fig..7-1 Item 22
91.517	(a) More Than 10 pax – First Aid Kits per Table 7			N/A – Less than ten passenger capacity
	- Fire Extinguishers per Table 8			<b><i>To be determined on an individual aircraft basis by the operator</i></b>
	(b) More than 20 pax - Axe readily acceptable to crew			N/A
	(c) More than 61 pax - Portable Megaphones per Table 9			<b><i>To be determined on an individual aircraft basis</i></b>
91.529	ELT - TSO C91a after 1/4/97 (or replacement)			NOTE – Joliet JE2 standard equipment <u>does not comply</u>
91.531	Oxygen Indicators - Volume/Pressure/Delivery			Not fitted
91.543	Altitude Alerting Device - Turbojet or Turbofan			N/A
91.545	Assigned Altitude Indicator			N/A – Not IFR approved
A.15	ELT Installation Requirements			<b><i>To be determined on an individual aircraft basis</i></b>
				NOTE – Eurocopter flexible mounting <u>does not comply</u>

## Civil Aviation Rules Part 135

### Subpart F - Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
135.355	Seating and Restraints	JAR §27.785(b)
135.357	Additional Instruments (Powerplant and Propeller)	JAR 27 is an acceptable standard per Part 21 Appendix C
135.359	Night Flight	See FM Section 7.9.1 and 7.9.2
135.361	IFR Operations	Speed, Alt, spare bulbs/fuses N/A – Not approved for IFR flight
135.363	Emergency Equipment	<b><i>To be determined on an individual aircraft basis</i></b>
135.365	Passenger Address System, Intercom	N/A - Less than 10 passenger seats
135.367	Cockpit Voice Recorder	N/A - Less than 10 passenger seats
135.369	Flight Data Recorder	N/A - Less than 10 passenger seats
135.371	Additional Attitude Indicator	N/A - Not turbo jet powered
135.373	Weather Radar	N/A – Not approved for IFR flight
135.375	Ground Proximity Warning System	N/A – Not approved for IFR flight

## Summary

Type Acceptance Certificate No.99/5 has been granted to the Eurocopter EC 120 B and all serial numbers are now eligible for the issue of a New Zealand Airworthiness Certificate in the Standard Category in accordance with CAR §21.177, subject to any outstanding operational requirements noted above being met.

## Attachments

The following documents form attachments to this report:

- Photographs first-of-type example serial number 1015 ZK-HEC
- Three-view drawing Eurocopter Model EC 120 B
- Copy of DGAC Type Certificate 189/JAA Data Sheet JAA/27/97/002

## Sign off

David Gill  
Airworthiness Engineer

Date: 29 June 1999