

ANAC Safety Emphasis Items (SEI) List

RBAC 25

Revision Log

Rev. 0	Dated July 31 st , 2019	Initial Issue
Rev. 1	Dated September 27 th , 2021	Removal and edition of items identified

SEI definition (ANAC-FAA IPA Rev. 2):

- (1) New VA standards where the VA or CA has limited past experience with the application to a product, they have an important impact on the whole product or a critical feature, and engineering judgment is required to establish compliance;
- (2) Airworthiness standards where the VA's and CA's interpretive, advisory, MOC, or guidance materials differ or are insufficient, to an extent that those differences impact the level of safety required by the VA system and could result in VA required changes to the type design or approved manuals. As experience is gained, the VA may choose to reduce the application of this criterion to minimize Non-Basic applications. When interpretive, advisory, MOC, or guidance materials are well understood by both Authorities, full confidence should be given to the CA for determining compliance to those VA SEIs;
- (3) Standards identified for special emphasis by the VA in a data-driven risk assessment analysis for the product class; and
- (4) Subjects linked to known safety conditions that the VA has identified, and for which the VA either has taken, or is in the process of taking, airworthiness action.

No.	Standard	Subject	Description	Reference
1	25.21(g)(3)	Proof of Compliance – Icing Conditions	Application of Appendix O supercooled large drop icing conditions. SEI applicable Amdt. 25-140 and on. Limited experience with new standard.	
2	25.21(g)(4)	Proof of Compliance – Icing Conditions	Application of Appendix O supercooled large drop icing conditions. SEI applicable Amdt. 25-140 and on. Limited experience with new standard.	
3	Removed at Rev. 1			
4	25.1309	Thrust Reverser Removal	SEI applicable to projects in which thrust reversers are removed from, or deactivated on, products originally certified with thrust reversers. Removal/deactivation of thrust reversers introduces system safety considerations for which mature compliance methods are not available. This may include revised operational factor considerations for wet or slippery runways.	
5	Removed at Rev. 1			
6	25.571, 25.671, 25.1309	Certification of Structural Elements in Flight Control Systems	SEI applies only to structural elements in flight control systems. FAA issued Policy Statement PS-ANM-25-12 in 2015. This policy statement provides guidance for certifying structural elements in flight control systems. Because of the unique nature of structural elements in systems, which act as both structure and as part of a system, additional guidance is needed on the appropriate application of fatigue and damage tolerance requirements and system safety requirements. The FAA policy provides examples of structural elements that are subject to these regulations and provides guidance on compliance.	FAA policy statement PS-ANM-25-12
7	25.601, 25.671(c)	Rudder Control Reversal Conditions	Applicable to new or modified rudder control systems, or other changes that could impact airplane dynamic response to rudder reversals. There is insufficient ANAC/FAA guidance that can be used to verify that the characteristics of the rudder control system are appropriate for compliance with sections 25.601 and 25.671(a). However, the ANAC/FAA accepts the rudder reversal load conditions in EASA CS 25.353 with associated guidance in EASA CS 25 Book 2, for RBAC/CFR compliance.	
8	Removed at Rev. 1			
9	25.561, 25.563, 25.801	Ditching	Water impact conditions are not fully defined.	
10	25.561, 25.562	Seat adapter plates	SEI applies to installations of multiple single-place seats onto adapter plates, with the adapter plate installed into the airplane seat track (or other structure).	Acceptable MoC are described in FAA policy statements PS-ANM100-2000-00123 and -00129.
11	25.603, 25.605, 25.613	New, novel or unusual materials or manufacturing processes	For relatively new, novel, or unusual materials and manufacturing process, such as additive manufacturing, welding (thermoplastic composites, laser beam, friction stir welding), the use of ceramic material or magnesium alloys, where limited experience has been gathered so far, it needs to be understood how the applicant is complying with the applicable requirements. Note: Completely new, novel, or unusual materials and processes will automatically lead to non-basic classification.	

