AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

TYPE CERTIFICATE DATA SHEET No. ER-2007T02

Type Certificate Holder:

MD HELICOPTERS, INC. (MDHI)
4555 E. McDowell Rd.
Mesa, AZ 85215-9734
USA

ER-2007T02
Sheet 01

MDHI

MD 900

August 2007

This data sheet, which is part of Type Certificate No. 2007T02, prescribes conditions and limitations under which the product, for which the Type Certificate was issued, meets the airworthiness requirements of the Brazilian Aeronautical Regulations.

I - Model MD 900 Explorer (Normal Category Helicopter), approved 06 August 2007.

ENGINE

Two (2) Pratt and Whitney PW206A, or
Two (2) Pratt and Whitney PW206E, or
Two (2) Pratt and Whitney PW207E.

FUEL SPECIFICATION

Type	Specification				
	USA	Canada	UK	French	China
Kerosene Type JET A, A-1, JP-8	ASTM D1655 MIL-T-83133	CAN/CGSB 3.23	DEF STAN 91-87	AIR 3405D	RP-3 (GB6537-94)
WIDE CUT * JET B, JP-4	ASTM D1655 MIL-T-5624	CAN/CGSB 3.22	DEF STAN 91-88	AIR 3407B	
High Flash JP-5	MIL-T-5624	CAN/CGSB 3.GP-24Ma	DEF STAN 91-86	AIR 3404C	

***** Secondary fuel for helicopters with PW206E or PW207E engines.
See Rotorcraft Flight Manual (RFM) for additional limitations.

ENGINE LIMITS

Pratt and Whitney PW206A

All Engines Operating:

Take Off (5 Min.)	Maximum Torque	N.m (ft. lb.)	593.8 (438)	(100%)
	Maximum MGT	(°C)	863	
	Maximum N_G	(rpm)	57 250	(98.7%)
	Power Turbine Ref.	(rpm)	6 000	(100%)
	(Output Shaft Speed)	(rpm)	6 240	(104%) *

ENGINE LIMITS (Cont.)

Maximum Continuous Power (MCP)

Maximum Torque	N.m (ft. lb.)	593.8 (438)	(100%)
Maximum MGT	(°C)	820	
Maximum N_G	(rpm)	57 250	(98.7%)
Power Turbine Ref.	(rpm)	6 000	(100%)
(Output Shaft Speed)	(rpm)	6 240	(104%)*

One Engine Inoperative (OEI):

2 1/2 Minute OEI Po

Maximum Torque	N.m (ft. lb.)	771.5 (569)	(130%)
Maximum MGT	(°C)	902	
Maximum N_G	(rpm)	58 600	(101%)
Power Turbine Ref.	(rpm)	6 000	(100%)
(Output Shaft Speed)	(rpm)	6 240	(104%)*

Continuous OEI Power

Maximum Torque	N.m (ft. lb.)	593.8 (438)	(100%)
Maximum MGT	(°C)	863	
Maximum N_G	(rpm)	57 250	(98.7%)
Power Turbine Ref.	(rpm)	6 000	(100%)
(Output Shaft Speed)	(rpm)	6 240	(104%)****

***** N_P operation at 6240 rpm (104%) is limited to airspeed of 100 KIAS or less.

Pratt and Whitney PW206E

All Engines Operating:

Take Off (5 Min.)

Maximum Torque	N.m (ft. lb.)	653.5 (482)	(110%)
Maximum MGT	(°C)	863	
Maximum N_G	(rpm)	57 250	(98.7%)
Power Turbine Ref. (Output Shaft Speed)	(rpm)	6 000	(100%)

Maximum Continuous Power (MCP)

Maximum Torque	N.m (ft. lb.)	593.8 (438)	(100%)
Maximum MGT	(°C)	820	
Maximum N_G	(rpm)	56 500	(97.4%)
Power Turbine Ref. (Output Shaft Speed)	(rpm)	6 000	(100%)

One Engine Inoperative (OEI):

2 1/2 Minute OEI Power

Maximum Torque	N.m (ft. lb.)	771.5 (569)	(130%)
Maximum MGT	(°C)	930	
Maximum N_G	(rpm)	59 400	(102.4%)
Power Turbine Ref. (Output Shaft Speed)	(rpm)	6 000	(100%)

Continuous OEI Power

Maximum Torque	N.m (ft. lb.)	737.6 (544)	(124%)
Maximum MGT	(°C)	885	
Maximum N_G	(rpm)	58 250	(100.4%)
Power Turbine Ref. (Output Shaft Speed)	(rpm)	6 000	(100%)

ENGINE LIMITS (Cont.)

