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Flight Standardization Board (FSB) Report

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Manufacturer
Robinson Helicopter Company (RHC)

Type Certificate Data Sheet (TCDS)	TCDS Identifier	Marketing Name	Pilot Type Rating
R00015LA	R66	Turbine, Police, Turbine Marine, E.N.G.	Not applicable

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1 RECORD OF REVISIONS

Revision Number	Section(s)	Date
Original	All	10/13/2010
1	All	12/17/2018

2 INTRODUCTION

Aircraft Evaluation Groups (AEG) are responsible for working with aircraft manufacturers and modifiers during the development and Federal Aviation Administration (FAA) certification of new and modified aircraft to determine: 1) the pilot type rating; 2) flightcrew member training, checking, and currency requirements; and 3) operational suitability.

This report lists those determinations for use by: 1) FAA employees who approve training programs; 2) FAA employees and designees who certify airmen; and 3) aircraft operators and training providers to assist them in developing their flightcrew member training, checking, and currency.

3 HIGHLIGHTS OF CHANGE

The purpose of this revision is to update the report to the new Flight Standardization Board (FSB) format and to revise the Master Differences Requirements (MDR) tables to include all variations introduced since the Original FSB, dated 10/13/2010.

4 BACKGROUND

- 4.1** The Rotorcraft and Powered Lift Branch formed an FSB to evaluate the R66, as defined in FAA Type Certificate Data Sheet (TCDS) #R00015LA. The evaluation was conducted on 08/24/2010 through 08/27/2010 using the methods described in the current edition of FAA Advisory Circular (AC) 120-53, Guidance for Conducting and Use of Flight Standardization Board Evaluations, and FAA Order 8400.10, Volume 8, Chapter 3, Section 4. The FSB concluded that the R66 did not require specific training for unique flight characteristics and recommended that the R66 not be added to Title 14 of the Code of Federal Regulations (14 CFR) part 61, § 61, Special Federal Aviation Regulation (SFAR) 73, Robinson R22/R44 Special Training and Experience Requirements.
- 4.2** On 12/17/2017, the Rotorcraft and Powered Lift Branch formed another FSB team to reevaluate the R66, during the time of the R22 FSB, Revision 1, and the R44 FSB, Revision 2. The evaluation was conducted on 03/12/2018 through 03/16/2018 using the methods described in AC 120-53 and FAA Order 8900.1, Volume 8, Chapter 2, Section 5

for the purpose of updating the FSB report (standardize formats) and to validate the Original FSB findings, since the R66 had a similar design (teetering cyclic) as the R22 and R44.

4.3 Variation History.

R66 Turbine (Original R66): *Serial numbers: 0001 and subsequent. *Produced October 2010 thru present. Model R66 on TCDS. “Turbine” is a commercial/marketing term.

R66 Police Version (Mission-specific police equipment): *Serial numbers: Limited production. *Produced September 2012 thru present. Left front seat is police observer’s station. Left side cyclic may or may not be included depending on specific equipment configuration. Center rear seat is not installed (replaced with an equipment storage console). Model R66 on TCDS. “Police Version” is a commercial/marketing term.

R66 Turbine Marine (Float equipped R66): *Serial numbers: Subset of R66 Turbine. *Produced November 2014 thru present. Pop-out floats only (fixed floats not available). Model R66 on TCDS. “Turbine Marine” is a commercial/marketing term.

R66 E.N.G. Version (Electronic News Gathering Version): *Serial numbers: Limited production. *Produced July 2017 thru present. Mission-specific E.N.G. equipment. Center rear seat is not installed (replaced with an equipment console. Model R66 on TCDS. “E.N.G. Version” is a commercial/marketing term.

*Means approximate serial numbers and dates.