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12	25.571, 25.1529, Appendix H	Fatigue and Damage Tolerance	SEI Applicable only to new TC and changes classified as significant under RBAC/14 CFR 21.101. The showing of compliance with fatigue and damage tolerance requirements is a complex task, with many issues to be considered, and with various possible compliance approaches, in particular for new TCs, amended TCs (derivative airplane/model) or significant STCs (such as passenger to freighter conversions). Given the importance of the subject for the overall safety level of the airplane, the means of compliance needs to be understood.	AC 25.571-1D, AC 20-128, and Policy PS-ANM100-1993-00041
13	Removed at Rev. 1			
14	Removed at Rev. 1			
15	25.772, 25.795(d)	Airplane security (physical security measures)	Any project involving any airplane (design) security measure. Including, but not limited to, the following specific issues: Inflight passenger access to checked cargo. Secondary flight deck door: Doors installed between the flight deck door and the passenger cabin. The regulation most applicable to the secondary door is § 25.772. Additional requirements include, but are not limited to, regulations relating to rapid decompression, emergency access to the flight deck, emergency evacuation, structural strength, and markings and placards. Airlines may install such a door in order to gain approval to modify procedures currently in place addressing § 121.587(b). Chemical oxygen generator: RBAC/14 CFR 25.795(d) requires chemical oxygen generators be secure from deliberate manipulation. This is a new requirement for which no one has yet demonstrated compliance.	MOC issue paper
16		Active side stick controllers	For active Side Stick controller applications, a means of compliance issue paper may be required to address the associated risks. There is insufficient guidance and all associated issues are evolving.	MOC issue paper
17	Removed at Rev. 1			
18	Removed at Rev. 1			
19	25.601, 25.671(c)(2)	Flight Control System Failure Criteria	ANAC/FAA allows an ELOS to § 25.671(c)(2) to use the Aviation Rulemaking Advisory Committee's (ARAC) proposed means of compliance. Applicable to new TC programs, and to all design change programs that involve modification of the flight control system.	ELOS
20	25.671, 25.672	Electronic Flight Control Systems (EFCS)	Applicable to EFCS changes. Mature standards and guidance are unavailable for airplanes with electronic flight control systems. The subject also covers side stick controllers, electronic flight control system failures, and mode annunciation. Special conditions may be needed.	Special conditions
21	25.671(c), 25.1301, 25.1309	Command Signal Integrity	Applicable to EFCS changes. A means of compliance issue paper may be needed to ensure fly-by-wire flight control systems are adequately evaluated. This area involves new technology with varying methods of compliance that are not completely harmonized.	MOC issue paper
22	25.629	Aeroelastic Stability (Flutter)	Applicable to projects requiring a compliance determination to 25.629. To establish the means of compliance with aeroelastic stability requirements for (i) airplanes equipped with feedback control systems that can affect the aeroelastic stability of the airplane, (ii) definition of failure conditions to be considered and (iii) addressing Limit Cycle Oscillation (LCO) and free-play, (iv) determining significance of a modification and extent of testing and analysis required, (v) hydraulic compensator design requirements. Multiple issues, complex and evolving. Recent policy and ELOS have been applied and more rule and policy changes expected.	
23	25.683	Flight Control System – Operation Tests	Applicable to projects requiring a compliance determination to 25.683. Compliance with 25.683(a) for electronic flight control systems (EFCS): 25.683(a) was originally intended for mechanical control systems, and methodology for EFCS is evolving. Sections 25.683(b) and (c) were added to the CFR at Amendment 25-139 to harmonize with CS 25.683(b) and (c). The ANAC/FAA has limited experience with application of these safety-critical standards. This SEI is applicable only to projects with Amendment 25-139 in the certification basis.	

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24	25.773	Pilot compartment view; Enhanced Vision Systems (EVS), Enhanced Flight Vision Systems (EFVS), Synthetic Vision Systems (SVS) displayed on a head-up display (HUD)	14 CFR Amdt 25-144 introduced a new requirement not in RBAC 25. A vision system with a transparent display surface located in the pilot's outside field of view, such as a head up-display, head mounted display, or other equivalent display, must meet the requirements of (e)(1) through (e)(4) in nonprecipitation and precipitation conditions. Limited experience with application of new standard to these technologies, previously addressed through special conditions. Special conditions may still be needed for a pre-Amdt. 25-144 certification basis.	Special Conditions
25	25.779(b)(1)	Reduced (Flexible) Takeoff Thrust Operations and Throttle Motion	An ELOS to § 25.779(b)(1) may be needed if there is a flight condition where there is an increasing thrust command given when the throttles are reduced (or vice versa). This can be an issue on non-moving throttles.	ELOS
26	25.803, 25.810	Emergency evacuation demonstration	Applicable to projects requiring a new compliance determination to RBAC/14 CFR 25.803 or 25.810. This includes changes to the emergency evacuation escape slides or any changes requiring emergency evacuation substantiation. Escape slide projects are rare, there is not extensive published guidance, and certification is a complex process. Emergency evacuation demonstration is also rare, and typically involves a combination of test and analysis, through a complex process with high visibility.	
27	Removed at Rev. 1			
28		Cargo Container with Self-Contained Temperature Control System, a.k.a. Active Unit Load Device (AULD)	AULDs are typically not part of the airplane type design and are approved in accordance with FAA Order 8150.4. Areas of concern include the presence of lithium batteries and active thermal control systems that may include a fan which could adversely impact smoke detection, smoke penetration and halon fire extinguishing agent concentration. For applicants proposing to use active unit load devices for the carriage of cargo, there is no published policy.	
29		Fire Extinguishing/Suppression Agent (Halon Replacement)	Halon is being phased out of airplane applications per ICAO deadlines. The use of non-Halon fire extinguishing/suppression agents for use in lavatory trash receptacle bottles, handheld fire extinguishers, engine/APU fire extinguishing and cargo compartment fire suppression should be documented by a means of compliance issue paper. There is insufficient guidance available for new fire extinguishing agents used in lieu of halon	
30		Main Deck Class C Cargo Compartment Halon Fire Extinguishing Agent Penetration into Occupied Cabin Areas	An issue paper may be needed to ensure an adequate design means is included and appropriate flight test compliance shown to ensure fire extinguishing agent penetration into occupied areas of the airplane does not occur or occurs at an acceptable level. There is insufficient guidance available.	
31		Smart Unit Load Devices	Smart Unit Load Devices are unit load devices that have enhanced fire protection features. Special Conditions may be needed to establish performance requirements for these devices.	Special conditions
32		Stowage/Baggage Compartment Fire Protection in Remote Areas	A special condition may be needed for fire protection measures in remote areas that contain stowage or baggage compartments.	Special conditions
33	25.901(c)	Powerplant installation	Applicable to projects requiring a 25.901(c) compliance determination.	
34	25.901(c)	Uncontrollable High Thrust (UHT)	A draft advisory circular provides a means of compliance with § 25.901(c) as it relates to failures that prevent the flightcrew from controlling thrust through the normal means when actual thrust is higher than commanded (a.k.a., uncontrollable high thrust). Applicants may use the draft advisory circular by referring to it in their project specific certification plan. When the applicant has done everything practical within the scope of the project to assure a compliant design, but still cannot demonstrate full compliance, granting an exemption may be in the public interest.	Exemption