Pratt and Whitney PW207E

All Engines Operating:

Take Off (5 Min.)

Maximum Torque	N.m (ft. lb.)	653.5 (482)	(110%)
Maximum MGT	(°C)	900	
Maximum NG	(rpm)	57 900	(99.8%)
Power Turbine Ref. (Output Shaft Speed)	(rpm)	6 000	(100%)

Maximum Continuous Power (MCP)

Maximum Torque	N.m (ft. lb.)	593.8 (438)	(100%)
Maximum MGT	(°C)	850	
Maximum NG	(rpm)	56 400	(97.2)%
Power Turbine Ref. (Output Shaft Speed)	(rpm)	6 000	(100%)

One Engine Inoperative (OEI):

2 ½ Minute OEI Power

Maximum Torque	N.m (ft. lb.)	801.3 (591)	(135%)
Maximum MGT	(°C)	970	
Maximum NG	(rpm)	59 750	(103.0)%
Power Turbine Ref. (Output Shaft Speed)	(rpm)	6 000	(100%)

Continuous OEI Power

Maximum Torque	N.m (ft. lb.)	737.6 (544)	(124%)
Maximum MGT	(°C)	900	
Maximum NG	(rpm)	57 900	(99.8)%
Power Turbine Ref. (Output Shaft Speed)	(rpm)	6 000	(100%)

ROTOR SPEED LIMITS

With PW 206A

Power-Off	Power-On (more than 100 KIAS)	Power-On (100 KIAS or less)*
Maximum 424 rpm (Tach reading 108%)	Maximum 396 rpm (Tach reading 101%)	Maximum 412 rpm (Tach reading 105%)
Minimum 345 rpm (Tach reading 88%)	Minimum 388 rpm (Tach reading 99%)	Minimum 388 rpm (Tach reading 99%)

* When the airspeed is 47 KIAS or less, the nominal N_R is 104%.

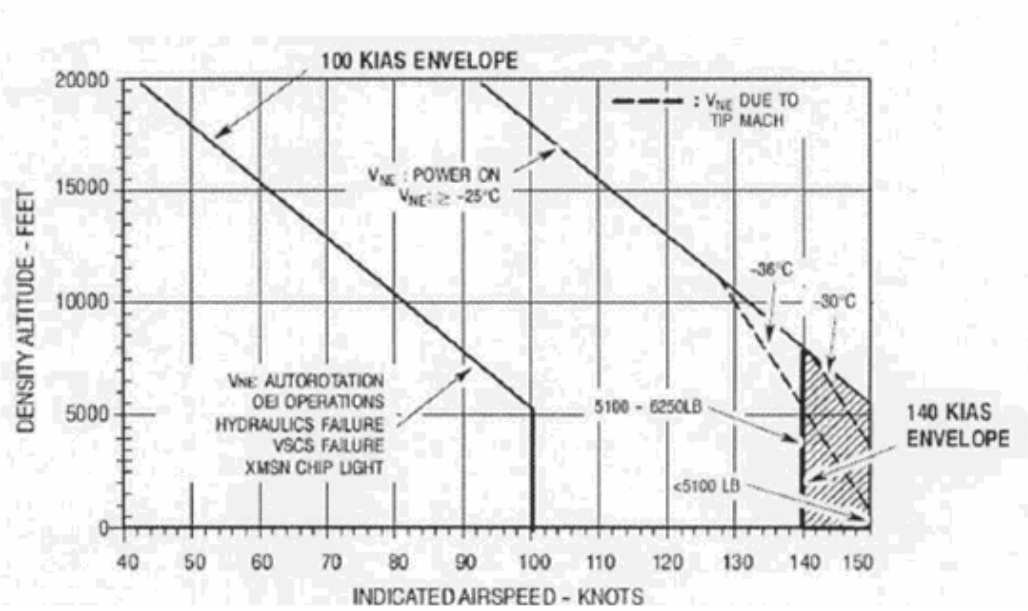
With PW 206E or 207E

Power Off	Power On
Maximum 424 rpm (Tach reading 108%)	Maximum 396 rpm (Tach reading 101%)
Minimum 345 rpm (Tach reading 88%)	Minimum 388 rpm (Tach reading 99%)

