Type Acceptance Report

TAR 7/21B/30

Agusta AB139/AW139

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Executive Summary

New Zealand Type Acceptance has been granted to the AgustaWestland AB139/AW139 Series based on validation of EASA Type Certificate number R.006. 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(b).

1. Introduction

This report details the basis on which Type Acceptance Certificate No.7/21B/30 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. Foreign Type Certificate Details

Manufacturer:	Agusta S.p.A.	
	Type Certificate:	R.006
	Issued by:	European Aviation Safety Agency
Model(s):	AB139, AW139	
MCTOW	6400 kg [14,110 lb]	
Max. No. of Seats:	17	
Noise Standard:	ICAO Annex 16, 1993, Vol.1 3rd Edition, Chapter 8	
Engine:	Pratt & Whitney Canada PT6C-67C	
	Type Certificate:	E-32
	Issued by:	Transport Canada

3. Type Acceptance Certificate

The application for New Zealand type acceptance of the Model AW139 was from the manufacturer, dated 19 February 2007. The first-of-type example will be serial number 31103, to be registered ZK-HNZ. Two examples have been ordered by Helicopters (NZ) Ltd for off-shore support work. The AW139 is a large twin-turboshaft Transport Category helicopter of conventional configuration with 5-bladed main rotor, 4-bladed tail rotor and retractable undercarriage, with provision for up to 15 passengers in a high-density layout. As part of the validation process a CAA certification specialist visited Agusta in Cascina Costa. Training was provided for Flight Operations and Maintenance Inspectors.

Type Acceptance Certificate Number 7/21B/30 was granted on 28 May 2007 to the Agusta AB139/AW139 based on validation of EASA Type Certificate R.006, and includes the PT6C-67C Series engine based on validation of Transport Canada Type Certificate E-32. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

The AW139 is an all-new-design helicopter in the 6-tonne class. It was originally designed and developed jointly by Agusta and Bell Helicopters and marketed as the Agusta-Bell AB139, although Bell subsequently withdrew from the project. Up to serial number 31054 were known as the AB139, and subsequent aircraft are known as the AW139 although they are identical helicopters. The first two production aircraft had a triple screen display cockpit, but all following aircraft have had a 4-display cockpit configuration as standard.

4. 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:

EASA Type Certificate Number R.006

EASA TCDS.R.006 at Issue 7 dated August 22, 2006
– Model AB139/AW139 approved 18 June 2003

Transport Canada Type Certificate Number E-32 Issue 3

Transport Canada TCDS Number E-32 at Issue 5 dated May 27, 2005
– Model PT6C-67C approved June 3, 2003

(2) Airworthiness design requirements:

(i) Airworthiness Design Standards:

The certification basis of the AW139 is JAR 29 at Amendment 3 dated April 1st 2002. This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41 and Advisory Circular 21-1A, because JAR 29 is equivalent to FAR 29, which is the basic standard for Transport Category Rotorcraft called up under Part 21 Appendix C. One Special Condition was applied for HIRF, and three equivalent safety findings were made. These 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.

The certification basis of the PT6C-67C is the Canadian Airworthiness Manual (AWM) Chapter 533 Change 533-5, as amended by NPA-2000-265, which is equivalent to FAR Part 33 up to and including Amendment 33-20. This is the basic standard for aircraft engines called up under Part 21 Appendix C.

(ii) Special Conditions:

CRI F-01 – Special Requirements for HIRF – In accordance with JAA Interim Policy and Guidance Material document n. INT/POL/27&29/1 "Protection from the Effects of HIRF".

(iii) Equivalent Level of Safety Findings:

CRI E-03 – JAR 29.1181(a)(6) Designated Fire Zone – The intermediate compartment of the PT6C-67C, which contains the inlet section and is isolated by two firewalls, is not designated a fire zone. However it includes the compressor section which is required to be designated a fire zone. (The compressor is separated from the inlet by three fireproof barriers in addition to the engine casing.) This was accepted after Agusta also showed there is no possibility of both a flammable fluid leak and an ignition source to cause a fire, which was backed up by the service history of the engine.

