
Type Acceptance Report

TAR 16/21B/6

MD HELICOPTERS MD900

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Executive Summary

New Zealand Type Acceptance has been granted to the MD Helicopters Model MD900 based on validation of FAA Type Certificate number H19NM. There are no special requirements for import.

Applicability is currently limited to the Models and/or serial numbers detailed in Appendix 1, which are now eligible for the issue of an Airworthiness Certificate in the Standard Category in accordance with NZCAR §21.191, subject to any outstanding New Zealand operational requirements being met. (See Section 5 of this report for a review of compliance of the basic type design with the operating Rules.) Additional variants or serial numbers approved under the foreign type certificate can become type accepted after supply of the applicable documentation, in accordance with the provisions of NZCAR §21.43(c).

NOTE: Information in this report is correct as at the date of issue. The report is 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 applicable State-of-Design Type Certificate Data Sheet.

1. Introduction

This report details the basis on which Type Acceptance Certificate No. 16/21B/6 was granted in the Standard Category in accordance with NZCAR Part 21 Subpart B.

Specifically the report aims to:

- (a) Specify the foreign type certificate and associated airworthiness design standard used for type acceptance of the model(s) in New Zealand; and
- (b) Identify any special conditions for import applicable to any model(s) covered by the Type Acceptance Certificate; and
- (c) Identify any additional requirements which must be complied with prior to the issue of a NZ Airworthiness Certificate or for any subsequent operations.

2. ICAO Type Certificate Details

Manufacturer: MD Helicopters, Inc. (MDHI)
PC715NM – Issued Nov 5, 1999 – s/n 900-00068 and up

McDonnell Douglas Helicopter Company
PC410NM – up to s/n 900-00065
PC714NM – s/n 900-00066 and 900-00067

Type Certificate: H19NM
Issued by: Federal Aviation Administration

Model: MD900

MCTOW 6500 lb. [2948 kg]
6770 lb. [3070 kg] – With MDHI TB900-044R1

Max. No. of Seats: 8

Noise Standard: 14CFR Part 36

Engine: PW206A, PW206E, PW207E

Type Certificate: E-23

Issued by: Transport Canada

(Validated under Type Acceptance Certificate 11/21B/11)

3. Type Acceptance Details

The application for New Zealand type acceptance was from originally from Faram Aviation group Ltd, dated 27 August 2015, and later transferred to MD Helicopters on request from CAANZ for a validation visit. A certification team from the CAANZ carried out the validation visit to MD Helicopters, Phoenix, Arizona, USA between 28-30 September 2015. The first-of-type example was serial number 900-00054, registered ZK-IYN.

Type Acceptance Certificate No. 16/21B/6 was granted on 19 October 2015 to the MD Helicopters MD900 based on validation of FAA Type Certificate H19NM. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

The MD900 is a twin engine, 8 seat helicopter which was first certificated in 1994. The turbine engines are FADEC controlled and geared to drive a bearingless, composite, fully-articulated, main rotor system with NOTAR anti-torque system.

From serial number 900-00052 the MD900 has been produced as an enhanced version for Category A operations, referred to as MD900 (902 configuration) and marketed as the MD902 and MD Explorer. The differences include additional engine isolation features and changes to the Integrated Instrument Display System. Earlier aircraft can be updated by embodiment of Technical Bulletin TB900-28.

4. NZCAR §21.43 Data Requirements

The type data requirements of NZCAR Part 21B Para §21.43 have been satisfied by supply of the following documents, or were already held by the CAA:

(1) ICAO Type certificate:

FAA Type Certificate Number H19NM

FAA Type Certificate Data Sheet no. H19NM at Revision 9 dated Dec 10, 2013
– Model MD900 approved December 2, 1994

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the MD900 is 14CFR Part 27, including up to Amendment 27-26. For the MD902 configuration Category A approval the requirements in Docket No. 28008 NPRM 94-36 were used. These were subsequently incorporated as 14CFR Part 27 Appendix C under Amendment 27-33. This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41 and Advisory Circular 21-1A, as 14CFR 27 is the basic standard for Rotorcraft called up under Part 21 Appendix C. A number of Special Conditions, Equivalent Level of Safety Findings, and Exemptions were reviewed and accepted by the CAA. There are no non-compliances and no additional special conditions have been prescribed by the Director under §21.23.

(ii) *Special Conditions:*

29-ASW-2 Model MD900 Critical Functioning Electrical/Electronic Systems – This addresses protection for electrical/electronic systems from High Intensity Radiated Fields (HIRF).

