Small Airplane Issues List (SAIL)

Q2 FY 2019 Release

This issues list is applicable to both international validation and domestic certification projects for which the Small Airplane Standards Branch oversees new and revised policy. At this time, this list is incomplete and represents only a portion of the issues that require additional policy besides the policy already available on the FAA's Regulatory and Guidance Library. This issues list (the SAIL) will continually be updated with those issues as we develop more standardized policy. Not all of these issues have template issue papers or policy memos available to ease the perceived burden of industry compliance to such policy, but we are working toward that end. The Small Airplane Standards Branch relies on the submittal of the Certification Project Notification by the geographic aircraft certification office (ACO) for domestic certification projects to evaluate the need for additional policy and we communicate that need to the (ACO) through the CPN response.

Note- The below listed published FAA Advisory Circulars, Policy, and guidance are located on RGL at the following link:

https://rgl.faa.gov/

Release notes listing all changes from the previous version can be found by clicking SAIL Release Notes

1080 Airships, Gliders (Sailplanes), Very Light Aircraft, 21.17(b) Special Class Products V1.0

Airships, Gliders (Sailplanes), and Very Light Airplanes are certificated by the FAA under 14 CFR 21.17(b) as "special class" products. These special class products use airworthiness design criteria as their certification basis rather than the airworthiness standards under Title 14, Code of Federal Regulations (14 CFR), part 23 etc.

The FAA has published accepted means of compliance (MOC) that establish the airworthiness criteria for Gliders (Sailplanes), Very Light Airplanes, and Airships. The FAA published Advisory Circulars (AC) are:

AC 21.17-2A, *Type Certification-Fixed Wing Gliders (Sailplane*s) establishes European Aviation Safety Agency (EASA) CS-22 and Joint Airworthiness Requirements (JAR-22) sailplane regulations as acceptable airworthiness criteria,

AC 21.17-3, T*ype Certification of Very Light Airplanes under FAR 21.17(b)*, establishes EASA CS-Very Light Airplanes (CS-VLA) and JAR-VLA regulations as acceptable airworthiness criteria,

AC 21.17-1A, *Type Certification—Airships*, and FAA-P-8110-2, *Airship Design Criteria* and additional policy memos.

The FAA must provide a public notice and respond to public comments when changes to airworthiness criteria are proposed or when newly established airworthiness criteria are proposed to be applied to a new product.

Any new products proposed to be certificated under 14 CFR 21.17 (b) special class and any changes to existing special class products that modify the established airworthiness criteria or deviate from the FAA accepted MOC will require Small Airplane Standards Branch involvement.

Regulatory Reference: 14 CFR 21.17(b)
FAA Advisory Circulars 21.17-1A, 21.17-2A, and 21.17-3

1140 Type Certificates (TC), design changes, or Supplemental Type Certificates (STC) using 14 CFR part 23 amendment 23-62 - addressing the errors V1.0

If an applicant is using part 23, amendment 23-62, for new products or product changes including STCs, then the Small Airplane Standards Branch must determine whether an equivalent level of safety (ELOS) finding is necessary due to 14 CFR part 23, amendment 23-62 containing various errors.

The FAA develops/issues ELOS findings per 14 CFR 21.21(b). However, the FAA will likely delegate the compliance finding to the Foreign Civil Aviation Authority for the part 23, amendment 23-62, errors ELOS finding memorandum. A copy of these errors and their corrections is available upon request.

Applicants using part 23 amendment 23-62 as the Means of Compliance (MOC) to Amdt 23-64 must also address these errors.

ACOs and applicants should review the Project Specific Policy Memo for the most accurate list of regulations with errors. As of 3/13/18, the known errors exist in the following regulations:

23.45, amendment 23-62 General (Performance)
23.51, amendment 23-62 Takeoff speeds
23.63, amendment 23-62 Climb:General
23.67, amendment 23-62 Climb:One engine inoperative
23.73, amendment 23-62 Reference landing approach speed
23.77, amendment 23-62 Balked landing
23.161, amendment 23-50 Trim
23.181, amendment 23-62 Dynamic Stability
23.221, amendment 23-50 Spinning
23.251, amendment 23-62 Vibration and buffeting
23.253, amendment 23-62 High speed characteristics
23.571, amendment 23-62 Metallic pressurized cabin structures
23.785, amendment 23-49 Seats, berths, litters, safety belts, and shoulder harnesses
23.831, amendment 23-62 Ventilation
23.1195, amendment 23-62 Fire extinguishing systems
23.1197, amendment 23-62 Fire extinguishing agents
23.1199, amendment 23-62 Fire extinguishing characteristics
23.1201, amendment 23-62 Fire extinguishing materials
23.1445, amendment 23-62 Oxygen distribution system
23.1527, amendment 23-45 Maximum Operating Altitude
23.1545, amendment 23-62 Airspeed indicator
23.1583, amendment 23-62 Operating limitations

Regulatory Reference: 14 CFR 21.21(b)
14 CFR part 23, at amendment 23-62.

