
Type Acceptance Report

RESTRICTED CATEGORY

TAR 19/21B/16

Arrow Falcon Exporters (Bell) UH-1H

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Executive Summary

New Zealand Type Acceptance in the Restricted Category has been granted to the Bell UH-1H helicopter based on validation of FAA Type Certificate number R00007DE. Special requirements for import are as detailed in this report.

Applicability is currently limited to the serial numbers detailed in Appendix 1, which are now eligible for the issue of an Airworthiness Certificate in the Restricted 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: The information in this report was correct as at the date of issue. The report is generally 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 latest revision of the State-of-Design Type Certificate Data Sheet referenced herein.

1. Introduction

This report details the basis on which Type Acceptance Certificate No. 19/21B/16 was granted in the Restricted 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. Aircraft Certification Details

(a) State-of-Design Type and Production Certificates:

Manufacturer: Bell Helicopter Company

Type Certificate Holder: Arrow Falcon Exporters Inc. (since Dec 15, 1999)

Type Certificate: R00007DE
Issued by: Federal Aviation Administration

Production Approval: Not Applicable

(b) Models Covered by the Part 21B Type Acceptance Certificate:

(i) **Model:** UH-1H

MCTOW: 9500 lb. [4309 kg]

Max. No. of Seats: See the Approved Flight Manual

Noise Standard: Not Applicable

Engine: Lycoming T53-L-13B or -13BA

Type Certificate: Not Applicable
Issued by: Not Applicable

3. Application Details and Background Information

Background

The first Restricted Category Surplus Military (RCSM) helicopters certificated by the FAA under FAR §21.25 were imported into New Zealand in 1991. There were twelve RCSM helicopters registered in New Zealand in the period 1992-2006, all of them UH-1 variants approved under seven different FAA type certificates. Unfortunately they had a poor safety record. Seven of the original twelve helicopters were involved in major accidents, four of which were fatal to all the occupants.

It was recognised during the first type acceptance application under NZCAR Part 21B that these Restricted Category aircraft do not meet New Zealand type acceptance requirements. Because of their poor safety record in New Zealand they were subject to a major review in 2002 which included CAA attendance at an FAA Standardisation Workshop in Fort Worth in June 2002. As a result of this it was decided to adopt the latest FAA policies in this area regarding support of the helicopter by the Type Certificate holder. In particular this requires the TC holder to develop a comprehensive set of Instructions for Continued Airworthiness that includes a list of applicable technical publications and their revision status, and a list of life-limited components. It was further recommended that all RCSM helicopters must be operated to their original military design regime of five ground-air-ground cycles per hour, unless an alternative loading schedule is substantiated.

In 2008 CAA announced a moratorium on further RCSM imports, unless the applicant could demonstrate to the CAA they had an operation and maintenance regime that would ensure an acceptable level of safety. Since then only two more UH-1 examples have been imported, both of which were for existing operators using previous FAA type certificates.

Current Application

This is the first RCSM application involving a new operator and a new FAA type certificate since the moratorium, and as such has been used to document current CAA policy. The type acceptance application for the Arrow Falcon UH-1H was from T & P Williams Limited, dated 7-1-19. The first-of-type example was serial number 68-15731, to be registered ZK-ILV. The Bell UH-1 “Iroquois” is a large military transport helicopter used extensively by the US armed forces and many other air forces, including the RNZAF for over forty years. A civil version of the large cabin UH-1D/H was developed and type certificated by Bell as the Model 205 in the Transport Category.

Type Acceptance Certificate No. 19/21B/16 was granted on 3 April 2019 to the UH-1H based on validation of FAA Type Certificate R00007DE. Specific applicability is limited to the Special Purpose Operations assessed as part of the application, and which are listed in the Mandatory New Zealand Flight Manual Supplement. The only special requirement for import is that the helicopter must come with an Export certificate of airworthiness.

FAA Type Certificate R00007DE was originally issued to the Department of Industrial Technology and Education of the University of Utah in August 1997, initially for two serial numbers, and re-issued to Arrow Falcon Exporters Inc. in December 1999. The first revision of the eligibility list added the subject of this type acceptance application. Another eight serial numbers have since been added.