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35	25.903(d)	Uncontained Engine and Tire Failure - Debris Penetration of Fuel Tank Composite Structure	Applicable to projects requiring a compliance determination to 25.903(d). Special Conditions may be needed to ensure that impacts to fuel tank composite structure from uncontained engine or tire failures do not penetrate or otherwise induce fuel tank deformation, rupture (for example, through propagation of pressure waves), or cracking sufficient to allow leakage of hazardous quantities of fuel.	Special conditions
36		Inflight All-Engine Restart	This issue applies to all airplanes powered by high bypass engines, engines with free power turbines, or with limited restart capability.	
37	Removed at Rev. 1			
38	Removed at Rev. 1			
39	25.867 25.963	Composite Wing and Fuel Tank Structure Post Crash Fire Survivability	A special condition may be needed to address §§ 25.867 and 25.963 because of fuel tank ignition sources related to composites in a post-crash fire. Composite material may not be as fire resistant as aluminum and may result in hot spots that cause ignition sources in fuel tanks. Composite structure may not match the existing level of safety that aluminum structure exhibits during a post-crash fire.	Special conditions
40	25.969	Fuel Tank Expansion Space for Composite Wing	Published policy is not available to address § 25.969. Composite material thermal expansion characteristics may result in less tank volume increase with temperature increase than traditional aluminum fuel tanks. Additional fuel tank expansion space may be needed to provide equivalent margin from fuel spillage provided by conventional aluminum fuel tanks.	
41	25.981(a)(3)	Lightning Protection of Fuel Tank Structure and Systems	Applicable to: - Projects for which CFR part 25 Amdt. 25-141 applies. Special conditions, exemptions, or exceptions under RBAC/14 CFR 21.101 may be needed to address fuel tank ignition sources from structural lightning, because compliance with compliance with § 25.981(a)(3) at Amdt. 25-141 can be impractical. Refer to FAA Policy Statement PS-ANM-25.981-02. or -Projects for which § 25.954 from Amdt. 25-146 and on applies, and fuel tank lightning protection is an affected area. There is limited experience applying the new rule and guidance.	Special conditions or exemptions. FAA Policy Statement PS-ANM-25.981-02, dated June 24, 2014.
42	25.981	Electrostatic Charge During Airplane Fueling of Composite Fuel Tanks	Mature guidance is not available to address fuel tank ignition prevention from electrostatic charge in compliance with § 25.981. During airplane fueling operations, the low electrical conductivity of composite materials could result in isolated parts that can collect electrostatic charge, or may result in longer electrostatic charge relaxation time of the fuel. Additional means may be needed to keep the accumulated charge on the fuel surface at a safe level to prevent an ignition source in the fuel tank.	
43	25.981	Fuel Tank Ignition Prevention and Electrical System Changes	Applicable to fuel tank and fuel tank system changes that could alter or introduce potential ignition sources. Subjectivity in determination of change significance under 21.101, and application of Amendment 25-102 or later standards.	
44	25.967(e)	Secondary Fuel Vapor Barrier for Composite Structure	Section 25.967(e) requires fuel tanks to be isolated from the personnel compartments by a fume proof and fuel proof enclosure. There is no published policy to ensure secondary fuel barrier coatings used on traditional aluminum tank construction are compatible for use with fuel tanks made of composites.	
45	25.1093(b)	Induction system icing protection	The FAA adopted new airworthiness standards in Title 14, Code of Federal Regulations part 25 at Amendment 25-140 and part 33 at Amendment 33-34 to include additional icing environments. The published guidance in AC 20-147A is not sufficient. The following aspects may require ANAC/FAA involvement: 1. Establishing the means of compliance to clarify the need for protection of the engine during icing conditions at all engine power settings, including in-flight idle conditions, and the regulatory need for consideration of the airframe as part of the engine inlet. 2. means of compliance to address falling and blowing snow. 3. means of compliance to describe that flight testing may be needed to sufficiently validate an analytical compliance demonstration to in-flight evaluating mixed phase and ice crystal icing (ICI) conditions. Means of compliance for ICI conditions is evolving and engineering judgement is required to determine if an applicant has sufficiently validated their analytical methods.	FAA policy memorandum dated August 3, 1992 and AC 20-147A
46	Removed at Rev. 1			