1360 Additive Manufacturing (AM) V1.0

If the applicant is proposing to use Additive Manufacturing (AM), then they must coordinate their proposals with the Small Airplane Standards Branch to determine the level of involvement the FAA requires with respect to policy or guidance.

AM is a relatively new manufacturing process and describes the process of joining materials to make objects from three dimensional (3D) model data using layer upon layer technique/method, as opposed to subtractive manufacturing methodologies. This manufacturing technique is sometimes referred to as 3D printing. AM is a generic term that spans a diverse range of techniques using a wide range of machines and technologies, such as Laser Powder Bed Fusion (LPBF), Electron Beam Powder Bed Fusion (EBPBF), and Directed Energy Deposition (DED) just to name a few. Some of these sub-categories of AM may even employ technologies that differ and have their own unique considerations for certification.

The FAA is actively working on draft policy and guidance for the use of this new and novel technology.

Regulatory Reference: No rule at 14 CFR 23 at amendment 23-63 and prior.

14 CFR 23.2010 at amendment 23-64 and after.

1420 Flight Into Known Icing (FIKI): Approvals, Changes, and Changes Affecting Icing Related Airworthiness Directives (AD) V1.1

Applicants must coordinate with the SASB if they are:

- Seeking flight into known icing (FIKI) approvals, or
- Proposing changes that affect or could affect existing FIKI approvals, or
- Proposing to modify an aircraft that has icing related airworthiness directives (AD), or
- Proposing to make autopilot modifications on an airplane certificated for icing prior to Amendment 23-43 to ensure the airplane has adequate low airspeeed awareness.

Regulatory Reference: 14 CFR 23.929, 23.1416, 23.1419 at amendment 23-63 and prior.
14 CFR 23.2010, 23.2165, 23.2415, 23.2540 at amendment 23-64 and after.

1460 Deice fluids: Approval of Use of Type II, III, and IV Deicing/Anti-Icing Fluids on Airplanes V1.0

If the applicant is including the use of Type II, III, or IV deicing/anti-icing fluids as part of their type design, then they must assess the impact of these fluids before operational use of such fluids is authorized.

Policy Statement, PS-ACE-23-05, provides an FAA accepted means of compliance (MOC) for using Type II, III, or IV deicing/anti-icing fluids.

Regulatory Reference: 14 CFR 23.143, 23.251, 23.1529, 23.1581, 23.1585, 23.1587 at amendment 23-63 and prior.

14 CFR 23.2010, 23.2135, 23.2160, 23.2620 at amendment 23-64 and after.

1480 Engine operation in ice crystal conditions V1.0

If the applicant is using Electronic Engine Control (EEC) logic to determine if the airplane is operating in ice crystal conditions, then the Small Airplane Standards Branch will be involved in the project. For example, blockage of the Tt0 probe by ice crystals has resulted in engine thrust rollbacks in ice crystal environments.

Regulatory Reference: 14 CFR 23.903(a)(2) at amendment 23-63 and prior.
14 CFR 23.2010, 23.2400 at amendment 23-64 and after.

1580 Electric Propulsion or Hybrid Electric V1.0

If the applicant is proposing to install electric or hybrid-electric propulsion systems, then they may require equivalent level of safety (ELOS) findings, special conditions (SC), or additional design criteria to address features not envisioned.

The need for SC, ELOS, design criteria and corresponding means of compliance (MOC) must be determined on a case-by-case basis for each installation. Specific policy does not exist at this time. Projects with electric propulsion or hybrid electric will require SASB involvement.

Regulatory Reference: No rule at 14 CFR part 23 amendment 23-63 and prior.

14 CFR 23.2010 at amendment 23-64 and after.

1600 Fire protection of flight controls, engine mounts, and other flight structure V1.1

If the applicant proposes to use materials not previously accepted as fire proof, such as composite materials, then they may need to obtain an FAA accepted means of compliance(MOC) to 14 CFR 23.865 at amendment 23-63 and prior.

Testing is usually required to validate the performance of these materials.

At amendment 23-64 and after, the applicant should incorporate FAA accepted means of compliance(MOC) into their certification planning.

Regulatory Reference: 14 CFR 23.865 at amendment 23-63 and prior.
14 CFR 23.2010, 23.2330 at amendment 23-64 and after.

1640 Composite or Nonmetallic Firewall V1.1

If the applicant proposes a firewall constructed with composite materials, then they must obtain and incorporate FAA accepted means of compliance (MOC) to 14 CFR 23.601, 23.603, 23.605, 23.859, 23.863, 23.903, 23.1013, 23.1091, 23.1121, 23.1123, 23.1141, 23.1182, 23.1183, 23.1189, 23.1191, 23.1192, and 23.1193 at amendment 23-63 and prior to ensure their proposed test and evaluation will be adequate.

