

ROTORCRAFT SIGNIFICANT PROJECT LIST

Updated 6/27/2017

Discipline	Issue Paper (Yes/No/Maybe)	Special Condition (Yes/No/Maybe)	Subject	Description	Regs. AC's, & Orders	POC
Electrical Sys/Avionics	Yes	Maybe	Lithium Batteries	Regulations (§27/29.1353) do not adequately address hazards associated with lithium batteries. Regulatory changes are in work.	AC 20-184, Guidance on Testing and Installation of Rechargeable Lithium Battery and Battery Systems on Aircraft. Policy guidance for non-rechargeable Lithium batteries policy to follow.	Wiley, Mark
Electrical Sys/Avionics	Yes	Yes	Advanced Flight Controls	No guidance exists for Advanced Flight Controls that include Fly-by-wire and Fly-by-light Technology. Special Conditions will be required for Advanced Flight Controls. To date, no FBW has been certified in Rotorcraft.		Ogunleye, Ifeolu
Electrical Sys/Avionics	Yes	Yes	Installation of Complex Avionics on Part 27 Rotorcraft	Special Conditions will be required to clarify proper assessment of malfunctions. The present 14 CFR 27.1309 (b) and (c) regulations do not adequately address the safety requirements for systems whose failures could result in "Catastrophic" or "Hazardous/Severe-Major" failure conditions, or for complex systems whose failures could result in "Major" failure conditions	§27.1309	Shaw, Andy
Electrical Sys/Avionics	Yes	No	Solid State Circuit Breaker Systems	These devices exhibit features not addressed by current regulation and current guidance does not provide a means of compliance appropriate for installation of these devices on rotorcraft. A means of compliance issue paper may be needed for installations to address concerns with these systems.	§27/29.1357	Wiley, Mark
Electrical Sys/Avionics	Yes	No	Non-required Equipment Safety Enhancing Equipment (NORSEE)	NORSEE is equipment, not required by any federal regulation, installed in rotorcraft with the intent to increase rotorcraft safety. An Issue paper is required to document the system evaluated, and determined to meet the NORSEE criteria.	NORSEE Policy PS-ASW-27,29-10	Schwab, George
Electrical Sys/Avionics	Maybe	No	Approved Model List (AML) STC	An AML STC is a variation of a multiple STC which allows the sharing of common certification data for a product being installed. Issues may arise when installing avionics that incorporate complex integration and when installing mounts. Ensure that the RSS policy is followed in addition to the national policy. Recommend a teleconference with RSS is conducted early in the project.	Rotorcraft AML policy ASW-100-09-001, AC 20-180	Schwab, George
Electrical Sys/Avionics	Maybe	No	Laser Systems	New laser policy was published in Dec 2014. A means of compliance issue paper may be required if the AC is not followed in its entirety.	AC 20-183	Wiley, Mark