CRI F-10 – JAR 29.1309 and 1357(e) Honeywell EPIC System – The Integrated Modular Avionics system has an architecture whereby single units support multiple essential loads without individual circuit protection. In addition a single failure can affect several essential functions. ENAC proposed a set of mitigating criteria which Agusta complied with, including steps to minimise the possibility of failure of a Modular Avionics Unit (MAU) and showing that the loss of one of the two MAUs was minor, along with appropriate MMEL considerations.

CRI F-11 – JAR 29.1305 Power Index Instrument – The AW139 has a continuous display of Power Index (PI), which is a synthesised display of N_G, ITT and TQ. (The individual parameters are still available on the engine page.) Agusta had to show that the PI display was equivalent to continuous display of the required power parameters, and that all potential engine failures and malfunctions could be detected through the PI indication.

(iv) Airworthiness Limitations:
Agusta Report 139G0430A001 – AW139 Airworthiness Limitations
(See also Chapter 4 of the Maintenance Manual)

(3) Environmental Certification:

Report No.139G1820T001/1 – AB139 – Noise Certification: Plan of Compliance

Agusta Report No.139G1820T001/2 – AB139 – Noise Certification: Demonstration of Compliance – Revision B dated 14/9/05

(4) Certification Compliance Listing:

Agusta Report No.139G0000N001 – AW139 – Compliance Check List – Rev.D

Agusta Report No.139G9500U001 – AB139 – Cabin Safety Evaluation – Rev.B

PWC Engineering Report No. 4810 – PT6C-67C Canadian Type Approval – Compliance Plan Revision 3

(5) Flight Manual:

EASA-Approved Rotorcraft Flight Manual AW139-RFM-4D for the AgustaWestland Model AW139 (4 Display) – Document Number 139G0290X002 – Publication Code 502500032 – CAA Accepted as AIR 3004

(6) Operating Data for Aircraft and Engine:

(i) Maintenance Manual:
*39-A-AFIP-00-X AW139 Fault Isolation Publication
*39-A-AMDI-00-X AW139 Material Data Information
*39-A-AMP-00-X AW139 Maintenance Publication
*39-A-ASRP -00-X AW139 Structural Repair Publication
*39-A-AWDP-00-X AW139 Wiring Data Publication
*39-A-CR&OP-00-X AW139 Component Repair & Overhaul Publication

PT6C-37C IETM – Maintenance Manual P/N 3045332
PT6C-37C Overhaul Manual P/N 3045333

(ii) Current service Information:
*AW139-BT Bulletini Technici
*AW139-IL Information Letter Set

PWC Service Bulletins, Spares Parts Bulletins and Service Information Letters are available on the Pratt and Whitney Canada website.

(iii) Illustrated Parts Catalogue:

*39-A-IPD-00-X AW139 Illustrated Parts Data Publication
*39-A-ITEP-00-X AW139 Illustrated Tool and Equipment Publication

*Contained on AW139-IETP CD-ROM

PT6C-37C IETM – IPC PN 3045334

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

Agusta Letter reference CSE-07-023 dated February 19, 2007

See email from Pratt & Whitney Canada DAA#55 dated 23 May 2007

(8) Other information:

AgustaWestland Report No. 139G0000P005/1 – AW139 – Type Design Definition (3 Displays Configuration) – Revision D dated 12/09/06

AgustaWestland Report No. 139G0000P005/2 – AW139 – Type Design Definition (4 Displays Configuration) – Revision E dated 12/09/06

Agusta Report No. 139G3130E003 – AW139 CVFDR Database for Primus Epic

Agusta Report No. 139G2400L001 – AB139 EPGDS Electrical Load Analysis

AW139-MMEL-EASA Master Minimum Equipment List (EASA)
AW139-MMEL-FAA Master Minimum Equipment List (FAA)

5. Additional New Zealand 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	***To be determined on an individual aircraft basis***
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	JAR §29.783(c) and (e)
E.2.1	Emergency Exit Marking	JAR §29.811(b) and (f)