While FAA Advisory Circular AC20-135 is an FAA accepted MOC that contains general guidance about the use of composite firewall materials, specific guidance is necessary to ensure a compliant design. Firewalls constructed with composite materials require consideration of unique fire threats, safety concerns and acceptance criteria that differs from those used to address firewalls constructed from traditional metallic materials.

Applicants seeking to ensure that proposed test and evaluation will be adequate to show compliance with fire protection requirements for any firewall constructed with composite material should contact the Small Airplane Standards Branch for additional guidance.

At amendment 23-64 and after, applicants should incorporate FAA accepted means of compliance (MOC) into their certification planning.

Regulatory Reference:

14 CFR 23.601, 23.603, 23.605, 23.859, 23.863, 23.903, 23.1013, 23.1091, 23.1121, 23.1123, 23.1141, 23.1182, 23.1183, 23.1189, 23.1191, 23.1192, and 23.1193 at amendment 23-63 and prior.
14 CFR 23.2010, 23.2440, 23.2250, 23.2260 at amendment 23-64 and after.

1740 Required Evaluation for All Part 23 Diesel Engine Installations V1.1

If the applicant is proposing installation of a diesel engine, then they may require special conditions or may require an Equivalent Level of Safety (ELOS) finding. All part 23 diesel engine installations must be evaluated per FAA Policy PS-ACE100-2002-004, Diesel Engine Installation. This policy statement identifies areas of regulatory compliance. The need for any specific ELOS findings or SCs must be determined on a case-by-case basis for each installation.

Installations being certificated to amendment 23-64 and after must include the evaluations contained in FAA Policy PS-ACE100-2002-004.

At amendment 23-64 and after, applicants should incorporate the requirements of the special condition into their certification planning as FAA accepted means of compliance(MOC) in lieu of a special condition or incorporate FAA accepted means of compliance (MOC) into their certification planning in lieu of an ELOS finding.

Regulatory Reference: No rule at 14 CFR 23 amendment 23-63 and prior.

14 CFR 23.2010 at amendment 23-64 and after.

1780 Autothrust System V1.1

If the applicant is seeking to install an autothrust (autothrottle) system, then they may be required to apply special conditions to establish adequate requirements at amendment 23-63 or earlier based on the requirements of 14 CFR 25.1329.

At amendment 23-64 and after, applicants should coordinate with the Small Airplane Standards Branch and incorporate the requirements of the special conditions into their certification planning for 14 CFR 23.2500, 23.2505, 23.2510, 23.2605 as FAA accepted means of compliance (MOC) in lieu of a special condition.

Regulatory Reference: No rule at 14 CFR part 23 amendment 23-63 and prior.

Reference 23.143 (amendment 23-50), and 23.1309 (amendment 23-62), and 14 CFR 25.1329 (amendment 25-119) via special condition at amendment 23-63 and prior.

14 CFR 23.2010, 23.2500, 23.2505, 23.2510, 23.2605 at amendment 23-64 and after.

1820 Engine Controls - Certification Requirements for Installation of a Full Authority or Supervisor Electronic Engine Control System (EEC/FADEC) V1.1

If the applicant is seeking to install a full authority or supervisory engine control system (EEC/FADEC), then they may be required to apply special conditions to establish adequate requirements at amendment 23-63 or earlier.

At amendment 23-64 and after, applicants should incorporate the requirements of the special condition into their certification planning as FAA accepted means of compliance (MOC) in lieu of a special condition.

Regulatory Reference: No rule at 14 CFR part 23 amendment 23-63 and prior.

14 CFR 23.2010 at amendment 23-64 and after.

1880 Fire Protection - Turbine Engine Oil Systems Without a Shutoff Valve V1.1

If the applicant is seeking to install a turbine-engine-oil system and all parts of the system are not shown to be fireproof when a shutoff valve is not incorporated into the system, then they may need to obtain an FAA accepted means of compliance (MOC) to 14 CFR 23.1013(e) and 23.1189(b) at amendment 23-62 and prior.

Demonstration of compliance to the requirements of 14 CFR 23.1013(e) and 23.1189(b) has proven problematic in the past.

At all amendment levels, applicants should incorporate FAA accepted means of compliance (MOC) into their certification planning.

Regulatory Reference: 14 CFR 23.1013(e) and 23.1189(b) at amendment 23-63 and prior.

14 CFR 23.2010, 23.2400(c) and 23.2440(d) at amendment 23-64 and after.

1960 Turbine Engines Shutdown V1.1

If the applicants turbine engine control system only includes a single means to shutdown the engine, then the applicant may require an FAA accepted means of compliance (MOC) to 14 CFR 23.1141(e) at amendment 23-63 and prior.

The installation requirements of § 23.1141(e) require that no single failure of a turbine-engine control system causes failure of any powerplant function necessary for safety.

Most engine control systems provide a redundant means for engine shutdown. For example, if the installed engine control system only provides a single means for shutting off fuel to the engine, then redundant means for engine shutdown must be provided to ensure a simple, quick, and safe shutdown if the primary means of shutdown fails.