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47	multiple	APU Certification Requirements	An ELOS to multiple regulations in subpart E, F and G may be needed if the applicant proposes to meet alternative certification standards for the APU. . ANAC issues ELOS FCAR and considers EASA AMC to 25.1193 an acceptable guidance material If an applicant chooses to use these APU certification requirements, ELOS findings for §§ 25.1103(e), 25.1105 and 25.1305 would not be separately needed since an ELOS standard for these regulations is incorporated into the draft APU installation requirements of this issue paper.	ELOS
48	Removed at Rev. 1			
49		Auxiliary Fuel Tank Installations	Applicable to new or modified auxiliary fuel tank installations. AC 25-8 primarily addresses auxiliary fuel tank installations in cargo compartments. FAA policy is not mature for fuel system and crashworthiness requirements for auxiliary fuel tanks installed in other locations, such as a passenger compartment. Additionally, a method of compliance may need to be established for fuel tank installations in the horizontal stabilizer, to address fuel leaks or spills caused by maneuvers, malfunctions or structural damage.	AC 25-8
50		AVM (Airborne Vibration Monitoring) Indication and Qualifications	Published guidance is not available on this topic to address installation of a different engine on an existing airplane and §25.1305(d)(3) at Amendment 25-35 was not part of the airplane's pre-modified certification basis. Additionally, a means of compliance may be needed for AVM indicators, including qualification requirements.	
51	25.901(c), 25.939, 25.1041 and 25.1091	Backing Using Reverse Thrust (Powerback)	Published guidance does not adequately cover this subject if an applicant requests type design approval to use reverse power or thrust from the airplanes engines to move the airplane backwards in lieu of using a tug.	
52	Removed at Rev. 1			
53	Removed at Rev. 1			
54	Removed at Rev. 1			
55	25.1309	Artificial Intelligence and Machine Learning	The use of artificial intelligence/machine learning requires specific guidance that is not available in current material	
56	25.1309	MBD for hardware development	The use of Model Based Development (MBD) within the development process of custom devices requires guidance that is not available in current material	
57		Security Protection of Aircraft Systems and Networks	Special conditions may be needed if internal or external sources are allowed to transmit or write to aircraft systems, databases or servers connected to systems that perform functions required for the safe operation of the airplane. The evolving nature of security threats and compliance methods justifies continued identification as SEL.	Special Conditions
58		Automatic Dependent Surveillance - Broadcast (ADS-B In)	For ADS-B In. Evolving technology and compliance methods.	AC 20-172B
59		Use of Ground-Based Augmentation System (GBAS) in CAT II/III operations	GBAS CAT II/III approach, autoland and rollout guidance not yet mature. Technologies include Global Positioning System - Local Area Augmentation System (GPS-LAAS), Global Navigation Satellite System (GNSS) Landing System (GLS). A means of compliance issue paper is needed for CAT I GLS autoland, rollout or takeoff. AC 20-138D Change 2 provides guidance for CAT I GLS approaches.	
60		Integration of other GNSS Constellations with GPS or GPS/WAAS	Emerging Technology/Issue. New means of compliance may be needed for GNSS equipment to use other GNSS constellations (e.g. GLONASS, GALILEO, COMPASS).	
61		Using Autopilot/Auto Throttles/Flight Director During Traffic Alert and Collision Avoidance System (TCAS) Resolution Advisory	Mature guidance is not yet available for using the Autopilot/Auto Throttles/Flight Director during a TCAS Resolution Advisory maneuver such that the behavior is predictable and unambiguous to the flightcrew.	

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62		Vertical Required Navigation Performance (RNP)	Mature guidance is not yet available for Vertical RNP.	
63		Time of Arrival Control (TOAC) - Also Known as Required Time of Arrival (RTA)	Mature guidance is not yet available for navigation systems intended to provide time of arrival control.	
64		Flight Crew Electronic Voice Checklist	Mature guidance is not yet available for flight crew electronic voice checklists, for designs not previously approved, or for any design intended for non-normal checklists.	
65		Touch Screen Interface and Control Device in Flight Deck	Mature guidance is not yet available for installing touch screens in the flight deck in lieu of physical controls (e.g., knobs, buttons, levers) to address the effect of touch screen controls on pilot workload, the demand for pilot attention, and the potential for crew error or inadvertent control inputs.	
66		Display of Aeronautical Charts	Mature guidance is not yet available for approval of the display of aeronautical charts on any of the installed displays (e.g., display of departure, arrival and approach procedures). Data Driven Charts is an area of evolving technology.	
67		Use of Portable Electronic Devices (PEDs) to Control Installed Airplane Systems in the Cabin	Mature methods of compliance are not available for use of PEDs to control certain aircraft systems.	
68		Use of Portable Electronic Devices (PEDs) to Control Installed Airplane Systems in the Flight Deck	Mature methods of compliance are not available for use of PEDs to control certain aircraft systems.	
69	25.1383	LED Landing and Taxi Light Night Performance	A mature compliance method for RBAC/14 CFR 25.1383(a)(2) and (3) is not yet available to address unique aspects of LED landing and taxi light installation, ICAs and performance at night.	
70	25.1420	Supercooled large drop icing conditions	Limited experience in application of Appendix O conditions.	
71	25.1441(d)	Oxygen equipment and supply	Means of compliance is affected by decompression requirements of Amdt. 25-87. There is insufficient certification guidance for oxygen systems used at cabin pressure altitude above 40,000 feet.	
72	Removed at Rev. 1			
73	25.1521(c)(2)	Fuel Temperature Indication	Published policy is not available to address § 25.1521(c)(2) if fuel temperature indication is not provided.	
74	25.1535	ETOPS approval	SEI applicable to changes for which a compliance determination/verification to RBAC/14 CFR 25.1535 is required. Published policy is not available for FAA ETOPS requirements, including definition of specific atmospheric icing conditions that must be considered to develop critical ice shapes for ETOPS diversions in accordance with RBAC/14 CFR 25.1535 and Appendix K25.1.3.	MOC issue paper
75	Removed at Rev. 1			
76	26.21	Limit of validity	SEI applies only to changes classified as significant under RBAC/14 CFR 21.101 for airplanes affected by § 26.21. Includes WFD maintenance actions determination (inspection start point and structural modification point), LOV and binding schedule. Changes to approved binding schedules must be processed as exemptions under RBAC/14 CFR part 11. For airplanes not affected by § 26.21 (transport category airplanes for which TC application was made after January 14, 2011) sections 25.571, 25.1529, and Appendix H apply.	AC 120-104
77	26.23	Extended limit of validity	SEI applicable only to the first LOV extension for a model. Includes WFD maintenance actions determination (inspection start point and structural modification point) and extended LOV.	AC 120-104