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Electrical Sys/Avionics	Yes	No	Filtered Infra-Red (IR) searchlights	These systems exhibit features not addressed by current regulation or published FAA guidance. ASTM recently published F3238, "Standard Specification for Design and Installation of an Infrared (IR) Searchlight System (USA)". The FAA plans to publish policy to reference the ASTM standard. Until FAA policy is published a means of compliance issue paper is needed to reference the ASTM standard. Draft policy does not allow certification of operable high energy infra-red searchlights systems on rotorcraft.	§27/29.1309; FAA policy is planned to reference ASTM Standard F3238.	Wiley, Mark
Electrical Sys/Avionics	Maybe	No	ADS-B-In	NEXTGEN Technology: A means of compliance issue paper may be required for initial situational awareness ADS-B In applications. A human factors evaluation may be required if it includes integration with the PFD.	AC 20-172A	Wiley, Mark Schwab, George
Electrical Sys/Avionics	Maybe	No	Health Usage Monitoring Systems (HUMS) for usage and maintenance credit	A means of compliance issue paper may be required for HUMS for usage and maintenance credit.	MG-15	Brandli, Liz Shaw, Andy Franke, Scott Hughlett, Michael
Electrical Sys/Avionics	Yes	No	MEMS Technology	A means of compliance issue paper is required for attitude-based systems using MEMS technology. The introduction of MEMS technology in attitude instruments raises new challenges for rotorcraft installations. MEMS technology that usually consists of three solid-state accelerometers (one for each flight axis) have a difficult time distinguishing between aircraft movement and the normal vibration spectrum of the platform to which it is mounted.	AC 20-181	Soth, Mitch
Electrical Sys/Avionics	Maybe	No	Wireless Systems	Current guidance does not provide a means of compliance that adequately addresses unique characteristics and features for permanent installation or carry-on systems designed for in cabin wireless rf communications on rotorcraft. A means of compliance issue paper may be required for installation of a wireless RF system on Rotorcraft.	AC 20-168	Wiley, Mark Schwab, George
Electrical Sys/Avionics Flight-test/Human Factors	Maybe	No	Glass cockpit installations	ACO will need to ensure that a systems integration evaluation and human factors assessment is performed when installing a new glass cockpit. A means of compliance issue paper may be required depending on the level of integration of the new system.	§27/29 - 1301, 1303, 1305, 1321, 1322, 771,773 b, 1316,1317,777,1323,1329 if applicable, 1367, 1381, 1501, 1541-1555, 1585, 27.1367, AC MG-1	Davenport, Clark Shaw, Andy Schwab, George
Electrical Sys/Avionics Flight-test/Human Factors	Yes	No	TCAS II	Rotorcraft guidance for TCAS II installations do not exist. A means of compliance issue paper will be required. Some Rotorcraft have performance issues with the Climb Resolution Advisory. Also, issues may exist with the Azimuth tracking.	AC 20-151B (fixed wing), PS-ASW-2729-12 in work	Jordan, Jon Davenport, Clark Shaw, Andy
Electrical Sys/Avionics Flight-test/Human Factors	Maybe	No	Class II Electronic Flight Bags	A means of compliance issue paper may be needed when installing provisions on the flight deck for Class 2 EFBs, which are considered Personal Electronic Devices. Responsibilities of the applicant include the identification of any limitations on the EFB (e.g. weight, electrical load) that are necessary to ensure the safety and continued airworthiness of the provisions.	AC 120-76B	Wiley, Mark
Electrical Sys/Avionics Flight-test/Human Factors	Maybe	No	Class III Electronic Flight Bags	NEXTGEN Technology: An issue paper may be needed for EFB projects with Class 3 hardware or Type C software applications.	AC 20-173	Wiley, Mark

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Electrical Sys/Avionics Flight-test/Human Factors	Yes	No	Non-TSO functions	Non-TSO functions included in avionics not related to TSO specific aviation, navigation, or aviation related communication. For example: Telephone, texting, video, entertainment, etc that the pilot controls because the design of the box requires the pilot to control them and they are integrated with avionics that control aviation related functions.		Davenport, Clark
Electrical Sys/Avionics Flight-test/Human Factors	Maybe	No	Synthetic Vision Displays for IFR	A systems review will be required for SVS in IFR Rotorcraft. A means of compliance issue paper may be required as well. Because SV is presented on the primary flight display as an integral part of the attitude indicator, the level of design assurance for the interaction between the flight guidance cues (flight path vector, display of terrain, attitude indications of pitch/roll) should be commensurate with the criticality of a primary flight display, particularly when it comes to misleading information.	MG-19, AC 20-167A	Davenport, Clark
Electrical Sys/Avionics Flight-test/Human Factors	Yes	No	G500H installation	For compliance to 14 CFR 27.1309, the Garmin G500H Avionics Display System does not meet the safety requirements ($<1 \times 10^{-7}$) for a Hazardous failure condition of misleading attitude information during night VMC operations .	§27.1309	Shaw, Andy
Electrical Sys/Avionics Flight-test/Human Factors	Yes	Yes	Search and Rescue including AFCS operations below Vmini	Special Condition will be required for SAR operations.		Soth, Mitch
Flight-Test/Human Factors	Maybe	No	RNP Operations	NEXTGEN Technology: An issue paper may be needed to establish an acceptable means of compliance for Vertical RNP. Specific wording will be required for the RFM and a Flight-test evaluation will be required.	AC 20-138C	Jordan, Jon Davenport, Clark
Flight-Test/Human Factors	No	No	Space-Based Augmentation System (SBAS) - Global Positioning System - Wide Area Augmentation System (GPS-WAAS)	Ensure a flight test evaluation is performed for LPV steep angle approaches. Legacy 3 axis autopilots have trouble with steep angle approaches. High Angle Intercepts Turns at the FAF should be performed to ensure adequate performance particularly in legacy based AFCS systems and equipment	AC 20-138C, MG-1	Jordan, Jon Davenport, Clark
Flight-Test/Human Factors	No	No	Referencing Equipment Handbooks in RFM Limitations	Ensure Pilot's guides, Handbooks, etc are not referenced within the limitations section of the RFM.		Jordan, Jon
Flight-Test/Human Factors	No	No	Night Vision Imaging Systems (NVIS)/NVG	Ensure a human factors evaluation is performed. Reg 21.93 is used to guide applicants to STC (Major Change)	§21.93, AC MG-16	Davenport, Clark
Flight-Test/Human Factors	Maybe	No	Touch Screen Interface	An issue paper on the means of compliance for a touch screen as a control method is not needed. The touch screen intended function, pilot interface, and failure modes will be considered as part of the system evaluation. An issue paper may be required if there are mitigations against touchscreen functionality and failure modes.	AC 20-175, §771(a), 1301, 1309	Davenport, Clark

