
Type Acceptance Report

TAR 99/35

Kawasaki-Hughes 369D

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Introduction

This report details the basis on which Type Acceptance Certificate No.99/35 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(s) 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: Number 29-5

Issued by: Japan Ministry of Transportation

Manufacturer: Kawasaki Heavy Industries Limited

Model: Kawasaki-Hughes 369D

Engines: Allison 250-C20B

MCTOW 3000 lb

The certification basis of the Kawasaki-Hughes 369D stated on the type certificate and associated specification is Japanese Civil Aeronautics Law (Showa 27 year Law No.231) Article 10-4 and Execution Attachment “technical standard to assure safety of aircraft and equipment (No.45 Ordinance of Ministry of Transport dated Dec.28, 1970, including amendments up to No.2 dated December 26, 1994)”. The JCAB advised that in addition the helicopter complied with Kawasaki-Hughes 369D Technical Standards dated November 14, 1977. The JCAB in their letter ref. KU-KI-643 dated May 21, 1999, stated the Kawasaki-Hughes 369D technical standards “provides airworthiness requirements which are equivalent to FAA certification basis (CAR and Special Conditions) applied to Hughes 369D.”

This is an acceptable certification basis in accordance with NZCAR Part 21B §21.41, as CAR6 is the predecessor to FAR 27, which is the basic standard for normal category rotorcraft called up under Appendix C. (The Hughes 369D was type accepted in New Zealand under the identical certification basis.) There are no non-compliances and no special conditions have been prescribed by the Director under §21.23.

Type Acceptance Application

The application for NZ type acceptance was from Wing & Rotor Aviation Ltd dated 30th April 1999. They have imported two examples from Japan, JA9189 s/n 6701 and JA9226 s/n 6702, registered in New Zealand as ZK-HWE and ZK-HWC respectively.

Type Acceptance Certificate No.99/35 was granted on 25th June 1999.

The CAA previously type accepted the Kawasaki-Hughes 369HS in 1992. Fundamental to that application was that the helicopter be allowed to fly using Hughes operating and

maintenance documentation, as the only manual Kawasaki produces in English is the IPC. The Kawasaki-Hughes 369D is in exactly the same position. It is again a license-manufactured version of the Hughes 369D helicopter, with only the rotor blades, hub and some tail rotor components actually being manufactured by Kawasaki. A number of instruments and accessories are also produced by other Japanese companies. Only nine civil examples of the KHI 369D were produced, serial numbers 6701 thru 6709.

During type acceptance of the Kawasaki-Hughes 369HS Kawasaki supplied a list of part numbers of finite-lived items and their Hughes and Kawasaki-specified lives. There were no differences between them. However, following enquiries by CASA, it has now been discovered that Kawasaki does specify different (lower) retirement lives for some items. (It is believed this is because Kawasaki has not gone through the escalation programme undertaken by Hughes.) This invalidates full use of the Hughes maintenance manual. Consequently the CAA issued Airworthiness Directives DCA/HU369/77 and 78 requiring compliance with the KHI Mandatory Component Retirement Schedule for all Kawasaki manufactured parts, or Kawasaki sourced parts that could not be shown to have been manufactured by Hughes Helicopters or their successors.

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:

Ministry of Transportation Type Certificate No. 29-5 issued October 31, 1997 *
Specification – Kawasaki-Hughes 369D Airworthy Category : Rotary-Wing N *
New Issue dated April 20, 1978 at revision TC No. 29-5 dated Aug 12, 1997
Specification – Kawasaki-Hughes 369D Airworthy Category : Special Aircraft X *
New Issue dated April 20, 1979 at revision 3 dated Apr 18, 1986

* In Japanese, but English translations provided by Japan Fleet Service

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

(3) Certification compliance listing: Not provided. The KHI 369D is an identical license-manufactured version of the Hughes 369D to the same certification basis. The compliance checklist and data would be the same.

(4) Flight manual: Kawasaki-Hughes 369D Flight Manual for JA9189 s/n 6701
Original issue 20 Apr 1978, at Revision 11 dated Sep 30, 1997.

JFS have provided translations of the revision summary pages and Section 2 - Limitations. JFS have also provided a summary of the differences between the KHI and Hughes 369D Flight Manuals. See CAA internal memo A540-K01 dated 7 May 1999 for discussion and justification for specifying using the MD 500D Flight Manual CSP-D-1, as AIR 2663. .

(5) Illustrated Parts Catalogue:

Kawasaki Heavy Industries Model 369D IPC issued 20-4-1978, revised 1-4-1997

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

The Maintenance Manual, which is clearly based on the Hughes document, is only available in Japanese. JFS have supplied translations of:

- MM Extract – Kawasaki-Hughes 369D Component TBO Hours
- MM Extract – Kawasaki-Hughes 369D retirement Hours

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

Reportedly since CASA began making enquiries about Kawasaki-Hughes models Kawasaki has reviewed their licensing agreement and found it only covers them for manufacture and sale of aircraft within Japan. The manufacturer therefore declines to provide support for aircraft operating overseas. (Although the two aircraft being imported by Wing & Rotor were purchased off Kawasaki, through the intermediary of Japan Fleet Service.) JFS has provided a letter stating they will supply CAA with copies of all future SBs and TCDs (Japanese ADs), translated into English, along with any revisions to the IPC and Flight Manual. The CAA has accepted this undertaking on the understanding that if the arrangement was found to have broken down in the future the validity of the type acceptance certificate would be revisited.