At amendment 23-64 and after, applicants should coordinate 23.2410(a) with the Small Airplane Standards Branch to incorporate an FAA accepted MOC into their certification planning.

Regulatory Reference: 14 CFR 23.1141(e) at amendment 23-63 and prior.

14 CFR 23.2010 and 23.2410(a) at amendment 23-64 and after.

1980 Fuel- Approval of New Fuel V1.0

If the applicant is seeking approval to use a new fuel type, then they must coordinate their proposal with the Small Airplane Standards Branch (and AIR 20 Alternative Fuels Program Office) to determine the level of FAA involvement with respect to policy or guidance.

There is considerable activity across the aviation industry; therefore, energy behind the introduction of new aviation fuels is high. These efforts are highly visible and potentially controversial.

NOTE: This is intended for fuels new to aviation where there is no existing FAA accepted standard for that fuel, not the approval of an existing aviation fuel for use on a specific model.

Regulatory Reference: 14 CFR 21.17(b)

14 CFR 23 at any amendment.

2000 Powerplant Indications - Use of Digital Only Indications V1.1

If the applicant is seeking to install digital only display(s) in lieu of analog displays for powerplant instruments when complying with 14 CFR 23.1305 (where the term “indicator” is included in the regulation) and § 23.1549, since digital only indicators do not provide for arc, line, or radial markings, then they may require an Equivalent Level of Safety (ELOS) finding for §23.1301, 23.1305, 23.1311, 23.1321 and 23.1549 at amendment 23-63 or earlier.

At amendment 23-64 and after, applicants should coordinate 23.2500, 23.2505, 23.2606, 23.2615, 23.2610 with the Small Airplane Standards Branch to incorporate FAA accepted means of compliance (MOC) into their certification planning in lieu of an ELOS finding.

Regulatory Reference: 14 CFR 23.1305 and 23.1549 at amendment 23-63 and prior.

14 CFR 23.2010, 23.2500, 23.2505, 23.2606,23.2615,23.2610 at amendment 23-64 and after.

2040 Engine Cooling - Use of Cooling Climb Speeds Greater than Best Rate of Climb Speed (Vy) or Balked Landing Climb Speed (VREF) in Reciprocating Engine Installations V1.0

If the applicant is proposing compliance with 14 CFR 23.1047, amendment 23-51, "*Cooling test procedures for reciprocating engine powered airplanes*", using an airspeed greater than the best rate of climb speed (Vy) or balked landing climb (VREF) speeds, then they may need to obtain an FAA accepted means of compliance (MOC).

Section 23.63(a)(2), amendment 23-62, requires §§ 23.65 Climb: All engines operating; and 23.77, Balked landing, to use speeds not less than the speed used to demonstrate compliance with the powerplant cooling requirements (§§ 23.1041, amendment 23-51, through 23.1047). Applicants proposing to use an airspeed greater than those used to show compliance to §§ 23.65 or 23.77 to demonstrate compliance with § 23.1047 should propose a method of compliance that will ensure adequate engine cooling during all expected operating conditions.

Applicants should coordinate with the Small Airplane Standards Branch to determine an appropriate MOC and incorporate the FAA accepted MOC into their certification planning.

Regulatory Reference: 14 CFR 23.1047 at amendment 23-63 and prior.

14 CFR 23.2010, 23.2400(c), (e) at amendment 23-64 and after.

2080 Engine Cooling - Liquid Coolant Tank Capacity Requirements V1.1

If the applicant is seeking to install liquid cooled reciprocating engines, then an Equivalent Level of Safety (ELOS) finding to 14 CFR 23.1061(b) may be required at any amendment up to and including amendment 23-63.

Some 14 CFR part 33 approved reciprocating engines include a self-contained cooling system that may not meet the installation coolant tank capacity and expansion space requirements of 14 CFR 23.1061(b).

At amendment 23-64 and after, applicants should incorporate FAA accepted means of compliance (MOC) into their certification planning in lieu of an ELOS finding.

Regulatory Reference: 14 CFR 23.1061(b) at amendment 23-63 and prior.

14 CFR 23.2010, 23.2400(c) at amendment 23-64 and after.

2120 Fuel System - Pressure Defueling V1.1

If the applicant is seeking to install a pressure defueling system in accordance with 14 CFR 25.979(e), then they may require special conditions at amendment 23-63 and earlier to establish adequate requirements.

At amendment 23-64 and after, applicants should coordinate 23.2400(c) and 23.2430(c) with the Small Airplane Standards Branch to incorporate the requirements of the special condition into their certification planning as FAA accepted means of compliance (MOC) in lieu of a special condition.

Regulatory Reference: No rule at amendment 23-63 and prior.

14 CFR 23.2010 at amendment 23-64 and after.

2140 Fuel System - Fuel Systems that Reject Heat through the Fuel System Resulting in Elevated Operational Fuel Temperatures V1.1

If the applicant is seeking to establish the minimum level of safety expected for the effect of elevated fuel system temperatures on the airplane, then they may require special conditions at amendment 23-63 and earlier.