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Flight-Test/Human Factors/ Propulsion	Yes	No	Auto-pop and Warning Track for required instruments (Part time display of required information and green-range anomaly alerting)	A means of compliance issue paper will be required for Part-time displays. Numerous issues arise when the required information is deselected thus needing warning track or other necessary mitigations.		Soth, Mitch Davenport, Clark
Icing/Flight-Test	Yes	No	Full Icing approvals	Due to the emerging rotorcraft fleet with full icing certification, directorate involvement will be required for full icing approvals. Full icing entails at least 2 icing tests (tunnel & aircraft level)	SAE AC9C AC revision to 29.1419 material in work	Haight, Eric
Misc	Maybe	No	Validation Projects	Any validation item generated by a foreign authority where the FAA is the certifying authority. Also, any limitations that are part of the foreign approval (i.e. TC, STC, etc) that are not compatible with FAA regulations. This will ensure the RSS is made aware of any harmonization issues.		Soth, Mitch
Propulsion/Human Factors	Yes	No	Integrated Power Indicators other than traditional first limit indicators	Integrated power indicators used in lieu of primary power indicators (e.g. Ng, ITT, and TQ). A means of compliance issue paper will be required for integrated power indicators. Use of a PI usually allows deselection of required primary powerplant indicators, thus, needing to establish certification criteria for acceptance of PI.		Haight, Eric Soth, Mitch
Propulsion	Yes	Yes	30-minute All Engines Operating (AEO) ratings	Most applicants are seeking this AEO rating, commonly at Takeoff power, for Search & Rescue missions. Special conditions are required,	27/29.923, 29.1049, 27/29.1305, 27/29.1521	Haight, Eric
Drive Systems	Maybe	No	Major changes or Parts Manufacturing (PMA) for main gear box (MGB) and related drive systems	A means of compliance issue paper may be required when applicants propose endurance testing on the bench vs. the aircraft.	27/29.923	Edupuganti, Rao
Propulsion/Flight-Test	Maybe	No	Inlet Barrier Filter (IBF) systems	IBF's can have negative performance issues or can adversely affect inlet distortion. However, IBF systems must not invalidate engine manufacturer installation instructions. Policy Statement PS-ASW-27/29-07 was published 5/8/2017.	PS-ASW-27/29-07	Hughlett, Michael Jordan, Jon
Propulsion	Maybe	No	Fuel System Crash Resistance	Important to verify acceptable fuel tank drop test plan configuration and provide clear pass/fail criteria. No post test leakage is allowed.	27/29.952	Blyn, James Haight, Eric
Propulsion	Yes	No	Time Limited Dispatch	A means of compliance issue paper will be required. To date, no approvals for TLD have been done for rotorcraft.		Blyn, James