TORQUE TRANSMISSION LIMITS

Rating	Max Torque at 100% N_R					
	PW 206A		PW 206E		PW 207E	
	(ft-lb)	(%)	(ft-lb)	(%)	(ft-lb)	(%)
Takeoff (5 min)	876	100	964	110	964	110
Max. Continuous	876	100	876	100	876	100
OEI, 2.5 Minute	569	130	569	130	591	135
OEI Continuous	438	100	544	124	544	124

AIRSPEED LIMITS (IAS) Power On and Power Off V_{NE} for weights of 2 835 kg (6 250 lb) or less:



Power On and Power Off V_{NE} for weights above 2 835 kg (6 250 lb):
100 KIAS
Power On and Power Off V_{NE} for all weights when lateral C. G. exceeds +2 in:
60 KIAS
Power On V_{NE} with cargo hook installed:
90 KIAS with no load on cargo hook
100 KIAS with no load on cargo hook. See RFM for V_{NE} above 5 500 ft H_D.

CG RANGE

Lateral CG Range

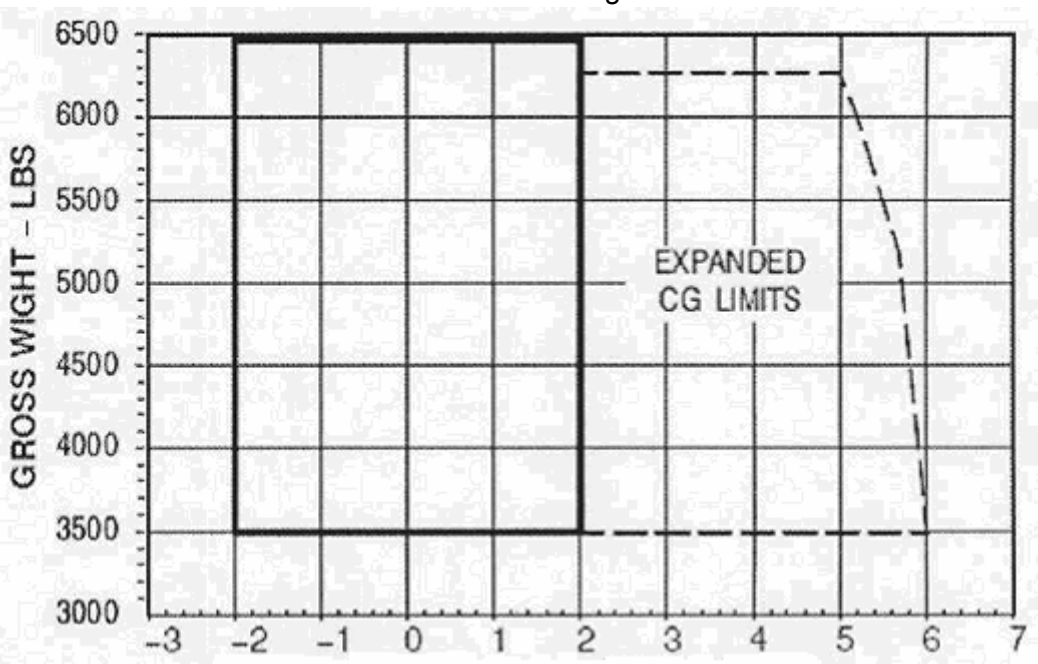


Chart A – Lateral CG Station (in)

CG RANGE (Cont.)