Fuel systems configured to reject engine heat through the airplane fuel tanks by use of an engine oil/fuel heat exchanger or other means may result in fuel tank temperatures above the critical temperature test requirements of 14 CFR 23.961 and 23.965(d).

At amendment 23-64 and after, applicants should coordinate 23.2430(a)(3) and (b)(1) with the Small Airplane Standards Branch to incorporate the requirements of the special condition into their certification planning as FAA accepted means of compliance (MOC) in lieu of a special condition.

Regulatory Reference: 14 CFR 23.961 and 23.965(d) at amendment 23-63 and prior.

14 CFR 23.2010 and 23.2430(a)(3) and (b)(1) at amendment 23-64 and after

2240 Fatigue Management Programs (FMP) V1.1

If the applicant is proposing to incorporate a Fatigue Management Program (FMP) into an existing product, then the FAA may need to be consulted to determine the certification basis and the accepted means of compliance (MOC).

FMPs cannot be mandated on existing products in the U.S. except through an Airworthiness Directive.

FAA Advisory Circular AC 91-82 is considered an accepted MOC.

There are varying approaches to the application of fatigue requirements to derivative model airplanes when the original model did not have fatigue requirements at initial certification. The Small Airplane Standards Branch may be involved with these projects.

In addition, the FAA does not typically allow use of an inspection program in lieu of the safe life design limits already established. Reference AC 21.101-1B, Appendix Table A-2, Example 23, "Conversion from a safe-life design to a damage tolerance-based design".

Regulatory Reference: 14 CFR 23 at any amendment.

2250 Load Relief/Alleviation Systems V1.1

If the applicant proposes to use load relief or load alleviation systems for aircraft structure, then they may require a special condition at amendment 23-63 or earlier to address the effect of such systems on aircraft structure. In addition, current regulations do not take into account the effects of system failures on aircraft loads.

At amendment 23-64 and after, applicants should coordinate with the Small Airplane Standards Branch to incorporate the requirements of the special conditions into their certification planning as FAA accepted means of compliance (MOC) in lieu of a special condition.

Regulatory Reference: No rule at amendment 23-63 and prior.

14 CFR 23.2010 at amendment 23-34 and after.

Applicants should be aware that the FAA has issued a memo stating there are safety issues with the installation of vinyl covering shrink wraps on the exterior of airplanes, gliders, and airships that are not present with other exteriors such as paint and deicing boots. These issues include hazards that are major to catastrophic, so the installation by FAA Field Approval is not acceptable. Only Federal Aviation Administration (FAA) Type Certificate (TC), Amended Type Certificate (ATC), and Supplemental Type Certificate (STC) are acceptable for this installation. This memorandum is not applicable to vinyl decals or logos that are placed on limited areas of the fuselage or empennage.

The following are safety concerns with the installation of vinyl shrink wrap coverings that must be evaluated by the applicant for any TC/ ATC/STC application:

1. Without proper engineering evaluation and/or tests, vinyl shrink wrap cannot be placed on any control surface or control surface tab:

   a. without consideration of the effect on the flutter characteristics (whether the surface is mass balanced or not) and

   b. where that installation would change the existing clearance between adjacent surfaces with and without loading.

2. Scoring the skin of aircraft when cutting the vinyl sheets to fit, which can start cracks, particularly in pressurized aircraft.

3. Blocking of fuel vents, static ports, hinges, drain holes etc., making them inoperative or changing the airflow over static ports.

4. Use of an open flame from a blowtorch to apply the material. This is a concern around fuel tanks and vents, sensitive antennas, and especially on composite parts, which have cure temperatures well below the temperature of a blowtorch.

5. Covering required exterior aircraft markings and emergency exits.

6. Vinyl sheets losing adhesion on the surface or on rotating parts and jamming control surfaces or compromising engines.

7. Static build-up causing electrical discharges in or around fuel tanks and causing radio/navigation interference.

8. Tinting of windows and windshields with transparent vinyl, which compromises the view of pilots.

9. The impact on removal of ice build-up on critical surfaces.

10. Flammability of the material, including lightning strikes, and especially near engine exhausts and around engine nacelles. Flammability test specimens should be built-up from the cowling/nacelle with the vinyl shrink wrap applied.

11. Peeling of the wrap from rain or hail.

12. Masking of cracks and corrosion in structure and skin.

13. Lifetime of a vinyl shrink w/Tap installation. How long before mandatory removal.

14. Effects of de-ice fluids on the film.

The policy memo is available upon request.

Regulatory Reference: 14 CFR 23.629, 23.659, 23.773, 23.775, 23.805, 23.807, 23.811, 23.865, 23.867, 23.975, 23.1301, 23.1309, 23.1323, 23.1325, and 23.1529 at amendment 23-63 and prior.