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78		Main Deck Class E Cargo Compartment - Protection of Critical Systems	An issue paper may be needed to ensure an adequate design means is included to protect critical systems located in, or in the vicinity of, the main deck cargo compartment are adequately protected from the effects of a main deck cargo fire. NEW	
79	Removed at Rev. 1			
80		Laser-based missile defense systems	You need special conditions for laser-based missile defense system installations. Applicants may also need to request an equivalent level of safety finding to § 25.251(b) as described in TAI List item "Vibration and Buffeting Requirements for External Modifications." Policy Statement PS-AIR-25-17, "Structural Certification Criteria for Antennas, Radomes, and Other External Modifications," identifies structural requirements and guidance for certification of external modifications	
81		Composite Structure in Aircraft Seats	You may need an issue paper to establish means of compliance for seats fabricated using composite materials or bonded joints in the primary load path. While the applicable regulations remain unchanged, the means of compliance for composite construction may differ from those traditionally used for seats of metallic construction.	
82	25.783(f)	Pressurization Doors Not Fully Closed and Locked	Standardization Item. New or modified airplanes with § 25.783(f) at Amendment 25-114 in the certification basis require a means to prevent initiation of pressurization for doors that are not fully closed and locked, that is highly reliable. SEI also applicable when the certification basis for § 25.783(f) is prior to Amendment 25-114. The ANAC/FAA considers this type of failure (i.e., inadvertent opening due to failure of the pressurization prevention system) must be extremely improbable.	
83		Composite Fuselage In-Flight Fire Safety/Flammability	You may need special conditions to ensure that composite fuselage construction does not reduce the level of in-flight fire safety when compared with a conventional metallic fuselage. These special conditions include evaluation of a fire propagating along the inside surface of the fuselage and the potential for toxic by-products.	
84	25.853, 25.856(b)	Composite Fuselage Post-Crash Fire Survivability	You may need an issue paper to establish an equivalent level of safety (ELOS) with §§ 25.853 and 25.856(b) to show a composite fuselage is as safe for passengers as a similarly sized metallic fuselage during a post-crash fire. The ELOS needs to address flame penetration, smoke and toxic gas emission.	
85	25.809(a)	Fiber Optic Viewing Means	You may need an issue paper to establish a means of compliance with § 25.809(a) at Amendment 25-116 when fiber optic viewing is used in lieu of a window.	
86	Removed at Rev. 1			
87	Removed at Rev. 1			
88		Inflight Access to Class C Cargo Compartments	You need special conditions for in-flight access to a Class C cargo compartment because the regulations do not contain adequate or appropriate safety standards. The special conditions provide additional requirements necessary to ensure sufficient cabin isolation from fire and smoke, and for passenger safety while occupying the Class C compartment during flight. In addition, the special conditions address the security concern related to in flight access to unscreened (checked) baggage.	
89	25.813(e), SFAR 109	Interior Doors	If the airplane certification basis has § 25.813(e) at Amendment 25-1 through 25-115, you need to petition for an exemption for installation of an interior door that separates passenger compartments, unless the airplane meets the applicability criteria for Special Federal Aviation Requirements (SFAR) 109. The ANAC/FAA has only granted exemptions for airplanes that are privately operated. SFAR 109 can be used for airplanes that meet the applicability criteria of the SFAR. If the airplane certification basis has § 25.813(e) at Amendment 25-116 or higher, you need to petition for an exemption for an interior door that is installed in any egress path between any passenger seat that is occupied for takeoff and landing and any passenger emergency exit. SFAR 109 can be used for airplanes that meet the applicability criteria of the SFAR.	
90	Removed at Rev. 1			
91	Removed at Rev. 1			

