Applicant's Name_____

SYSTEMS AND EQUIPMENT (MECHANICAL EQUIPMENT)

See FAA Order 8110.37, Appendix B, Chart C1

DER APPLICATION EVALUATION TECHNICAL CRITERIA

Delegated Functions and Authorized Areas

- Applicant indicates requested area(s) of delegation and attaches supporting data to establish technical expertise and experience.
- Advisor (Adv) evaluates requested area(s), recommends area(s) to evaluation panel (EP) (Y=YES; N=NO), and provides rationale.
- Evaluation panel evaluates area(s) recommended by advisor, marks EP column (Y=YES; N=NO), and provides rationale.

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DER APPLICANT USE ONLY		FAA USE ONLY	
Requested Areas	**DETAIL DESIGN AND INSTALLATION**	**Adv**	**EP**
	1A Air Conditioning		
	1B Hydraulic		
	1C Ice Protection		
	1D Rain Protection		
	1E Oxygen		
	1F Pneumatics		
	1G Wheels, Tires, Brakes		
	1H Interior Arrangements		
	1I Interior Materials		
	1J Pressurization		
	1K Fire Protection		
	1L Water System, Potable & Waste		
	1M Evacuation Systems		
	1N Special (Specify)		
Requested Areas	**EQUIPMENT QUALIFICATION TESTS**	**Adv**	**EP**
	2A Air Conditioning		
	2B Hydraulic		
	2C Ice Protection		
	2D Rain Protection		
	2E Oxygen		
	2F Pneumatics		
	2G Wheels, Tires, Brakes		
	2J Pressurization		
	2K Fire Protection		
	2L Water System, Potable & Waste		
	2M Evacuation Systems		
	2N Special (Specify)		
Requested Areas	**SOFTWARE**	**Adv**	**EP**
	3A Air Conditioning		
	3B Hydraulic		
	3C Ice Protection		
	3D Rain Protection		
	3E Oxygen		
	3F Pneumatics		
	3G Wheels, Tires, Brakes		
	3H Interior Arrangements		
	3I Interior Materials		
	3J Pressurization		
	3K Fire Protection		
	3L Water System, Potable & Waste		
	3M Evacuation Systems		
	3N Special (Specify)		

DER APPLICANT USE ONLY		*FAA USE ONLY*	
Requested Areas	**SAFETY ANALYSIS**	**Adv**	**EP**
	4A Air Conditioning		
	4B Hydraulic		
	4C Ice Protection		
	4D Rain Protection		
	4E Oxygen		
	4F Pneumatics		
	4G Wheels, Tires, Brakes		
	4J Pressurization		
	4K Fire Protection		
	4L Water System, Potable & Waste		
	4M Evacuation Systems		
	4N Special (Specify)		
Requested Areas	**FLAMMABILITY**	**Adv**	**EP**
	5I Interior Materials		
	5K Fire Protection		
	5N Special (Specify)		

Requested Areas	**LIGHTNING/HIRF PROTECTION**	**Adv**	**EP**
	6A Air Conditioning		
	6B Hydraulic		
	6C Ice Protection		
	6D Rain Protection		
	6E Oxygen		
	6F Pneumatics		
	6I Interior Materials		
	6J Pressurization		
	6K Fire Protection		
	6L Water System, Potable & Waste		
	6N Special (Specify)		

Applicant's Name_____

SYSTEMS AND EQUIPMENT (MECHANICAL EQUIPMENT)

See FAA Order 8110.37, Appendix B, Chart C1 (Cont'd)

DER APPLICANT USE ONLY		*FAA USE ONLY*	
Requested Areas	**SERVICE DOCUMENTS**	**Adv**	**EP**
	7A Air Conditioning		
	7B Hydraulic		
	7C Ice Protection		
	7D Rain Protection		
	7E Oxygen		
	7F Pneumatics		
	7G Wheels, Tires, Brakes		
	7H Interior Arrangements		
	7I Interior Materials		
	7J Pressurization		
	7K Fire Protection		
	7L Water System, Potable & Waste		
	7M Evacuation Systems		
	7N Special (Specify)		

Additional Requirements for a DER With a Delegation of Software Approval:

Circle One

Yes No (a) Comprehensive familiarity with, and understanding of, RTCA Document DO-178 (revision), Software Considerations in Airborne Systems and Equipment Certification.

Yes No (b) Familiarity with the systems safety assessment process, specifically, those portions which establish the software criticality levels.

Yes No (c) A demonstrated knowledge of the rationale for, and the significance of, each stage in the software development process, as well as its supporting standards, procedures, and documentation. The DER should be able to identify the critical aspects and contents of each of the documents mentioned in DO-178.

Yes No (d) Experience gained from participation in some technically responsible capacity over a complete software development program life cycle. This qualification may be satisfied by an aggregate over several different software development programs.

Yes No (e) Experience interacting with all phases of software development and testing processes addressed by DO-178, including utilization of the associated configuration and quality control procedures. This experience should include significant responsible involvement in several of those phases. When assessing an applicant's capabilities for making a knowledgeable finding of compliance, experience obtained in the requirements development or testing phases may, for example, be weighted more heavily than that obtained in the detail design or coding phases.

Yes No (f) Fluency in at least one high-level and one assembly-level programming language and familiarity with typical support software used in a software development process. Familiarity with typical software tools available to facilitate the development, documentation, and consistency-checking processes is highly desirable.