Longitudinal CG Range

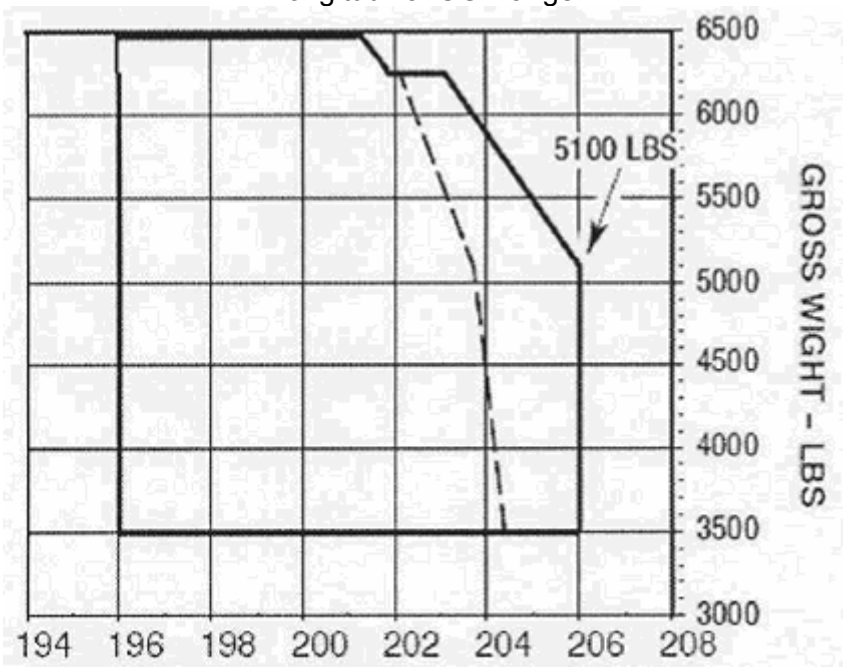


Chart B – Longitudinal CG Station (in)

When the lateral CG is in the Expanded CG Limits area, depicted by the dashed lines on Chart A, above, the longitudinal CG must not be aft of the dashed line in the longitudinal CG chart, Chart B, above.

EMPTY WEIGHT CG RANGE None.

MAXIMUM WEIGHTS

Weights of 2 835 kg (6 250 lb), or
2 948 kg (6 500 lb) if helicopter is modified in accordance with MDHI Mod drawing No. 90005006500 at the latest approved revision or No. 90005006501 at the latest approved revision, identified by serial number in FAA approved RFM Supplement No. CSP-900RFM206A-SI, CSP-900 RFM207E-S2, or
CSP-902RFM207E-SI, and operated in accordance with that RFM Supplement, or 2 948 kg (6 500 lb) if helicopter is modified in accordance with MDHI Service Bulletin SB900-102R1.

MINIMUM CREW 1 pilot, seated in the right crew seat.

PASSENGERS

7 seats, located as follows:

Location	No. of Seats	Arm cm (in)
Crew compartment	1	332.0 (130.7)
Cabin, Forward	3	439.4 (173.0)
Cabin, Aft	3	541.0 (213.0)

See RFM for other approved cabin configurations.

MAXIMUM BAGGAGE

Baggage compartment
226.8 kg (500 lb), not to exceed floor loading density of 0.0561 kg /cm^2 (115 lb per square foot).
Cargo deck
680.4 kg (1 500 lb) not to exceed floor loading density of 0.0561kg/cm^2 (115 lb per square feet).

MAXIMUM OPERATING ALTITUDE

Weights of 2 835 kg (6 250 lb) or less
Helicopters with PW206A engines: 20000 feet density altitude
Helicopters with PW206E or PW207E engines and using –
Primary fuels: 20 000 feet density altitude, or
Secondary fuels: 10 000 feet density altitude

Weights greater than 2 835 kg (6 250 lb)
5 000 feet density altitude

FUEL CAPACITY

With PW206A engines

Standard

	Liters	U.S. Gal
Unusable	10.60	2.80
Usable	553.40	146.20
Capacity	564.00	149.00
Arm cm (in)	484 (190.8)	

With PW206A engines

Range Extender

	Liters	U.S. Gal
Unusable	10.60	2.80
Usable	600.0	158.5
Capacity	610.6	161.3
Arm cm (in)	485 (190.9)	

With PW206E or PW207E engines

Standard

	Liters	U.S. Gal
Unusable	10.60	2.80
Usable	600.0	158.5
Capacity	610.6	161.3
Arm cm(in)	485 (190.9)	485 (190.9)

OIL CAPACITY

Fluid Type	Component or System	Capacity	
		Liters	U.S. Gal
Oil	Engine (each)	3.93	1.04
	Main Transmission	9.46	2.50
Hydraulic Fluid	System 1, Total	0.95	0.25
	System 2, Total	1.14	0.30
	Rotor Brake, Total	0.11	0.03

CONTROL SYSTEM RIGGING

For rigging information, refer to Model MD900 Maintenance Manual.

SERIAL NUMBERS ELIGIBLE

S/N 900-00008, 900-00010, and subsequent.
S/N 900-00052 and subsequent are produced as enhanced versions. See Note 8.
A FAA Certificate of Airworthiness for Export, endorsed as noted under Import Requirements, must be submitted for each individual rotorcraft for which application for a Brazilian Airworthiness Certificate is made.

DATUM

503.1 cm (199.3 in) forward of the main rotor hub centerline.