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92		Side-Facing Seat	You need special conditions for single and multiple place side-facing seats on airplanes that include Amendment 25-64 in their certification basis. Seats meeting these special conditions have no operational limitations. Special Federal Aviation Requirements (SFAR 109) can be used for airplanes that meet the applicability criteria of the SFAR.	
93	Removed at Rev. 1			
94	25.997, 25.1305(c)(6), 25.1309(c)	Fuel Filter Bypass Indication	An equivalent level of safety issue paper may be needed to address §§ 25.997 and 25.1305(c)(6) if the fuel filter required by § 25.997 is not installed in the location specified in § 25.997. A means of compliance issue paper may be needed to address §§ 25.1305(c)(6) and 25.1309(c) if more than one fuel filter is used and/or if other fuel system components (e.g., fuel-oil heat exchanger) are installed upstream of the main fuel filter to ensure the flightcrew receives appropriate alerting of possible fuel contamination. Both subjects may need to be addressed.	
95		Adaptive or Smart Environmental Control System (ECS)	Emerging Technology/Issue. Applicable if an applicant proposal uses an adaptive or smart ECS to provide reduced ventilation flow while continuing to provide an acceptable environment for the flight deck and cabin. Adaptive or smart ECS systems require special conditions or other unique MOC's that require ANAC/FAA involvement.	
96	Removed at Rev. 1			
97	Removed at Rev. 1			
98	25.841(a)	High Altitude Decompression	There is limited guidance for compliance with 25.841(a)(1), (2) and (3) at amendment 25-87 so applicants may require a unique MOC issue paper.	
99	Removed at Rev. 1			
100	25.1182(a)	Engine Strut Fire Protection - Hydraulic Components	An equivalent safety finding to § 25.1182(a) may be needed for fire resistant flammable fluid carrying lines (hydraulic system components) in engine pod attaching structure. This also relates to the type of fire applicants are assuming.	
101	25.933	Flight Critical Thrust Reverser	An issue paper may be needed to define a means of compliance with the controllability requirements of § 25.933, or an equivalent level of safety based on reliability in lieu of the controllability requirements of § 25.933.	
102	Removed at Rev. 1			
103		Integration of Automatic Deployable Flight Recorders (ADFR)	New means of compliance (MOC) would be required for adding a flight, voice or combi recorder that is intended to separate from an airplane during or after an accident. Additional MOC, equivalent level of safety finding and possibly exemptions may also be needed if the ADFR is intended to replace, rather than to augment, either of the two currently required fixed recorders. Requires coordination with flight standards in the country of registry as both part 25 and operating regulations are affected	
104	RBAC 21.41-I	Portuguese language information for markings and placards.	The required markings and placards installed in passenger cabin, cargo, baggage or stowage compartments and in the aircraft exterior shall be presented in Portuguese or bilingual (Portuguese and English)	IS 21-010
105		Units of altitude instruments	The barometric setting units of the altitude indication instruments, including standby altimeters and cabin altitude indicators, shall be presented in "mbar" or "hpa". The units used in the instruments shall be consistent with those presented in the Flight and Service Manuals.	IS 21-010
106	25.562	Club seat installations (opposite facing seats)	The interaction between occupants, under dynamic emergency conditions, must be evaluated, as it raises concerns regarding interactions between these occupants (for example, one head against another occupant's knee)	
107	25.562	Interaction of neck and chin of the ATD with seatback features in seat dynamic testing	Subjective evaluation based in the FAA reference (letter to industry)	ANM-115-17-002
108	25.561, 25.562, 25.785	Hybrid interior structures	If the seat configuration comprises a hybrid structure (for example a structural armrest with function of restraining a seat movement under emergency conditions), Special Conditions may apply	
109	25.562	Row-to-row AFT facing HIC test criteria	For interior configurations comprising rows of AFT facing seats, there is a lack of policies regarding occupant protection aspects for such installations	