5 ACRONYMS

14 CFR	Title 14 of the Code of Federal Regulations
AC	Advisory Circular
ACS	Airman Certification Standards
AEG	Aircraft Evaluation Group
CPT	Cockpit Procedures Trainer
E.N.G.	Electronic News Gathering
FAA	Federal Aviation Administration
FFS	Full Flight Simulator
FSB	Flight Standardization Board
FSTD	Flight Simulation Training Device
MDR	Master Differences Requirements
NAS	National Airspace System
PTS	Practical Test Standards
RFM	Rotorcraft Flight Manual
RHC	Robinson Helicopter Company
SFAR	Special Federal Aviation Regulation
TC	Type Certificate
TCDS	Type Certificate Data Sheet

6 DEFINITIONS

These definitions are for the purposes of this report only.

- 6.1 **Base Aircraft.** An aircraft identified for use as a reference to compare differences with another aircraft.
- 6.2 **Current.** A crewmember meets all requirements to operate the aircraft under the applicable operating part.
- 6.3 **Differences Tables.** Describe the differences between a pair of related aircraft and the minimum levels operators must use to conduct differences training and checking of crewmembers. Difference levels range from A to E.
- 6.4 **Master Differences Requirements (MDR).** Specifies the highest training and checking difference levels between a pair of related aircraft derived from the Differences Tables.
- 6.5 **Mixed Fleet Flying.** The operation of a base aircraft and one or more related aircraft for which credit may be taken for training, checking, and currency events.
- 6.6 **Operational Evaluation.** An AEG process to determine pilot type rating, minimum crewmember training, checking, and currency requirements, and unique or special airman certification requirements (e.g., specific flight characteristics, no-flap landing).
- 6.7 **Operational Suitability.** An AEG determination that an aircraft or system may be used in the National Airspace System (NAS) and meets the applicable operational regulations (e.g., 14 CFR parts 91, 121, 133, 135).
- 6.8 **Qualified.** A crewmember holds the appropriate airman certificate and ratings as required by the applicable operating part.
- 6.9 **Related Aircraft.** Any two or more aircraft of the same make with either the same or different type certificates that have been demonstrated and determined by the Administrator to have commonality.
- 6.10 **Seat Dependent Tasks.** Maneuvers or procedures using controls that are accessible or operable from only one flightcrew member seat.
- 6.11 **Special Emphasis Area.** A training requirement unique to the aircraft, based on a system, procedure, or maneuver, which requires additional highlighting during training. It may also require additional training time, specialized training devices, or training equipment.
- 6.12 **Specific Flight Characteristics.** A maneuver or procedure with unique handling or performance characteristics that the FSB has determined must be checked.

7 PILOT TYPE RATING

- 7.1** Type Rating. Not applicable.
- 7.2** Common Type Ratings. Not applicable.
- 7.3** Military Equivalent Designations. Not applicable.

8 RELATED AIRCRAFT

- 8.1** Related Aircraft on Same TCDS. Not applicable.
- 8.2** Related Aircraft on Different TCDS.
 - a) R22.
 - b) R44.

9 PILOT TRAINING

- 9.1** Airman Experience, No specific previous pilot experience required.
- 9.2** Special Emphasis Areas.
 - 9.2.1** Pilots must receive special emphasis on the following areas during ground training:

Removable Controls. Pilots need to be trained on how to rotate the cyclic (wind up) after the dual controls are removed.
 - 9.2.2** Pilots must receive special emphasis on the following areas during flight training:
 - a) Autopilot. Pilots need training on guarding the controls during all phases of flight, and cyclic positioning, when the removable controls are installed and the HDG or NAV modes are selected.
 - b) Familiarization with teetering cyclic (see 9.4 below).
- 9.3** Specific Flight Characteristics. There are no specific flight characteristics.
- 9.4** Seat Dependent Tasks.
 - 9.4.1** There are no seat dependent tasks for pilots as long as the pilot keeps the cyclic grip on or near his/her leg.
 - 9.4.2** Instructors and check pilots must receive seat dependent training on cyclic up/down positions (teetering cyclic) to simulate short/tall student instruction, if applicable.