LEVELING MEANS

Plumb line from aft inside top of left cabin doorframe, F.S. 215.43.

IMPORT REQUIREMENTS

A Brazilian Airworthiness Certificate must be issued in the basis of the Airworthiness Certificate for Exportation issued by the FAA, including the following statement:

"The rotorcraft covered by this Certificate has been inspected, tested and found to comply with the Brazilian approved type design as defined by the ANAC Type Certificate No 2007T02, and is in condition for safe operation."

CERTIFICATION BASIS

Brazilian Type Certificate No. 2007T02 issued on 06 August 2007 based on the RBHA 27, which endorses the FAR 27, including Amendments 1 through 26 (Multiengine Rotorcraft Transport Category).

RBHA 36 which endorses the FAR 36 as amended by Amendment 36-1 through Amendment 36-20, Appendix J for initial certification at a maximum weight of 6 000 lb with P&W 206A engines.

RBHA/FAR 36 as amended by Amendment 36-1 through Amendment 36-21, Appendix H (See Exemption No. 6505.) for certification at:
A maximum weight of 2 948 kg (6 500 lb) with P&W 206A engines, and
Maximum weights of 2 835 kg (6 250 lb) and 2 948 kg (6 500 lb) with P&W 207E engines.
It has been determined that the noise characteristics of the MD900 at a maximum weight of 2 835 kg (6 250 lb) with P&W 206E engines were equivalent to the characteristics approved in the initial certification.
It has been determined that the noise characteristics of the MD900 at a maximum weight of 2 948 kg (6 500 lb) with P&W 206E engines were equivalent to the characteristics approved for the MD900 at a maximum weight of 2 948 kg (6 500 lb) with P&W 206A engines.
It has been determined that the noise characteristics of the MD900 incorporating the thruster extension kit with P&W 206A, 206E, or 207E engines were equivalent to the previously approved noise characteristics.
MDHI requested certification of the MD900 (902 configuration) to the proposed Category A requirements for part 27 rotorcraft in Docket No. 28008; Notice No. 94-36, "Rotorcraft Regulatory Changes Based on European Joint Airworthiness Requirements Proposals," The authority concurred with MDHI's request and subsequently certificated the MD900 for Category A operations. The Category A requirements in NPRM 94-36, with minor changes, were incorporated into part 27 as Appendix C – Criteria for Category A by Amendment 27-33.

Special Condition

Docket No. 91-ASW-2; Special Condition 29-ASW-2, "McDonnell Douglas Model MD-900 Helicopter, Critical Functioning Electrical/Electronic Systems", issued 26 December 1991. This special condition addresses protection for electrical/electronic systems from High Intensity Radiated Fields (HIRF). See http://rgl.faa.gov for the full text of this special condition.

Equivalent Level of Safety (ELOS) Findings

ELOS No. TD9369LA-R/F-2, "MD Helicopters, Incorporated (MDHI), Equivalent Level of Safety (ELOS) Finding to RBHA/FAR 27.143(c)(4) and 27.1587(a)(2)(ii)." This ELOS addresses low speed controllability and the associated presentation of information in the RFM.
Equivalent Level of Safety (ELOS) finding for compliance to 29.1181(a) and 29.1191(a)(1) for the engine forward firewall.

CERTIFICATION BASIS (Cont.)

Exemptions

Exemption No. 6505, "In the matter of the petition of McDonnell Douglas Helicopter Systems for an exemption from Section 27.1(a) of Title 14, Code of Federal Regulations," issued on 05 September 1996. This exemption allowed McDonnell Douglas Helicopter Systems to increase the maximum gross weight of the MD900 from 2 721.55 kg (6 000 lb) to 3 175.14 kg (7 000 lb). RBHA/FAR 27.1(a) was amended in 1999 to expand the maximum weight limit for normal category rotorcraft to 3 175.14 kg (7 000 lb).

Exemption No. 7360, "In the matter of the petition of MD Helicopters Inc. for an exemption from Section C36.105(c)(1) of Title 14, Code of Federal Regulations" issued on 27 September 2000. (The section cited in the exemption title is incorrect. The correct section, H36.105(c)(1), is discussed in the body of the exemption.) This exemption allowed an alternative level flyover airspeed of 90 percent of the never-exceed airspeed (0.9VNE) for use in the RBHA/FAR 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 02 July 2004 when Appendix H was amended to include this criteria.

