Type Acceptance Report

TAR 6/21B/12

Hiller UH-12C

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Executive Summary

New Zealand Type Acceptance has been granted to the UH-12C Series based on validation of FAA Type Certificate number 6H2. 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(2).

1. Introduction

This report details the basis on which Type Acceptance Certificate No.6/21B/12 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

TC Holder: Hiller Aircraft Corporation
(See TCDS for Type Certificate Ownership record.)

Type Certificate: 6H2
Issued by: Federal Aviation Administration

Model: UH-12C

MCTOW 2500 lb.

Max. No. of Seats: 3

Noise Standard: Not Applicable

Engine: Franklin 6V4-200-C33 or 6V-335-B per SB No.70

Type Certificate: E-244
Issued by: Federal Aviation Administration

3. Type Acceptance Certificate

The application for New Zealand type acceptance was from the importer, Mr Bruce Harvey, dated 20 October 2005. The first-of-type example was serial no. 856, registered ZK-HXK. The UH-12C is a three seat light training and utility helicopter with a two-blade (laminated wood with metal leading edge insert) semi-rigid teetering rotor system. For cyclic control the Hiller has a unique small servo rotor fitted with paddles which use aerodynamic action to tilt the main rotor. This is claimed to offer lower stick forces and better control.

Type Acceptance Certificate No. 6/21B/12 was granted on 9 June 2006 to the Hiller Model UH-12C based on validation of FAA Type Certificate 6H2, and includes the Franklin 6V4-200-C33 and 6V-335-B engines based on FAA Type Certificate E-244. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

The Model 12C was a development of the 12B with detailed improvements. The most obvious was the new bubble canopy, while the instrument panel was re-designed (smaller) and the rotor system has expanded (9° - 12°) rotor hub and cyclic scissor stops.

4. Type Data

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) Type certificate:

FAA TCDS No. 6H2 at Revision 18 dated March 25, 2005

FAA TCDS E-244 at Revision 20 dated December 8, 1994

(2) Airworthiness design requirements:

The certification basis of the UH-12B/C is CAR 6 as amended March 1, 1950. This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41 and Advisory Circular 21-1A, as CAR 6 is the predecessor of FAR 27, which is the basic standard for Normal Category Rotorcraft called up under Part 21 Appendix C. There are no non-compliances and additional special conditions have been prescribed by the Director under §21.23.

The certification basis of the Franklin 6V4-200-C33 engine is CAR 13 effective August 1, 1949, as amended by 13-1 and 13-2, while this is upgraded to CAR 13 effective June 15, 1956 for the 6V-335-B variant. CAR 13 is the predecessor to FAR Part 33, which is the basic standard for aircraft engines called up under Part 21 Appendix C.

(3) Certification compliance listing:

Hiller Aircraft Corp. – Technical Report Index

(4) Environmental Certification:

Not Applicable

(5) Flight manual: FAA-Approved Hiller Model 360 (UH-12C) Equipped with Skid Gear Helicopter Flight Manual – CAA Accepted as AIR 2935

(6) Illustrated Parts Catalogue:

UH-12A, UH-12B, UH-12C Parts Catalog – Jan 1956

Illustrated Service Parts List – Franklin Models 6V4-200-C32/C33, 6V-335-A/B

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

Hiller UH-12 ABC Service Manual – January 1956
UH-12 ABC Overhaul Manuals – Main Rotor Blade P/N 40-001-5 – May 1957
UH-12A, UH-12B, UH-12C Structural Repair Manual – January 1956
Models UH-12A, UH-12B, UH-12C Inspection Guide – September 1959
Hiller UH-12 ABC Piston Service Letters and Bulletins

Overhaul Instructions – Franklin Aircraft Engines – Models 6V4-178-B32/B33, 6V4-200-C32/C33, 6V-335-A/B
Franklin Service Bulletins and Service Instructions

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

CAA 2171 from General Manager, Hiller Aircraft Corp., dated Dec 2, 2005

(9) Other information:

Hiller Engineering Report Number 412.9 – Specification for Hiller Model UH-12C Helicopter – Revised 9 January 1956

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	Complies by inspection
E.2.1	Emergency Exit Marking	CAR 6.357(3)

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		CAR 6.605(b)	
91.507	Pax Information Signs - Smoking, safety belts fastened		Not Applicable – Less than 10 passenger seats	
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(a)(1) CAR 6.604(a)(4) CAR 6.604(a)(2)	(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 – Air-cooled engine CAR 6.604(a)(3) CAR 6.604(b)(3) CAR 6.604(b)(1) N/A – Helicopter N/A – Fixed skid landing gear GE 8DW53 Standard Fit
91.511 Night	(1)Turn and Slip (2) Position Lights	***Compliance as applicable*** CAR 6.632	(3) Anti-collision Lights (4) Instrument Lighting	CAR 6.637 CAR 6.630
91.517	IFR Instruments and Equipment		Not Applicable – Instrument flight prohibited	
91.519	IFR Communication and Navigation Equipment		Not Applicable – Instrument flight prohibited	
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		 Not Applicable – Less than 10 passenger seats Not Applicable – Less than 10 passenger seats Not Applicable – Less than 20 passenger seats Not Applicable – Less than 61 passenger seats	
91.529	ELT - TSO C91a or C126 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	Oxygen for Non-pressurised Aircraft		***Operational requirement – To be determined as applicable***	
91.541	SSR Transponder and Altitude Reporting Equipment		***Operational requirement – To be determined as applicable***	
91.543	Altitude Alerting Device - Turbojet or Turbofan		Not Applicable – Not turbojet or turbofan powered	
91.545	Assigned Altitude Indicator		Not Applicable – Instrument flight prohibited	
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 flight-crew seats		***To be determined on an individual aircraft basis***
135.357	Additional Instruments (Powerplant and Propeller)		Instruments required by FAR 27.1305 are fitted as standard (See Report 412.9 Section F)
135.359	Night Flight	Landing light, Pax compartment	***Operating Requirement – Compliance as applicable***
135.361	IFR Operations	Speed, Alt, spare bulbs/fuses	***Operating Requirement – Compliance as applicable***
135.363	Emergency Equipment (Part 91.523 (a) and (b))		***Operating Requirement – Compliance as applicable***
135.367	Cockpit Voice Recorder		N/A – Only for 2-crew helicopters with more than 10 pax
135.369	Flight Data Recorder		Not Applicable – Less than 10 passenger seats
135.371	Additional Attitude Indicator		Not Applicable – Not turbo jet or turbofan powered

Attachments

The following documents form attachments to this report:

Photographs first-of-type example Hiller UH-12C s/n 856 ZK-HXK
Three-view drawing Hiller Model 360 (UH-12C)
Copy of FAA Type Certificate Data Sheet Number 6H2

Sign off

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David Gill
Team Leader Airworthiness

Checked – AWE5
Date: 9 June 2006

Appendix 1

List of Type Accepted Variants:

Model:	*Applicant:*	*CAA Work Request:*	*Date Granted:*
UH-12C	Mr B H Harvey	6/21B/12	9 June 2006