14 CFR 23.2010, 23.1529, 23.2215, 23.2245, 23.2250, 23.2315, 23.2320, 23.2330, 23.2335, 23.2400, 23.2415, 23.2430, 23.2500, 23.2505, 23.2510, 23.2540, 23.2600, 23.2605, 23.2615 at amendment 23-64 and after.

FAA Airship Design Criteria.

EASA JAR 22/CS 22.

2280 Emergency Exits - Unobstructed Path V1.0

If the applicant is seeking to comply with 14 CFR part 23.807(b) at amendment 23-63 and prior, then they may require an Equivalent Level of Safety (ELOS) Finding.

The FAA has allowed exemptions or ELOS where a seatback could be pushed out of the path without any additional actions, while other foreign airwothiness certification authorities have permitted additional actions on seatbacks and climbing over seats with lowered seatbacks based on an evacuation test.

Applicants complying with 14 CFR part 23.807(b) at amendment 23-63 and prior must maintain an unobstructed path to emergency exits.

At amendment 23-64 and after, applicants should incorporate FAA accepted means of compliance (MOC) into their certification planning in lieu of an ELOS finding.

Regulatory Reference: 14 CFR part 23.807(b) at amendment 23-63 and prior.
14 CFR part 23.2010 and 23.2315 at amendment 23-64 and after.

2300 Composite Floats - Durability/Fatigue V1.1

If the applicant is seeking to install composite floats, then they may need to obtain an FAA accepted means of compliance (MOC) to address fatigue and durability requirements per 14 CFR 23.573. The addition of floats is deemed a significant change per §21.101 and therefore requires applicants to apply §23.573 (pre amendment 23-64) requirements unless they can show that compliance with a later requirement does not materially improve the level of safety or is impractical. (See FAA AC 21.101-1B).

NOTE: TSO-C27 and National Aircraft Standards (NAS) 807 provide minimum test requirements to obtain a TSO for floats but the TSO is deemed inadequate for installation approval of composite floats with respect to fatigue and durability.

The FAA is recommending that the applicant does not need to comply with §23.573 for the composite floats themselves as long as they comply with §23.603 using the guidance of AC 23-19A sections 201 through 207. The applicant should also comply with §23.613 for their composite float design. In order to substantiate the certification approach in the guidance of the AC, the FAA will likely require material testing or other testing.

The guidance in AC-23-19A closely approximates requirements per §23.573. If the applicant's design dictates that using § 23.573 for the composite floats would be more expedient or address any short falls not adequately addressed by the above regulations, then the applicant may be required to apply special conditions to establish adequate requirements at amendment 23-63 and earlier based on the requirements of §23.573.

At amendment 23-64 and after, if a special condition is required, then the applicant should coordinate with the Small Airplane Standards Branch and incorporate the requirements of the special condition into their certification planning as FAA accepted means of compliance (MOC) in lieu of a special condition.

Regulatory Reference: 14 CFR 23.573, 23.603, 23.609, 23.613 at amendment 23-63 and prior

14 CFR 23.2010, 23.2240 at amendment 23-64 and after.

2360 Replacement of Vacuum Driven Attitude Indicators in 14 CFR Part 23/CAR 3 Airplanes. V1.0

If the applicant proposes to replace vacuum-driven attitude instruments with electronically-driven indicators in CAR 3 and Part 23 airplanes, then they must use FAA accepted means of compliance (MOC).

Policy Statement, PS-ACE-23-08-R1, is an FAA accepted MOC.

Electronically-driven attitude indicators include indicators that use electrical power in place of vacuum to (1) excite an internal gyro, or (2) replace the operation of the gyro with microelectronics. Electronically-driven attitude indicators may replace the existing attitude indicators in airplanes including those approved for IFR operations.

Regulatory Reference: 14 CFR 23.1311 at amendment 23-63 and prior.

14 CFR 23.2010, 23.2500, 23.2615 at amendment 23-64 and after.

2400 Non-TSO Electronic Flight Instrument Systems and Avionics V1.0

If the applicant is seeking to install non-TSO avionics, then they may need to verify the level of FAA involvement in their project.

Many avionics manufacturers have developed lower cost integrated display systems specifically for the Experimental and Amateur-built airplane markets. Although these systems have many or all of the same functions, they generally do not follow the design assurance processes specified in the TSOs. The TSOs only specify a minimum performance, and they often outline the design assurance requirements as well as environmental standards in addition to general operating requirements.

TSO authorization indicates that the article manufacturer has provided a statement of compliance with the TSO requirements and the article is produced under an FAA approved quality system. For non-TSO equipment, the installer bears responsibility for supplier control of the type design and the production of the article.

The FAA has issued several project-by-project policies that support the integration of such EFIS into part 23 airplanes. The FAA will determine their involvement for any EFIS that has not been certificated before.

Regulatory Reference: 14 CFR 23.1301, 23.1306, 23.1308, 23.1309, 23.1311 at amendment 23-63 and prior.