9.5 Regulatory Training Requirements which are Not Applicable to the R66.

9.5.1 Aircraft used in part 135 operations:

- Ground Training. Part 135, § 135.345(b)(6)(iv).
- Emergency Training. Part 135, § 135.331(b)(3)(i) and (d).

9.6 Flight Simulation Training Devices (FSTD). There are no specific systems, procedures, or maneuvers unique to the R66 that require a specific FSTD for training.

9.7 Training Equipment. There are no specific systems or procedures unique to the R66 that require specific training equipment.

9.8 Differences Training between Related Aircraft. Pilots must receive differences training for all R66 variations specified in Appendix 2, Master Differences Requirements (MDR) Table.

9.9 Other Training Items. Instructor pilots and check pilots should be trained on the R66 published Robinson Helicopter Company (RHC) guidelines, if applicable:
<https://robinsonheli.com/flight-training-guide>.

10 PILOT CHECKING

10.1 Landing from a No-Flap or Nonstandard Flap Approach. Not applicable.

10.2 Specific Flight Characteristics. There are no specific flight characteristics.

10.3 Seat Dependent Tasks.

10.3.1 There are no seat dependent tasks as long as the pilot keeps the cyclic grip on or near his/her leg.

10.3.2 Instructors and check pilots should be evaluated on cyclic up/down (teetering cyclic) positions to simulate short/tall student instruction/checking, if applicable.

10.4 Other Checking Items. Pilots need to be checked (oral only) on how to rotate the cyclic (wind up) for removable controls.

10.4.1 Instructors, check pilots, and examiners should be evaluated on the R66 published RHC maneuvers guidelines, if applicable: <https://robinsonheli.com/flight-training-guide>.

10.5 FSTDs. There are no specific systems, procedures, or maneuvers unique to the R66 that require a specific FSTD for checking.

10.6 Equipment. There are no specific systems or procedures unique to the R66 that require specific equipment.

10.7 Differences Checking between Related Aircraft. Pilots must receive checking on the R66 variants as specified in Appendix 3, Differences Table.

11 PILOT CURRENCY

There are no additional currency requirements for the R66 other than those already required by parts 61 and 135.

11.1 Differences Currency between Related Aircraft. Not applicable.

12 OPERATIONAL SUITABILITY

The R66 is operationally suitable for operations under parts 91 and 135. The FSB determined operational compliance by conducting an evaluation of aircraft serial number 0373 on 03/12/2018 through 03/16/2018. The list of operating rules evaluated during the FSB is on file at the Rotorcraft and Powered Lift Branch.

13 MISCELLANEOUS

None.

APPENDIX 1. DIFFERENCES LEGEND

Training Differences Legend

Differences Level	Type	Training Method Examples	Conditions
A	Self-Instruction	<ul style="list-style-type: none"> • Operating manual revision (HO) • Flightcrew operating bulletin (HO) 	<ul style="list-style-type: none"> • Crew has already demonstrated understanding on base aircraft (e.g. updated version of engine). • Minor or no procedural changes required. • No safety impact if information is not reviewed or is forgotten (e.g. different engine vibration damping mount). • Once called to attention of crew, the difference is self-evident.
B	Aided Instruction	<ul style="list-style-type: none"> • Audiovisual presentation (AV) • Tutorial computer-based instruction (TCBI) • Stand-up instruction (SU) 	<ul style="list-style-type: none"> • Systems are functionally similar. • Crew understanding required. • Issues need emphasis. • Standard methods of presentation required.
C	Systems Devices	<ul style="list-style-type: none"> • Interactive (full-task) computer-based instruction (ICBI) • Cockpit Procedures Trainers (CPT) • Part task trainers (PTT) • Level 4 or 5 flight training device (FTD 4–5) 	<ul style="list-style-type: none"> • Training can only be accomplished through systems training devices. • Training objectives focus on mastering individual systems, procedures, or tasks versus highly integrated flight operations or “real-time” operations. • Training devices are required to assure attainment or retention of crew skills to accomplish more complex tasks usually related to aircraft systems.
D	Maneuvers Devices	<ul style="list-style-type: none"> • Level 6 or 7 flight training device (FTD 6–7) • Level A or B full flight simulator (FFS A–B) 	<ul style="list-style-type: none"> • Training can only be accomplished in flight maneuver devices in a real-time environment. • Training requires mastery of interrelated skills versus individual skills. • Motion, visual, control loading, and specific environmental conditions may be required.
E	Level C/D FFS or Aircraft	<ul style="list-style-type: none"> • Level C or D full flight simulator (FFS C–D) • Aircraft (ACFT) 	<ul style="list-style-type: none"> • Motion, visual, control loading, audio, and specific environmental conditions are required. • Significant full task differences that require a high fidelity environment. • Usually correlates with significant differences in handling qualities.