Yes No (g) Demonstrated knowledge of the sources of software anomalies, the relative merits of the types of testing procedures which are available to protect against them, and the characteristics of a thorough test program.

Yes No (h) Familiarity with the aspects of computing peculiar to real-time avionics systems, such as the use of interrupts, multitasking, software reentrancy, etc. This should include an appreciation of the types of analysis and testing necessary to ensure the integrity of these mechanisms.

Yes No (i) An understanding of the techniques which may be employed to reduce software criticality levels, such as system architecture, multiversion programming, and partitioning. This should include the ability to assess the adequacy of a proposed technique relative to the integrity credit desired.

Yes No (j) Knowledge of hardware characteristics such as input/output schemes, memory organization and multiport access, communication bus protocols, and processor architecture, all of which have an impact on the software interface and the potential for the creation of anomalies.

Applicant's Name_____

SYSTEMS AND EQUIPMENT (MECHANICAL EQUIPMENT)

See FAA Order 8110.37, Appendix B, Chart C1 (Cont'd)

Additional Application Requirements for a Delegated Function of Complex Electronic Hardware Approval:

Circle One		(Applicant/DER indicates knowledge/ability/experience possessed - attach substantiation)
Yes	No	(a) Thorough working knowledge and understanding of RTCA/DO-254[ ] (where [ ] indicates the latest revision of the document), Design Assurance Guidance for Airborne Electronic Hardware.
Yes	No	(b) Understanding of and experience with RTCA/DO-254[ ] hardware life cycle data needed to demonstrate that the objectives of RTCA/DO-254 are fully met (for example, Plan for Hardware Aspects of Certification, Hardware Accomplishment Summary, Hardware Process Assurance Plan, Hardware Configuration Management Plan, Hardware Design Plan, Hardware Verification Plan, Hardware Validation Plan, Hardware Design Standards, Traceability Data). The DER should also demonstrate the ability to assess the quality of hardware life cycle data and the development team's adherence to approved plans, standards, and procedures.
Yes	No	(c) Familiarity with the systems safety assessment process, specifically, those portions that establish the hardware design assurance levels.
Yes	No	(d) Demonstrated knowledge of the rationale for, and the significance of, each process and activity in the hardware life cycle, as well as its supporting standards, procedures, and documentation. The DER should be able to identify and to evaluate the critical aspects and contents of each of the documents in RTCA/DO-254[ ].
Yes	No	(e) Ability to distinguish between complex and simple electronic hardware. This should include the ability to evaluate the classification of the device as "simple" and its justification, assess the test and analysis strategy, and evaluate the test and analysis results to confirm verification coverage required for the "simple" classification of the electronic hardware.
Yes	No	(f) Experience gained from participation in some technically responsible capacity over a complete airborne electronic hardware life cycle. This qualification may be satisfied by an aggregate of involvement in different airborne electronic hardware development programs and various roles in those programs.
Yes	No	(g) Experience interacting with the phases of airborne electronic hardware development and testing processes addressed by RTCA/DO-254[ ], including use of the associated configuration management and process assurance. This experience should include significant responsible involvement in several of those phases.
Yes	No	(h) Experience with the design of some different kinds of airborne electronic hardware devices, such as Application Specific Integrated Circuits (ASIC), Programmable Logic Devices (PLD), Field Programmable Gate Arrays (FPGA), and other types of custom micro-coded devices.
Yes	No	(i) Familiarity with Hardware Description Languages used for programming airborne electronic hardware, and an understanding of the types of verification required for use of such languages.
Yes	No	(j) Familiarity with various tools used in the design, verification, validation, and configuration control of airborne electronic hardware. Familiarity with typical airborne electronic hardware tools available to facilitate the development, documentation, and consistency-checking processes is highly desirable.
Yes	No	(k) Demonstrated knowledge of the sources of airborne electronic hardware anomalies, the relative merits of the types of verification processes and activities able to detect errors and anomalies, and the characteristics of a thorough verification program.
Yes	No	(l) Understanding of the system and hardware design techniques that may be used to assign or to reduce a hardware design assurance level, such as redundancy, built-in-test, monitoring, circuit/function isolation, and dissimilarity. This should include the ability to assess the acceptability of proposed mitigation techniques relative to the required system integrity and reliability.
Yes	No	(m) Experience in addressing errors in the different processes and activities in which errors can be introduced in airborne electronic hardware, for example, handling of components, use of development tools, design, and manufacturing/fabrication process.
Yes	No	(n) Knowledge of hardware characteristics that can impact interfaces with software and other hardware components, including safety, integrity, and reliability aspects.
Yes	No	(o) Experience with airborne electronic hardware verification process activities, including reviews, analyses, simulation/emulation, and testing.
Yes	No	(p) Familiarity with post-certification airborne electronic hardware processes, such as manufacturing quality control, factory configuration control, acceptance test procedures, factory installation and test equipment, production equipment control, and installation approvals for Technical Standard Order (TSO) authorization equipment.
Yes	No	(q) Familiarity with airborne electronic hardware modification processes, including modifications to previously developed hardware, changes of aircraft installation, change of application or design environment, upgrading a design baseline, and conducting change impact analyses and regression testing and analyses.
Yes	No	(r) Demonstrated knowledge of the different design assurance considerations and strategies in RTCA/DO-254[ ] appendix B, including Functional Failure Path Analysis, Architectural Mitigation, Product Service Experience, and Advanced Verification Methods that may be used for level A and B complex electronic hardware.