PRODUCTION CERTIFICATE

Production Certificate No. PC 410NM was issued to McDonnell Douglas Helicopter Company (MDHC), the original holder of TC H19NM. MDHC built helicopter serial numbers 900-00065 and prior under this PC.
Production Certificate No. PC 714NM was issued to McDonnell Douglas Helicopter Company (MDHC) on 19 February 1999. MDHC, under license from MDHI, built helicopter serial numbers 900-00066 and 900-00067 under this PC.
Production Certificate No. PC 715NM. This PC was issued to MDHI on 05 November 1999. Helicopters manufactured under this PC include serial numbers 900-00068 and subsequent.

EQUIPMENT

The basic required equipment as prescribed in the applicable airworthiness regulations must be installed in the helicopters for certification, and, in addition, those equipments established in the Report No H.10-1580-01; and The FAA approved Brazilian Rotorcraft Flight Manual issued for the applicable helicopters serial numbers.

NOTES:

NOTE 1

A current Weight and Balance Report (MDHI's Basic Weight and Balance Record) listing the helicopter certificated empty (basic) weight and loading instructions including a List of Equipment (MDHI's MD900 Required/Optional Equipment List is provided as a separate document) must be provided for each helicopter at the time the helicopter's original airworthiness certification is issued. This Basic Weight and Balance Record shall be kept current as the configuration, affecting the helicopter's weight and balance, is changed. The MDHI Basic Weights Checklist for Model MD900 contains needed reference data for the Weight and Balance Record. A copy of the current MDHI Basic Weight and Balance Record shall be kept in the helicopter. The certificated basic weight and corresponding center of gravity locations includes all transmission, hydraulic and engine oil/fluids as well as trapped/unusable fuel.

NOTE 2 Marking and placards: All markings and placards for passenger information, external markings for emergency, and load limits in cargo/baggage compartments must be presented in Portuguese or bilingual. A list of these placards and the respective translations acceptable to ANAC is provided in the H.10-1580-01 report referred in the Equipment item.

NOTE 3 Continuing airworthiness. The retirement times of certain parts and inspection requirements are listed in Airworthiness Limitations Section (ALS), Section 04-00-00, of the Model MD900 Maintenance Manual (CSP-900RMM-2). These values of retirement of service lives and inspection cannot be increased without FAA approval and ANAC validation.

NOTE 4 The differences of the Brazilian airplanes in relation to the basic FAA type design are summarized below:

1. The Markings and placards in bilingual format i.e. Portuguese and English.

NOTE 5 Electronic engine control (EEC) and software installed must be FAA approved. EEC Part Numbers and software versions approved are:

EEC P/N:	Software Version	EEC P/N:	Software Version
PW206A		PW206E	
3116655-04	M0900.FLP	3043845-01	8021310.FLP
3116655-06	M1000.FLP	3043845-02	8021314.FLP
3116655-08	M1300.FLP		
3116655-12	M1700.FLP		
PW207E			
3053929-01	11020306.FLP		
3055498-01	11020501.FLP		

NOTE 6 Modification of existing seats or installation of new seats into this aircraft requires re-certification in accordance with Emergency Landing Dynamic Conditions of RBHA/FAR 27.562, Amendment 27-25.

NOTE 7 The MD900 rotorcraft employs electronic engine controls, commonly referred to as Full Authority Digital Engine Controls (FADEC). Engines with FADEC are recognized to be more susceptible to Electromagnetic Interference (EMI) than engines with manual (non-electronic) controls. For this reason, modifications that add or change electrical systems that have the potential for EMI must be qualified to an FAA acceptable standard. For guidance refer to section MG-4 of Advisory Circular AC 27-1B Change 2, or later revision. See MDHI Service Bulletin SB900-067R1 "Electromagnetic Compatibility Test" or latest approved revision.

NOTE 8 On 11 February 1998, the FAA approved an enhanced version of the MD900 for Category A operations. The enhanced version, designated MD902 by MDHI, is referred to by the FAA as the MD900 (902 Configuration). The MD900 (902 Configuration) incorporated a number of changes, including additional engine isolation features, changes to the Integrated Instrument Display System (IIDS), and a separate RFM. These changes allowed the MD900 (902 Configuration) to comply fully with Category A certification requirements.

for **CLÁUDIO PASSOS SIMÃO**
Gerente Geral, Certificação de Produtos Aeronáuticos
(Manager, Aeronautical Products Certification)