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) State-of-Design Type certificate:

FAA Type Certificate Number R00007DE

FAA Type Certificate Data Sheet no. R00007DE at Revision 4 dated Feb 7, 2018
– Model UH-1H approved August 25, 1997

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the UH-1H in the Restricted Category under FAA Type Certificate Number R00007DE is FAR §21.25(a)(2), effective February 1, 1965, including Amendments 21-1 through 21-74, for the special purposes of:

- 1) Agricultural Operations under FAR 21.25(b)(1);
- 2) Forest and Wildlife Conservation Operations under FAR 21.25(b)(2);
- 3) External Load Operations under FAR 21.25(b)(7).

The FAA type certificate states this certification basis does not comply with ICAO Annex 8. It is not therefore an acceptable certification basis in accordance with NZCAR Part 21B paragraph §21.41 or Advisory Circular 21-1A.

To establish an acceptable level of safety for the operation the Director prescribed the following special conditions under §21.23:

1. Type acceptance of RCSM helicopters will only be granted where CAA has knowledge of the original military design specification. (So it can be determined if the proposed civil operation fits within the original design parameters.)
2. Type acceptance is limited to the Special Purpose Operations (SPO) declared in the application, which must be listed on the FAA TCDS. The type certificate holder must have assessed any effect on continued airworthiness from the SPO, where they vary from the original military design specification of the helicopter. (particularly structural fatigue.)
3. The FAA type certificate holder must provide technical support for the type acceptance application, including specifying the applicable publications and their revision status; detailing the life-limited components; listing the eligible serial numbers and any civil conversion requirements; and substantiation if required for any SPO under Special Condition 2 above.

The application for the Arrow Falcon Exporters UH-1H has been assessed against the Special Conditions above, as follows:

- a. It is known that the UH-1 Series was designed to meet the military design specification for helicopters AR-56, which specifies a maximum of 5 ground-air-ground cycles per hour.
- b. This type acceptance application is for agricultural operations under CAR Part 137, which include spraying and bait dropping. These are covered by special purpose 1) above on the TCDS.
- c. The Type Certificate holder Arrow Falcon confirmed in a letter dated 29/11/2018 continued support of the UH-1H helicopters, and provided copies of supporting reports mentioned on the TCDS.

(ii) *Special Conditions:*

Nil

(iii) *Equivalent Level of Safety Findings:*

Nil

(iv) *Airworthiness Limitations:*

See Arrow Falcon Exporters Inc. Instructions for Continued Airworthiness Report AF-UH-1H-01CA – Section I Component Overhaul Schedule and Section II Airworthiness Limitations Schedule

(3) Aircraft Noise and Engine Emission Standards:

(i) *Environmental Standard:*

In accordance with the exemptions for specific operations under FAR 36.1(a)(4), compliance with the noise requirements was not shown. Therefore, aircraft certificated under this type certificate are only eligible for those specific special purpose operations excepted by FAR 36.1(a)(4) 36-24. The TCDS states that any alteration to the aircraft for Special Purposes not identified above require further FAA approval and in addition, may require noise and / or flight testing.

(ii) *Compliance Listing:*

Not Applicable

(4) Certification Compliance Listing:

Arrow Falcon Exporters Inc. Report Number AF-UH-1H-01CR – TC Number R00007DE – Configuration Report (See Page 9 for Publications status.)

Arrow Falcon Exporters Inc. Report Number AF-UH-1H-0100 – TC Number R00007DE – Approved Serial Number Eligibility List (Rev.7 dated 03/02/09)

Arrow Falcon Exporters Inc. Report Number AF-UH-1H-01AD – TC Number R00007DE – Airworthiness Directive Report

(5) Flight Manual:

U.S. Army Technical Manual TM55-1520-210-10 – Operators Manual Army Model UH-1H/V Helicopters – CAA Accepted as AIR 3902

NOTE: A Mandatory Flight Manual Supplement is required for operations in NZ. This calls up any limitations included on the FAA TCDS or called up in FAR §91.313, and any additional limitations specified by the Director.