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110	25.305 , 25.481 , 25.571	Landing Pitchover Condition	A landing pitchover condition that takes into account the effects of the automatic braking system should be assessed. The concern is a possible high nose gear sink rate, and potentially higher gear and airframe loads than would occur with a traditional braking system.	Special Condition
111	25.813(c)(2)(i)	Emergency exit access	Minimum passageway between seats must be unobstructed. Interpretation not well defined. Food tray table that encroaches when deployed but not deployed during dynamic tests and stowed during TTL is acceptable by the ANAC. The FAA recently has raised different interpretation.	
112	25.867	2D Nacelle Zone	Section 25.867 requires that surfaces to the rear of the nacelles, within one nacelle diameter of the nacelle centerline, must be at least fire-resistant. 1. ANAC understands that, although 25.867 is related to airplane surfaces, the intent of the rule is to ensure that a fire adjacent to the engine will not be hazardous to the airplane. Systems affected by the 2D Nacelle Zone should be evaluated, considering different aircraft configuration as landing gear deployed and high lift configuration 2. ANAC accepts in the AMOC FCAR that aerodynamic seals or fairings within the zone are not required to be fire resistant if the applicant provides an analysis substantiating failure of component will not result in a hazard. This approach is different from EASA that addressed this subject through an equivalent safety finding CRI 3. The fire testing should simulate the likely fire environment which includes vibration and stress loads. As all conditions may be difficult to represent in the fire test, it is possible that several tests could be done independently and then by analysis show that the requirements of 25.867 are met. There is no specific policy for compliance demonstration combining test and analysis. 4. ANAC requests the applicant to follow the FAA AC 20-135, the guidance for powerplant installation. However, ANAC acknowledges that the fire threat defined in the AC may be too severe for surfaces that have a significant distance to the fire source. Deviations from the fire standards provided in the guidance material for powerplant installation could be accepted considering a case-by-case evaluation of particular characteristics of each design, especially regarding the distance and direction of the burner.	
113	25.865	Engine mounts fireproofness	ANAC does not consider the flame from a single standard AC 20-135 test burner, in isolation, to be representative of a 'foreseeable fire condition' within a typical fire zone. A fully involved engine fire should be considered or a rationale for the use of the AC20-135 standard flame must be provided. When fail safe features of the engine mount system are taken into account to comply with 25.865, ANAC issues a FCAR that requires a substantiation of the worst foreseeable fire condition to demonstrate that a flame cannot engulf both load paths	
114	25.865	Composite Fan Case Fireproofness	25.865 requires "essential flight controls, engine mounts and other flight structures" located in areas where they would be subjected to the effects of a fire to be fireproof or shielded so they are capable of withstanding the effects of fire. The fan case is considered within the definition of "flight structures" as it is used in this regulation. A fire could cause of structural integrity loss leading to separation of the inlet from nacelle, separation of the gearbox or of the fire containment function loss of the firewalls. ANAC does not consider the flame from a single standard AC 20-135 test burner, in isolation, to be representative of a 'foreseeable fire condition' within a typical fire zone. The flame from a single standard AC 20-135 test burner is not intended to define the size of a fire that can occur in an engine fire zone. The worst case fire condition shall be evaluated as well as the the analysis to demonstrate the fireproofness capability, considering the effects of failures that can both cause a fire and damage that increases airflow.	
115	25.951 (c)	APU Fuel Ice	An Alternative Means of Compliance (AMOC) finding may be needed to allow certification of an APU fuel feed system icing threats. Investigations determined that under certain conditions, over a period of low fuel temperatures, ice may accumulate in the airplane fuel feed system and then be fed or released downstream to the APU. The ice may collect on the face of the APU fuel oil heat exchanger (FOHE) and create a restriction within the APU fuel system because there is insufficient fuel heating to melt the ice either before the fuel reaches the restriction at the heater or at the face of the heater. A restriction in fuel flow to the APU may result in APU shut down.	DOT-FAA-TT12-29 FCAR-AMOC
116	25.993(f)	Fuel line installation	An issue paper may be needed to ensure an adequate guidance on the minimization of the likelihood of a post crash fire event following a impact survivable accident. Some applicants don't address adequately the fuselage separation.	FCAR AMOC

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117	25.951(c)	Fuel Ice Test	Published policy is not available for FAA or ANAC to address 25.951(c) - airframe test. An Alternative Means of Compliance (AMOC) finding may be needed to allow certification of an fuel feed system icing threats. Investigations determined that under certain conditions, over a period of low fuel temperatures, ice may accumulate in the airplane fuel feed system and then be fed or released downstream to the engines. The ice may collect on the face of the engine fuel oil heat exchanger (FOHE) and create a restriction within the engine fuel system because there is insufficient fuel heating to melt the ice either before the fuel reaches the restriction at the heater or at the face of the heater. A restriction in fuel flow to the engine(s) may result in failure to achieve a commanded thrust level, and this is considered an unsafe condition.	FCAR AMOC
118	25.903(d)	Engine cowls retention	ANAC issues a FCAR related to 21.21(b)(2) as in-service experience on large airplanes shows a large number of events of fan cowl loss separation occurring on engines. ANAC requires in the FCAR obvious and reliable provisions for inspection of the retention mechanism in order to allow the crew to verify that the cowling is fully closed and each single latching device is locked prior to each take-off	
119	25.1187	Seals/Sealant - Drainage and ventilation of fire zones	Sealing of compartments should be adequate to allow build-up of fluids without migration of fluid into areas where ignition could occur. Drained fluid path and ventilation are often relying on drainage or sealant to prevent movement of fluids from one zone to another or to isolate a zone from its environment to control its pressure. However, except when these seals are fire seals, they are often candidates of the Component Deviation List (CDL) which allow dispatch of the aircraft without them. The impact on drainage and ventilation test demonstration due to the absence of these seals cannot be ignored and a review of the intended dispatch configuration shall be performed. Tests should be demonstrated to cover both full-up and dispatch configurations.	
120	25.1191	Fire seals - Pass/fail criteria	1. The AC 20-135 defines as acceptable test criteria that the specimen shall withstand flame penetration and not exhibit backside ignition for the required test time. Backside ignition occurred in fire seals can be accepted based on an applicant's rationale that the ignition would not increase the overall fire hazard. There is no specific policy on this subject 2. The AC 20-135 requests also that self-re-ignition of the material does not occur when the flame is removed. Residual flames with low and decreasing intensity can be acceptable as long as they do not increase the fire overall hazard. There is no specific policy on this subject	
121	25.1093	Natural Icing campaign	According to FAA AC 20-147A, for compliance with 25.1093, a typical test sequence includes three natural fan ice shed cycles at each of the following conditions (inlet anti-ice turned "on"): descent (flight-idle, or anti-ice idle), holding (power set to maintain level flight through a range of anticipated airplane gross weight), and maximum climb, unless a more critical engine power setting exists. Certification experience has shown that some manufacturers do not include dedicated test points for fan ice shed in the natural icing campaign. In addition, the applicant must establish an acceptable equivalent exposure time corrected for LWC, (with respect to the Appendix C Continuous Maximum at the corresponding target ambient temperature and droplet size) for descent and maximum climb condition. There is no specific policy on this issue.	
122	25.1309	Use of the ARP4754 for propulsion system	25.1309 is applicable to engine, propeller and propulsion system installations. The development assurance process should cover the engine installation and integration, as a system, in the aircraft. The development assurance process usually follows the FAA AC 20-174 that recognizes the SAE ARP 4754A as an acceptable method. However, certification experience has shown that aircraft manufacturers have difficulty in obtaining evidence of development assurance activities for the engine control functions to ensure that the development assurance activities are in line with the objectives of the SAE ARP 4754A.	
123	25.1316 and 25.1317	FADEC HIRF/Lightning	The Part 25 applicant may request to take credit of engine manufacturer's tests in the compliance demonstration with 25.1316 and 25.1317. However HIRF and Lightning requirements and guidance for Part 33 are not equivalent neither more severe and therefore considered not sufficient to demonstrate compliance with Part 25. In addition all aircraft interfaces should be adequately represented. A guidance is needed for the applicant demonstrate that the tests performed by the engine manufacturer covers the guidance material for Part 25.	