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		JAR §29.785(c)	
91.507	Pax Information Signs - Smoking, safety belts fastened		Fitted as Standard (Complies with JAR-OPS 3.731)	
91.509 Min. VFR	(1) ASI (2) Machmeter (3) Altimeter (4) Magnetic Compass (5) Fuel Contents (6) Engine RPM (7) Oil Pressure	JAR §29.1303(a) N/A – No mach no. limitations JAR §29.1303(b) JAR §29.1303(c) JAR §29.1305(a)(3) JAR §29.1305(a)(13) JAR §29.1305(a)(6)	(8) Coolant Temp (9) Oil Temperature (10) Manifold Pressure (11) Cylinder Head Temp. (12) Flap Position (13) U/C Position (14) Ammeter/Voltmeter	N/A – Turbine engine JAR §29.1305(a)(9) N/A – Turbine engine N/A – Turbine engine N/A – Helicopter JAR §29.729(e) JAR §29.1351(b)(6)
91.511 Night	(1)Turn and Slip (2) Position Lights	Standard fit (JAR-OPS 3.652f) JAR §29.1385	(3) Anti-collision Lights (4) Instrument Lighting	JAR §29.1401 JAR §29.1381
91.513	VFR Communication Equipment		The Honeywell Epic Primus fitted as standard is a fully integrated avionic system which includes dual VHF Comm and VOR/ILS Nav; Single DME, ADF and Mode S Tx, with optional dual installations, plus optional HF radio. The AW139 complies with RNP-1 and RNP-5 RNAV	
91.517	IFR Instruments and Equipment			
91.519	IFR Communication and Navigation Equipment			
91.523	Emergency Equipment (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		 Fitted as Standard (Complies with JAR-OPS 3.745(a)) Two fire extinguishers fitted as standard (JAR-OPS 3.790) Not Applicable – Less than 20 passengers Not Applicable – Less than 61 passengers	
91.529	ELT - TSO C91a or C126 after 1/4/97 (or replacement)		Kit ELT P/N 3G2560F00111 fits a 121/243/406 MHz ELT	
91.531	Oxygen Indicators - Volume/Pressure/Delivery		***Operational Requirement – Compliance as applicable***	
91.533	Oxygen for Non-Pressurized Aircraft >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		Not fitted as standard (Maximum operating altitude in the Flight Manual Limitations Section is 20,000 ft)	
91.541	SSR Transponder and Altitude Reporting Equipment		Mode S transponder is standard fit with Primus EPIC	
91.543	Altitude Alerting Device - Turbojet or Turbofan		Not Applicable – Not turbo jet or turbofan powered	
91.545	Assigned Altitude Indicator		***Operational Requirement – Compliance as applicable***	
A.15	ELT Installation Requirements		Standard tailboom installation meets stiffness requirements	

Civil Aviation Rules Part 135

Subpart F - Instrument and Equipment Requirements

PARA:	REQUIREMENT:		MEANS OF COMPLIANCE:
135.355	Seating and Restraints – Shoulder harness flight-crew seats		JAR §29.785
135.357	Additional Instruments (Powerplant and Propeller)		JAR §29.1305
135.359	Night Flight	Landing light, Pax compartment	***Operational Requirement – Compliance as applicable***
135.361	IFR Operations	Speed, Alt, spare bulbs/fuses	***Operational Requirement – Compliance as applicable***
135.363	Emergency Equipment (Part 91.523 (a) and (b))		***Operational Requirement – Compliance as applicable***
135.367	Cockpit Voice Recorder Appendix B.5 requires TSO C84/C123		Standard fit is a multi-purpose cockpit voice and flight data recorder unit, Type 51615-102, which meets EUROCAE ED-55, ED-56A Amendment 1, and is compatible with ARINC/573/717 – Complies with JAR-OPS 3.715/720 Agusta also confirmed compliance with FAR §135.151 and §135.152/Appendix C, which are the same as the NZCAR
135.369	Flight Data Recorder Appendix B.6 requires TSO C124		
135.371	Additional Attitude Indicator		Not Applicable – Not turbo jet or turbofan powered NOTE: Single standby attitude indicator fitted as standard

Attachments

The following documents form attachments to this report:

Photographs first-of-type example AW139 s/n 31103 ZK-HNZ
Three-view drawing AgustaWestland Model AW139
Copy of EASA Type Certificate Data Sheet Number R.006

Sign off

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David Gill — Checked – AWE3 Peter Gill

Team Leader Airworthiness — Date: 28 May 2007

Appendix 1

List of Type Accepted Variants:

Model:	*Applicant:*	*CAA Work Request:*	*Date Granted:*
AB139/AW139 (4-display)	Agusta S.p.A.	7/21B/30	28 May 2007