(6) Operating Data for Aircraft and Engine:

For full list of applicable documents see Arrow Falcon Exporters Inc. Instructions for Continued Airworthiness Report AF-UH-1H-01CA – Section III

(i) *Maintenance Manual:*

U.S. Army TM55-1520-210-23 – Aviation Unit and Intermediate Maintenance Instructions Army Model UH-1H/V/EH-1H/X Helicopters

U.S. Army TM55-1520-210-PMD – UH-1H/V and EH-1H/X Aircraft – Preventive Maintenance Daily Inspection Checklist

Interagency Committee for Aviation Policy – UH-1 Inspection Planning Guide

U.S. Army TM 55-2840-229-23-1 – Aviation Unit and Aviation Intermediate Maintenance Manual for Engine Assembly – Models T53-L-13B, -13BA and -703

(ii) *Current service Information:*

U.S. Army Technical Bulletin TB 1520-xxx-20 and TB-2840-229-20 Series

(iii) *Illustrated Parts Catalogue:*

U.S. Army TM55-1520-210-23P – Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) for Helicopter, Utility – Tactical Transport UH-1H, UH-1M, EH-1H, EH-1X, UH-1V

U.S. Army TM 1-2840-260-23P – Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) – Turbine Aircraft Engines Models T53-L-13B and -703

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

Not Applicable. The FAA Type Certificate R00007DE calls up the use of the original US Army technical manuals for the helicopter. These were not produced or supplied by the type certificate holder.

The revision status of the US Army Technical Manuals called up under the type certificate are specified by the TC Holder on Page 9 of the Configuration Report.

(8) Other information:

Thomson Design Report ELA6185-01-R1 – Electrical Load Analysis VH-UHH

5. New Zealand Operational Rule Compliance

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	<i>Operational requirement – Compliance as applicable</i>
E.2.1	Emergency Exit Marking	<i>Operational requirement – Compliance as applicable</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	Inertial reel shoulder harness fitted as std – See OM §2-10c
91.507	Pax Information Signs – Smoking, safety belts fastened	Not Applicable – Only essential crew may be carried
91.509 Min. VFR	(1) ASI (2) Machmeter (3) Altimeter (4) Magnetic Compass (5) Fuel Contents (6) Engine RPM (7) Oil Pressure	Fitted as std – See OM §2-76 <i>N/R – Mach No limitations</i> Fitted as std – See OM §2-79 Fitted as std – See OM §2-82 Fitted as std – See OM §2-26b Fitted as std – See OM §2-24c Fitted as std – See OM §2-24f
91.511 Night	(1) Turn and Slip (2) Position Lights	Fitted as std – See OM §2-77 Fitted as std – See OM §2-65
91.513	VFR Communication Equipment	<i>Operational requirement – Compliance as applicable</i>
91.517	IFR Instruments and Equipment	Not Applicable – Approved for VFR operations only
91.519	IFR Communication and Navigation Equipment	Not Applicable – Approved for VFR operations only
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 – Only essential crew may be carried Not Applicable – Only essential crew may be carried Not Applicable – Less than 20 passenger seats Not Applicable – Less than 61 passenger seats
91.529	ELT – TSO C126 406 MHz after 22/11/2007	<i>Operational requirement – Compliance as applicable</i>
91.531	Oxygen Indicators – Volume/Pressure/Delivery	<i>Operational requirement – Compliance as applicable</i>
91.533	Oxygen for non-Pressurised Aircraft:	Not fitted as standard
91.541	SSR Transponder and Altitude Reporting Equipment	<i>Operational requirement – Compliance as applicable</i>
91.543	Altitude Alerting Device – Turbojet or Turbofan	Not Applicable – Not turbojet or turbofan powered
91.545	Assigned Altitude Indicator	Not Applicable – Not equipped for IFR operations
A.15	ELT Installation Requirements	<i>Compliance to be determined on an individual aircraft basis</i>

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

Attachments

The following documents form attachments to this report:

Three-view drawing Bell Helicopter Model UH-1H
Copy of FAA Type Certificate Data Sheet Number R00007DE
Mandatory NZ Flight Manual Supplement – Arrow Falcon Exporters UH-1H

Sign off

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David Gill
Team Leader Airworthiness

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Checked – Greg Baum
Team Leader Product Certification

Appendix 1

List of Type Accepted Variants:

<i>Model:</i>	<i>Applicant:</i>	<i>CAA Work Request:</i>	<i>Date Granted:</i>
UH-1H	T & P Williams Limited	19/21B/16	3 April 2019