(iii) *Equivalent Level of Safety Findings:*

TD9369LA-R/F-2 – 14CFR §27.143(c)(4) and §27.1587(a)(2)(ii) – Low speed controllability criteria for max weight determination - This ELOS addresses low speed controllability (crosswind operations) and was issued to allow a definition of MTOW at an altitude less than 7000ft. An equivalent level of safety is provided by take-off/landing weight limitations (typically defined as performance information under 27.1587) as well as cross wind azimuth limitations in the RFM. This ELOS does not apply to Category A operations since 14CFR 29 allows for definition of a reduced envelope.

TD4970LA-R/P-2 - 14CFR §29.1181(a) and §29.1191(a)(1) – Designated Fire Zone regions and firewalls (Category A) – The engine installation is such that the compressor and accessories are forward of the designated firewall and exposed to flammable fluid zones. An equivalent level of safety was provided by enclosing the engine fuel control unit within a vented, fireproof shroud.

(iv) *Exemptions:*

No. 6505 - This exemption allowed McDonnell Douglas Helicopter Systems to increase the maximum gross weight of the MD900 above 6,000 lb up to 7,000 lb. Title 14 CFR 27.1(a) was amended in 1999 to expand the maximum weight limit for normal category rotorcraft to 7,000 lb.

No. 7360 - This exemption allowed an alternative level flyover airspeed of 90 percent of the never-exceed airspeed (0.9VNE) for use in the 14 CFR part 36 noise certification of the MD900 at weights above 6,250 lb since at those weights MDHI defined the VNE as 100 KTAS, a speed less

than the true VH. This exemption expired on July 2, 2004 when Appendix H was amended to include this criteria.

(v) *Airworthiness Limitations:*

See the Airworthiness Limitations Section 04-00-00 of the Rotorcraft Maintenance Manual

(3) Aircraft Noise and Engine Emission Standards:

(i) *Environmental Standard:*

The Model MD900 has been certificated under 14CFR Part 36 for noise, including Amendments 36-1 through 36-24.

(ii) *Compliance Listing:*

Rotorcraft flight manual section V:

MD 900 (902 configuration) with 207E, Part 36-J for level flight at 0.9VH

6770 lb = 81.49 dBA, 6500 lb = 81.2 dBA

MD900 and MD900 (902 configuration) with 206E, Part 36-H for 6500 lb at VH

Level flyover EPNL = 93.7, Takeoff = 94.7, Approach 95.7

MD900 with 207E, Part 36-H for 6500 lb at 0.9VNE

Level flyover EPNL = 83.6, Takeoff = 85.8, Approach 89.7

MD900 with 206A, Part 36-H for 6500 lb

Level flyover EPNL = 84.2, Takeoff = 86.0, Approach 92.3

(4) Certification Compliance Listing:

Model MD900 Compliance Checklist dated December 14, 1994.

9000R000370 Rev B dated August 28, 2006 - MD900 6500 lb speed increase and operating envelope expansion certification plan.

9000R000200 Rev A dated July 10, 2000 – Category A envelope expansion certification plan for the MD-900 (902) with PW207E engine installation.

(5) Flight Manual:

FAA Approved Rotorcraft Flight Manual MD900 with PW206A

– Publication CSP-900RFM206A-1 – CAA Accepted as AIR 3328

FAA Approved Rotorcraft Flight Manual MD900 with PW206E

– Publication CSP-900RFM206E-1 – CAA Accepted as AIR 3329

FAA Approved Rotorcraft Flight Manual MD900 with PW207E

– Publication CSP-900RFM207E-1 – CAA Accepted as AIR 3330

FAA Approved Rotorcraft Flight Manual MD900 (902 config with PW206E)

– Publication CSP-902RFM206E-1 – CAA Accepted as AIR 3331

FAA Approved Rotorcraft Flight Manual MD900 (902 config with PW207E)

– Publication CSP-902RFM207E-1 – CAA Accepted as AIR 3332

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

(i) *Maintenance Manual:*

Rotorcraft Maintenance Manual – CSP-900RMM-2 Servicing and Maintenance.
Rotorcraft Maintenance Manual – CSP-900RMM-3 Instruments – Electrical – Avionics.

(ii) *Current service Information:*

Service bulletins, Technical Bulletins, and Service Letters are available on the MDHI website.

(iii) *Illustrated Parts Catalogue:*

Illustrated Parts List – Publication CSP-900IPL-4

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

MDHI provides on-line document access at their website www.mdhelicopters.com

(8) Other information:

MD 902 Explorer Technical Description

5. Additional New Zealand Requirements

Compliance with the retrospective airworthiness requirements of NZCAR Part 26 has been assessed as they are a prerequisite for the grant of an airworthiness certificate.