(8) Other information:

English Translation of domestic production parts list by KHI or authorised vendors in HTC drawing, “but limited to qualification test items only and approved by JCAB”. According to this this list KHI only manufacture the main rotor blades, hub assembly, pitch casting housing, tail rotor assembly and draft shaft. All the other parts are mostly accessories and instruments, with Kayaba making the shock absorbers and other local companies producing parts such as seats, instruments, lights etc.

List of Japanese TCD with reference to originating KHI SB and FAA AD

Additional New Zealand Certification requirements

Compliance with the following requirements has been reviewed and were to be covered by either the original certification or the basic build standard of the aircraft, 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	<i>To be determined on an individual aircraft basis</i>
B.2	Crew Protection Requirements - CAM 8 App. B # .35	Agricultural Aircraft – <i>Not Applicable</i>

Appendix E - Helicopters

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
E.1	Doors and Exits – operable each side, unobstructed	Complies by inspection
E.2.1	Emergency Exit Marking – visible across cabin	CAR 6.357(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	Shoulder harness fitted as standard
91.507	Pax Information Signs - Smoking, safety belts fastened	N/A – Maximum number of occupants is 5
91.509 Min. VFR	(1) ASI (2) Machmeter (3) Altimeter (4) Magnetic Compass (5) Fuel Contents (6) Engine RPM (7) Oil Pressure	CAR 6.603(a) N/A CAR 6.603(b) CAR 6.603(c) CAR 6.604(d) CAR 6.604(k) CAR 6.604(h)
91511 Night	(1) Turn and Slip (2) Position Lights	Available as Option LE2058 CAR 6.632 (3) Anti-collision Lights (4) Instrument Lighting CAR 6.637 CAR 6.630
	MDH/Kawasaki-Hughes 369 Series is certificated for day and night VFR operations	
91.517 IFR	(1) Gyroscopic AH (2) Gyroscopic DI (3) Gyro Power Supply (4) Sensitive Altimeter	Available as Optn 369H90038 Available as Optn 369H90039 N/A – Not IFR certificated Fitted as standard (5) OAT (6) Time in hr/min/sec (7) ASI/Heated Pitot (8) Rate of Climb/Descent Required equipment under type certification – See FM §2-1 N/A – Not IFR certificated N/A – Not IFR certificated Available as Option 369H90044

91.519	IFR Communication and Navigation Equipment	N/A - Not IFR certificated (Available as Optional Equipment under 369H90067 for ADF and 369H90071 for VHF/COM)
91.523 Emergency Eqmt.	(a) More Than 10 pax - First Aid Kits per Table 7 - Fire Extinguishers per Table 8 (b) More than 20 pax - Axe readily acceptable to crew	Operational Requirement – Compliance as appropriate Operational Requirement – Compliance as appropriate N/A – Maximum number of occupants is 5
91.529	ELT - TSO C91a after 1/4/97 (or replacement)	To be determined on an individual aircraft basis
91.531	Oxygen Indicators - Volume/Pressure/Delivery	Not fitted as standard
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	Not fitted as standard (Maximum Operating Altitude specified in Flight Manual is 16,000 feet.)
91.541	SSR Transponder and Altitude Reporting Equipment	Operational Requirement – Compliance as appropriate Available as Optional Equipment under 369H90078
91.543	Altitude Alerting Device - Turbojet or Turbofan	N/A – Not IFR certificated
91.545	Assigned Altitude Indicator	N/A – Not IFR certificated
A.15	ELT Installation Requirements	To be determined on an individual aircraft basis

Civil Aviation Rules Part 135

Subpart F - Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
135.355	Seating and Restraints	Shoulder harness fitted as standard
135.357	Additional Instruments (Powerplant and Propeller)	Compliance with FAR§29.1305 to be determined as applicable
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))	To be determined on an individual aircraft basis
135.365	Public Address and Crew Member Intercom System	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 – MCTOW less than 5700 kg.
135.375	Ground Proximity Warning System	N/A – Less than 10 pax seats and MCTOW under 5700 kg.

Summary

Type Acceptance Certificate No.99/35 has been granted to the Kawasaki-Hughes 369D 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 of First-of-Type example s/n 6702 ZK-HWC

Three-view drawing Kawasaki-Hughes Model 369D

Copy of Japanese Type Certificate No. 29-5 and the associated Specification

Sign off

David Gill
Airworthiness Engineer

Date: 12 July 1999