14 CFR 23.2010, 23.2500, 23.2505 at amendment 23-64 and after.

2420 HIRF/Lightning Test Levels and Compliance Methods for 14 CFR Part 23 Class I, II, and III Airplanes V1.1

If the applicant is proposing alternate methods of compliance for HIRF/lightning test levels and compliance, then they must incorporate FAA accepted means of compliance (MOC) (PS-ACE-23-10).

PS-ACE-23-10, is an FAA accepted MOC that may be used in lieu of the MOC described in AC 20-136B, Aircraft Electrical and Electronic System Lightning Protection, and AC 20-158A, The Certification of Aircraft Electrical and Electronic Systems for Operation in the High-intensity Radiate Fields (HIRF) Environment, to show compliance to 14 CFR 23.1306 and 23.1308 (§§ 23.2515 and 23.2520) for level A systems. PS-ACE-23-10 defines an alternate means of demonstrating compliance with level A systems for HIRF and the indirect effects of lightning requirements for small airplanes without the need to perform full airplane test.

At all amendment levels, applicants should incorporate FAA accepeted means of compliance (MOC) into their certification planning and coordinate with the Small Airplane Standards Branch when incorporating alternate FAA accepted MOC into their certification planning.

Regulatory Reference: 14 CFR 23.1306, 23.1308 at amendment 23-63 and prior.

14 CFR 23.2010, 23.2515, 23.2520 at amendment 23-64 and after.

2460 System Level Verification of Software and Airborne Electronic Hardware (AEH) V1.1

If the applicant is proposing alternative means of compliance (MOC) for system level verification in place of RTCA/DO-178B/C for level 1 and 2 (class I and II) part 23 airplanes, then they may incorporate FAA accepted means of compliance PS-AIR-23-09 or request an alternative MOC.

Applicants should incorporate FAA accepted means of compliance (MOC) into their certification planning and coordinate with the Small Airplane Standards Branch when incorporating alternate FAA accepted MOC into their certification planning.

NOTE: Project applications after October 11, 2018 who apply this policy, are restricted to class I and II airplanes. Previously, on some projects the FAA, during the developmental policy phases, allowed some approvals using this policy for class III airplanes. This PS-AIR-23-09 policy statement must be used in lieu of project specific policy memos for new applications dated October 11, 2018 and after.

Regulatory Reference: 14 CFR 23.1301 and 23.1309 at amendment 23-63 and prior.

14 CFR Part 23.2010, 23.2500, 23.2505, 23.2510 at amendment 23-64 and after.

2500 Artificial Intelligence Software V1.0

If the applicant is proposing to use artificial intelligence (AI) software, then this will require FAA involvement.

References: FAA Advisory Circular (AC) 20-115D, DO-178C.

Applicants should contact the Small Airplane Standards Branch for additional guidance.

Regulatory Reference: 14 CFR part 23.1301, 23.1309 at amendment 23-63 and prior.

14 CFR part 23.2010, 23.2505, 23.2510 at amendment 23-64 and after.

2520 Electronic Flight Instrument Systems (EFIS) V1.1

If the applicant is proposing to install an electronic flight instrument system (EFIS) that has not been previously evaluated by the Small Airplane Standards Branch, then the FAA may require a multi-pilot usability and human factors evaluation.

This evaluation (on past EFIS) have resulted in the need for Equivalent Level of Safety (ELOS) finding(s) or additional FAA accepted means of compliance (MOC) to 14 CFR 23.1309(d), 23.1311, 23.1321 and 23.1322 at amendment 23-63 and prior.

At amendment 23-64 and after, applicants should incorporate FAA accepted means of compliance (MOC) into their certification planning in lieu of an ELOS finding

Regulatory Reference: 14 CFR 23.1309(d), 23.1311, 23.1321, 23.1322 at any amendment 23-63 and prior.

14 CFR 23.2010, 23.2500, 23.2605, 23.2610, 23.2615 at amendment 23-64 and after.

2600 Use of Speech Recognition or Voice Activated Technology for Avionics Data Entry in Part 23 Airplanes V1.1

If the applicant proposes to install speech recognition or voice activated technology for avionics data entry, then they may need to obtain an FAA accepted means of compliance (MOC) to 14 CFR 23.1301 and 23.1309 at amendment 23-63 and prior.

At amendment 23-64 and after, applicants should incorporate FAA accepted means of compliance (MOC) inot their certification planning.

Regulatory Reference: 14 CFR 23.1301 and 23.1309 at amendment 23-63 and prior.

14 CFR 23.2010, 23.2500, 23.2505, and 23.2510 at any amendment 23-64 and after.

2640 Touch Screens V1.0

If the applicant is seeking to install touch screens (multi-function controls), then they should follow the FAA accepted means of compliance (MOC) contained in the applicable chapters of FAA Advisory Circular AC 20-175, "*Controls for Flight Deck Systems*."

If the touchscreen has not previously evaluated by the FAA, then the FAA will evaluate their level of involvement in the project.