Checking Differences Legend

Differences Level	Checking Method Examples	Conditions
A	None	None
B	<ul style="list-style-type: none"> • Oral or written exam • Tutorial computer-based instruction self-test (TCBI) 	<ul style="list-style-type: none"> • Individual systems or related groups of systems.
C	<ul style="list-style-type: none"> • Interactive (full-task) computer-based instruction (ICBI) • Cockpit Procedures Trainers (CPT) • Part task trainers (PTT) • Level 4 or 5 flight training device (FTD 4–5) 	<ul style="list-style-type: none"> • Checking can only be accomplished using systems devices. • Checking objectives focus on mastering individual systems, procedures, or tasks.
D	<ul style="list-style-type: none"> • Level 6 or 7 flight training device (FTD 6–7) • Level A or B full flight simulator (FFS A–B) 	<ul style="list-style-type: none"> • Checking can only be accomplished in flight maneuver devices in a real-time environment. • Checking requires mastery of interrelated skills versus individual skills. • Motion, visual, control loading, and specific environmental conditions may be required.
E	<ul style="list-style-type: none"> • Level C or D full flight simulator (FFS C–D) • Aircraft (ACFT) 	<ul style="list-style-type: none"> • Significant full task differences that require a high fidelity environment.

APPENDIX 2. MASTER DIFFERENCES REQUIREMENTS (MDR) TABLE

These are the minimum levels of training and checking required, derived from the highest level in the Differences Tables in Appendix 3. Differences levels are arranged as training/checking.

Related Aircraft ↓	Base Aircraft →	R66 Turbine	R66 Turbine Marine	E.N.G or Police Version
R66 Turbine		Not applicable	B/B	B/B
R66 Turbine Marine		B/B	Not applicable	B/B
E.N.G or Police Version		B/B	B/B	Not applicable

Variation(s) of the Aircraft Type.

A variation of the aircraft type is an aircraft or a group of aircraft with the same type certificate (TC) as the base aircraft. A variation of the aircraft type has the same features as the base aircraft. If the variation(s) of the aircraft type has pertinent differences from the base aircraft, differences training is required. Pertinent differences are those that could affect flight safety. Typical pertinent differences are those relating to configuration, handling qualities, performance, procedures, limitations, controls, instruments, indicators, systems, equipment, options, or modifications.

APPENDIX 3. DIFFERENCES TABLES

This Design Differences Table are modifications by Robinson Helicopter Company (RHC) since 2010. It lists the minimum differences levels operators must use to conduct differences training and checking of flightcrew members.

	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING
	ATA 22 Autoflight	Genesys HeliSAS Autopilot	No	Yes	*E	*E
	ATA 34 Navigation	Garmin G500H Primary and Multifunction Flight Displays	No	Yes	C	A
	ATA 34 Navigation	Garmin G500H TXi Display System with Garmin GTN 750	No	Yes	C	A

* See 9.2 and 10.4

NOTE: (C) Training in the cockpit of the actual aircraft may be substituted for an approved cockpit procedures trainer (CPT).