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124	Subpart H	Engine EWIS	25.1701 defines EWIS for the purposes of complying with the subpart H requirements as any wire, wiring device, or combination of these, including termination devices, installed in any area of the airplane for the purpose of transmitting electrical energy, including data and signals, between two or more intended termination point. The exceptions to the EWIS definitions are described in RBAC 25.1701(b) but wiring and associated components on engines and nacelles are not exempt from the EWIS requirements. Due to the fact that Part 33 does not include requirements that address the safety concern of Subpart H of Part 25, the means of compliance with EWIS requirements for the engine must be verified. Engine manufacturer's standards may be significantly different from the AC 25.1701-1	
125	25.1309(b)	Flight Controls System	A means of compliance FCAR may be required to address development error mitigation in Flight Controls System. NOTE: This FCAR is applicable to all aircraft systems and is issued by the EVI group.	
126	Removed at Rev. 1			
127	Removed at Rev. 1			
128	Removed at Rev. 1			
129	Removed at Rev. 1			
130		RNP AR	Certification of RNP AR capability of the aircraft. There is some lack of harmonization among the authorities and the definition of the roles of the Airworthiness and Operational offices.	AC 20-138 (latest)
131		Autoland	Certification of Autoland capability of the aircraft. There is some lack of harmonization between EASA and FAA, and consequently ANAC, since ANAC issues a FCAR for harmonizing the items. Furthermore, a new FAA AC is coming.	AC 120-28D and 20-191 (still draft)
132	Removed at Rev. 1			
133	25.1389-25.1401	External Lights Requirements	Guidance for new lighting Technologies (LED based) is not yet available. Nevertheless, the present guidance is old (AC 20-30B and 20-74).	
134	Subpart H	EWIS requirements for engines	There is no current guidance for means of compliance for EWIS requirements applied to electrical harness installed on engines.	AC 25-1701
135	25.1316 and 25.1317	HIRF and Lightning Safety Assessment	There is no prescriptive guidance for performing a Safety Assessment for HIRF and Lightning. Applicants and Authorities may have different interpretations.	AC 20-158A, AC 20-136B
136	25.1316(a) and 25.1317(a)	HIRF and Lightning test setup for integrated System Level tests	Increased use of highly integrated system architectures, including IMA, lead to more complex test setups, test support equipment and more difficulties to define the appropriate extension of the required system level HIRF and Lightning laboratory test for Level A systems.	AC 20-158A; AC 20-136B
137	25.1316(a)(b) and (c)	HIRF and Lightning test setup for integrated System Level tests	The use of series impedance on lightning pin injection tests (DO-160 Sec.22) must be carefully verified and coordinated by the aircraft manufacturer to ensure that the aircraft installation will provide an equivalent remote impedance. However, these are equipment level tests, usually performed by the equipment manufacturer and the verification/crosscheck of series impedance can be insufficient or inadequate.	AC 20-136B; DO-160E to G, Section 22
138	25.1301 / 25.1309	Use of Formal Methods for software	The use of the DO-333 (Formal Methods Supplement to DO-178C) is relatively new and the applicants may have different interpretations due to limited past experience.	AC 20-115D / RTCA DO-333
139	25.1301 / 25.1309	Use of Service History / Experience for replacing traditional Software/AEH means of compliance	Service History / Experience may be used as means of compliance for software/AEH instead of using the process-based methods described in DO-178C and DO-254. However, there are difficulties in determining how much history / experience is sufficient. The guidance is subjective.]	AC 20-115D / DO-178C / DO-254

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140	25.1302, 25.1322, 25.1309,	Human factors	<p>This SEI is applicable for new TCs, derivatives and significant changes for which § 25.1302 and/or human factors aspects of § 25.1322 or § 25.1309 are affected.</p> <p>The ANAC has identified safety-related concerns with traditionally-accepted assumptions related to human factors. The ANAC is required to review and validate any underlying assumptions related to human factors used in system safety assessments or other analyses [Ref. Aircraft Certification, Safety, and Accountability Act, Sec. 106]. The ANAC may use an issue paper to document agreement on acceptable methods of compliance.</p> <p>The interpretative material is still under discussion about interpretation of accepted means of compliance among Authorities in different forums related to regulations.</p>	AC-25-1302
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