Civil Aviation Rules Part 26

Subpart B – Additional Airworthiness Requirements

Appendix B – All Aircraft

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
B.1	Marking of Doors and Emergency Exits	<i>To be determined on an individual aircraft basis</i>
B.2	Crew Protection Requirements – CAM 8 Appdx. B # .35	Not Applicable – Agricultural Aircraft only

Appendix E – Helicopters

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
E.1	Doors and Exits	14CFR §27.783 and 14CFR §27.807(b)
E.2.1	Emergency Exit Marking	<i>To be determined on an individual aircraft basis</i>

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

Civil Aviation Rules Part 91

Subpart F – Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
91.505	Seating and Restraints – Safety belt/Shoulder Harness	14CFR 27.785 - Crew seats have 5 point restraint harness, PAX seats have 3 point (4 point available by service letter).
91.507	Pax Information Signs – Smoking, safety belts fastened	N/A – Less than ten passenger seats
91.509 Min. VFR	(1) ASI (2) Machmeter (3) Altimeter (4) Magnetic Compass (5) Fuel Contents (6) Engine RPM (7) Oil Pressure	14CFR § 27.1303(a) N/A 14CFR § 27.1303(b) 14CFR § 27.1303(c) 14CFR § 27.1305(d) 14CFR § 27.1305(k) 14CFR § 27.1305(h)
91.511 Night	(1)Turn and Slip (2) Position Lights	Fitted as standard Fitted as standard (3) Anti-collision Lights (4) Instrument Lighting
91.513	VFR Communication Equipment	<i>To be determined on an individual aircraft basis</i>
91.517 IFR	(1) Gyroscopic AH (2) Gyroscopic DI (3) Gyro Power Supply (4) Sensitive Altimeter	IFR capability embodied with STC SR00436WI-D (5) OAT (6) Time in hr/min/sec (7) ASI/Heated Pitot (8) Rate of Climb/Descent
91.519	IFR Communication and Navigation Equipment	IFR capability embodied with STC SR00436WI-D. (Note: EuroNav III (GPS), AeroNav II, Dornier DKG4 moving maps are not approved for primary means navigation. Moving map should be placarded VFR only.)
91.523 Emrgcy Eqpmt.	(a) More Than 9 pax - First Aid Kits per Table 7 - Fire Extinguishers per Table 8 (b) More than 20 pax - Axe readily accessible to crew (c) More than 61 pax - Portable Megaphones per Table 9	N/A – Less than 10 PAX N/A N/A
91.529	ELT - TSO C126 406 MHz after 22/11/2007	<i>To be determined on an individual aircraft basis</i>
91.531	Oxygen Indicators - Volume/Pressure/Delivery	<i>To be determined on an individual aircraft basis</i>
91.533 Unpress. A/c	>30 min above FL100 - Supplemental for crew, 10% Pax - Therapeutic for 3% of Pax Above FL100 - Supplemental for all Crew, Pax - Therapeutic for 1% of Pax - 120l PBE for each crew member	<i>To be determined on an individual aircraft basis</i> Not fitted as standard. (Maximum operating altitude is 20,000ft density altitude)
91.541	SSR Transponder and Altitude Reporting Equipment	<i>To be determined on an individual aircraft basis</i>
91.543	Altitude Alerting Device - Turbojet or Turbofan	N/A - Not turbo jet or turbofan powered
91.545	Assigned Altitude Indicator	Fitted as standard
A.15	ELT Installation Requirements	<i>To be determined on an individual aircraft basis</i>

Civil Aviation Rules Part 135

Subpart F – Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
135.355	Seating and Restraints – Shoulder harness for flight-crew seats	14CFR §23.785 shoulder harness fitted as standard
135.357	Additional Instruments (Powerplant and Propeller)	(1) Meets 14CFR 27 at amendment 26 (2) N/A - Helicopter
135.359	Night Flight	Landing light & Pax compartment
135.361	IFR Operations	Speed, Alt, spare bulbs/fuses
135.363	Emergency Equipment (Part 91.523 (a) and (b))	<i>To be determined on an individual aircraft basis</i>
135.367	Cockpit Voice Recorder	N/A – Only for 2-crew helicopters with more than 10 pax
135.369	Flight Data Recorder	N/A – Less than 10 passenger seats
135.371	Additional Attitude Indicator	N/A – Not turbo jet or turbofan powered

NOTES: 1. A Design Rule reference in the Means of Compliance column indicates the Design Rule was exactly 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:

Three-view drawing MD Helicopters Model MD900 Explorer
 Copy of FAA Type Certificate Data Sheet Number H19NM

Sign off

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 Greg Baum
 Airworthiness Engineer

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 Checked – Alessio Caldara
 Airworthiness Engineer

Appendix 1

List of Type Accepted Variants:

<i>Model:</i>	<i>Applicant:</i>	<i>CAA Work Request:</i>	<i>Date Granted:</i>
MD900	MD Helicopters, Inc.	16/21B/6	19 October 2015