

## Transport Category Rotorcraft Generic Validation Items

### Avionics

Subject	Description
Integrated Modular Avionics	An issue paper may be needed to establish a method of compliance for highly complex and integrated system architectures.
System Safety Analysis	The application of SAE ARP 4754 to reduce the design assurance level based on system architectural features

### Electrical Systems

Subject	Description
Operation without normal electrical power	Proposed Special Condition – Affected rotorcraft include those with modern electronics in safety critical applications such as fly by wire flight controls, etc.

### Flight

Subject	Description
General Handling Qualities (Subpart B)	<ul style="list-style-type: none"><li>• For projects involving significant external modification to the basic airframe (FLIR, Night-sun, etc.)</li></ul>
Category-A (Subpart B)	<ul style="list-style-type: none"><li>• Evaluation of T/O and Landing procedures, including abuse testing</li><li>• Engine failure below/at/above DP.</li><li>• Assessment of displays &amp; required equipment to execute maneuver (RADALT, lights, etc.)</li><li>• Assessment of “TNG mode” (if applicable)</li><li>• Verification of RFMS WAT performance information.</li><li>• Evaluation of <u>elevated</u> heliport procedures, if</li></ul>

approval is requested. [Note: this may be difficult to schedule – early coordination is essential, as simulation of an elevated heliport procedures has not been accepted.]

- Evaluation of “Training Mode” & displays, if applicable.
- $V_{ne}$  Cues

AFCS / Autopilot  
(§§ 671, 695, 1329)

- Hardovers & slowovers, at the critical flight condition
- ILS to 100'
- RADALT power interrupt during ILS

External Loads  
(§ 143)

- General H/Q; evaluation of low-speed controllability and related flight limits.
- Review substantiation for equipment intended for HEC operations.

NVG Compatible  
Cockpits  
(§§ 1321, 1322, 1381,  
1383, 1385, 1401)

- Evaluation of cockpit for compatibility with approved NVG systems.
- Aircraft must still meet the basic lighting requirements for unaided flight.
- Review of RFMS limitations and procedures.

### Other

<b>Subject</b>	<b>Description</b>
Flammable Fluid Fire Protection	27/29.863 Flammable Fluid Fire Protection, Flammability characteristic of Fluids, encourage use of Fire retardant fluids.

## PowerPlant

Subject	Description
Rotor drive system	29.917 (b) Design assessments required which includes detailed failure analysis.
Rotor drive system and control mechanism tests (29.923(a)(2))	Repetitive ELOS. Rule requires endurance test be done on the rotorcraft. Some manufacturers perform the test on simulated fuselages.
Flight Into Known Icing (FIKI)	29.1419 Ice Protection. Approval for FIKI for Part 29 aircraft increasing. Expect a Part 27 aircraft with seek FIKI approval.  * - More a case where existing AC material has not been standardized between authorities.
Power Situation Indicator	29.1305 Powerplant Instruments. Use of 1 cockpit display of the minimum limit engine power parameter vs. the analog display of 3 instruments (Nr, MGT, and Q).
Inlet Barrier Filter (IBF)	29.1091 Air Induction & 29.901 Installation. Adequate compliance requirements for use of IBFs. Policy guidance memorandum in legal review.
HUMs	MG 15-1 Airworthiness Approval of Rotorcraft Health Usage Monitoring Systems (HUMS). To include various drive system vibrations monitoring systems.  * - Current AC material has not been standardized between authorities.

## Structures

<b>Subject</b>	<b>Description</b>
Composite Structure	Currently, there is no specific rule addressing composite structure. Current § 29.571 is the compliance requirement and the advisory guidance addresses a compliance methodology.
Yawing (§29.351)	This may become a generic validation item due to different regulatory interpretations between FAA and EASA
Human External Cargo (HEC) (§29.865)	There is confusion as to what constitutes “HEC”. The current guidance needs to be revised to provide clear guidance. There are differences between EASA and FAA operational requirements which also lead to confusion during validation.
Fatigue (§29.571)	The latest amendment for §29.571 was in 1989. However, to date there has only been one new US manufacturer meeting the latest amendment and only a few validated products. The AC guidance (MG 11) has been updated to clarify some confusion from the previous guidance.
Passenger Emergency Exits (§29.807(c)(1))	Repetitive ELOS. Requires exits on top, bottom or ends of fuselage. Typically rotorcraft do not have these and compliance is shown by demonstrating egress out side exits while fuselage is on its side.