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Propulsion/Flight-Test	Maybe	No	Above Min-Spec Engine Performance	A means of compliance issue paper may be required. In addition to installation considerations, early coordination with EPD and engine manufacture is needed. Issues arise when applicants exceed the ratings of the engine.		Edupuganti, Rao Jordan, Jon
Security	Maybe	Maybe	Aircraft Electronic System Security Isolation or Protection from Internal access	A special condition issue paper may be needed to ensure isolation or protection if new access by internal systems is allowed to previously isolated data networks connected to systems that perform functions required for safe operation of the rotorcraft. For example, via wired and wireless access ports such as ground support equipment, PEDs, EFBs, maintenance computers and USB.	PS-AIR-21.16-02 Rev 2	Brandli, Liz Ogunleye, Ifeolu
Security	Maybe	Maybe	Aircraft Electronic System Security Isolation or Protection from Unauthorized External access	A special condition issue paper may be needed if access by external sources are allowed to aircraft systems, databuses or servers. For example, via wireless such as, Gatelink networks, cellular or the Internet.	PS-AIR-21.16-02 Rev 2	Brandli, Liz Ogunleye, Ifeolu
Software/Airborne Electronic Hardware	Maybe	No	Integrated Modular Avionic (IMA) systems	A means of compliance issue paper may be needed if an applicant does not propose to use AC 20-170 and RTCA DO-297 for IMA systems.	AC 20-170	Brandli, Liz
Software/Airborne Electronic Hardware	Yes	No	Multi-Core Processors	New/Novel Technology: A means of compliance issue paper is required for the use of Multi-Core Processors. The use of these devices introduces a number of new issues that do not exist with traditional single core processors.		Brandli, Liz
Software/Airborne Electronic Hardware	Yes	No	Airborne Electronic Hardware Programmed with COTS Intellectual Properties	A means of compliance issue paper may be needed for aircraft systems that utilize Airborne Electronic Hardware devices programmed with COTS intellectual properties.	AC 20-152A in work, 8110.105	Brandli, Liz
Software/Airborne Electronic Hardware	Maybe	No	Management of Open Problem Reports	A means of compliance issue paper will likely be needed if an applicant or any of their suppliers intends to defer numerous resolution and correction of software and airborne electronic hardware problems past the date of certification.	AC 20-TBD in work, AC 20-115D in work, 8110.49, Update	Brandli, Liz
Software/Airborne Electronic Hardware	Maybe	No	Model-Based Development	A means of compliance issue paper may be needed if an applicant or supplier is using model-based techniques for software development using RTCA DO-178B. When using RTCA DO-178C, the Model-Based-Technology supplement RTCA DO-331 should be used for guidance.	AC 20-115D in work	Brandli, Liz
Software/Airborne Electronic Hardware	Maybe	No	Formal Methods	A means of compliance issue paper may be needed if an applicant or supplier is using formal methods and tools for software development using RTCA DO-178B. When using RTCA DO-178C, the Formal Methods supplement RTCA DO-333 should be used for guidance.	AC 20-115D in work	Brandli, Liz

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Software/Airborne Electronic Hardware	Maybe	No	Object Oriented Technology	A means of compliance issue paper may be needed for applicants or suppliers using Object Oriented Technology for software development using RTCA DO-178B. When using RTCA DO-178C, the Object-Oriented Technology supplement RTCA DO-332 should be used for guidance.	AC 20-115D in work	Brandli, Liz
Software/Airborne Electronic Hardware	Maybe	No	Software/AEH Maturity prior to TIA	An issue paper may be needed to establish minimum software and airborne electronic hardware criteria prior to TIA. This is to ensure adequate information and safety mitigations are appropriate to proceed with FAA TIA per the SRB process. An Issue paper should be used on Rotorcraft with Fly-By-Wire Flight Controls.		Brandli, Liz
Structures/Flight-Test	No	No	External Loads	Rotorcraft external loads intended for carriage of persons or non-persons. Human External Cargo (HEC) requirements were not codified until later amendments of Parts 27 & 29. This is a 21.101 (CPR) concern. Additionally, external load airworthiness standards did not exist in the CARs. Confusion exists with the various regulations, types of HEC, and policy.	27/29.865	Soth, Mitch
Structures	Yes	Yes	Combi	Rotorcraft that includes a passenger and cargo configuration. A special condition is required due to the lack of regulations for combi configurations.	Draft policy in work	Roach, Gary
Structures	Yes	No	Exterior Vinyl covering	A means of compliance issue paper will be required since policy does not exist for exterior vinyl coverings. Vinyl coverings raise several issues such as installation near rotating components, control systems, engine inlet(s), windows, and emergency exits. Substantiation that the vinyl will not prevent discovery of a crack, adverse chemical reaction, deterioration, etc.		Roach, Gary
Noise	Maybe	No	Rotorcraft Noise	Part 36 for Helicopters was updated in May 2014 to Amendment 30. This amendment defined stage 3 rotorcraft noise limits. There is a path for stage 2 rotorcraft to be "recertified" as a Stage 3 compliant Rotorcraft. A means of compliance issue paper may be required for Amendments 28 or earlier.	14 CFR Part 36	Soth, Mitch
Structures	Maybe	No	Additive Manufacturing	All new and novel proposals for additive manufacturing must be reviewed by the Rotorcraft Directorate. An Issue Paper may be required. This would include processes where metallic powders, wire, resin, etc. are processed in a machine using lasers or electronic beams to produce near final parts. Also known as 3-D printing or rapid prototyping. This line item is not intended for approaches that are additive in nature but have a long successful history (e.g. hardface coatings, thermal barrier coatings, etc.)	MOC Issue Paper may be necessary for 27/29.603, 27/29.605, 27/29.613	Hatfield, David