Regulatory Reference: 14 CFR 23.671, 23.771, 23.777, 23.1301, 23.1311, 23.1309, 23.1322, 23.1381, 23.1523 and 23.1555 at amendment 23-63 and prior.
14 CFR 23.2010, 23.2250(a), 23.2300, 23.2320, 23.2500(a), 23.2500, 23.2505, 23.2510, 23.2600, 23.2605, 23.2610, 23.2615 at amendment 23-64 and after.

2680 Synthetic Vision Systems (SVS) and Enhanced Vision Systems (EVS) V1.0

If the applicant is seeking to install Synthetic Vision Systems (SVS) or Enhanced Vision Systems (EVS), then they must incorporate FAA accepted means of compliance (MOC).

FAA Advisory Circulars AC 20-167A,"*Airworthiness Approval of Enhanced Vision System, Synthetic Vision System, Combined Vision System, and Enhanced Flight Vision System Equipment*", and AC 20-138D, "*Airworthiness Approval of Positioning and Navigation Systems*", are FAA accepted MOCs.

SVS typically uses terrain data from a database to display"synthetic vision" information to the pilot.

EVS is an electronic means to provide a display of the forward external scene topography through the use of imaging sensors, such as forward looking infrared (FLIR), millimeter wave (MMW) radiometry, MMW radar, and/or low-light-level image intensifying.

At amendment 23-64 and after, applicants should incorporate FAA accepted means of compliance (MOC) into their certification planning.

Regulatory Reference: 14 CFR 23.773, 23.1301, 23.1309, 23.1311 at amendment 23-63 and prior.
14 CFR 23.2010, 23.2600 at amendment 23-64 and after.

2760 Vision Systems - Night Vision Imaging Systems (NVIS) V1.1

If the applicant is seeking to install night vision compatible lighting systems into part 23 airplanes, then they must obtain an FAA accepted means of compliance (MOC) to amendment 23-63 and prior.

The FAA accepted NVIS MOC is currently available as a Policy Memo that may be obtained from the Small Airplane Standards Branch. This MOC defines an acceptable MOC for aided flight operations and aided takeoff and landing operations. This MOC does not address operational authorization.

Applicants installing night vision (NVIS) compatible lighting systems into part 23 airplanes must incorporate an FAA accepted means of compliance (MOC) at any part 23 amendment.

At all amendment levels, applicants should coordinate with the Small Airplane Standards Branch and incorporate the FAA accepted means of compliance (MOC) into their certification planning.

Regulatory Reference: 14 CFR 23.561, 23.771, 23.773, 23.777, 23.807, 23.1301, 23.1311, 23.1321, 23.1322, 23.1351, 23.1381, 23.1383, 23.1401, 23.1501, 23.1523, 23.1525, 23.1543, 23.1581, 23.1583, 23.1585 and any amendment 23-63 and prior.

14 CFR 23.2010, 23.2250, 23.2270, 23.2315, 23.2320, 23.2325, 23.2500, 23.2505, 23.2510, 23.2525, 23.2530, 23.2540, 23.2600, 23.2605, 23.2610, 23.2615, 23.2620 at amendment 23-64 and after.

2800 ADS-B Out System Installation (NEXTGEN) V1.1

If the applicant proposes to use ADS-B Out System and the ADS-B Out pairing is not already on the list of approved sources, then they may need to obtain an FAA accepted means of compliance (MOC) for initial airworthiness approval.

This link below has the list of previously approved sources:
https://www.faa.gov/nextgen/equipadsb/installation/equipment/

FAA Advisory Circular 20-165B is an FAA accepted MOC.

At amendment 23-64 and after, applicants should incorporate FAA accepted means of compliance (MOC) into their certification planning.

Regulatory Reference: 14 CFR 23.1301 at amendment 23-63 and prior.

14 CFR 23.2010, 23.2505, 23.2510 at amendment 23-64 and after.

14 CFR 91.227, amendment 91-314

14 CFR part 91.225

2840 Airspeed Indicator Markings V1.1

If the applicant is installing digital avionics (glass cockpit), then they may require an Equivalent Level Of Safety (ELOS) finding when complying with 14 CFR 23.1545 Airspeed Indicator at amendment 23-63 and prior.

At amendment 23-64 and after, applicants should incorporate FAA accepted means of compliance (MOC) into their certification planning in lieu of an ELOS finding.

Regulatory Reference: 14 CFR 23.1545 at amendment 23-63 and prior.

14 CFR 23.2010, 23.2610 at amendment 23-64 and after.

If the applicant is seeking to install aircraft data communication systems used for air traffic services (ATS), then they must incorporate FAA accepted means of compliance (MOC).

Advisory Circular AC 20-140C,"*Guidelines for Design Approval of Aircraft Data Link Communication Systems Supporting Air Traffic Services (ATS*)", covers different types of data link systems and interoperability criteria, respectively, is an FAA accepted MOC.

Additionally, policy memorandum, AIR-6B0-17-6B0-DM281, AC 20-140C General Memo, dated December 08, 2017, provides clarification on FANS 1/A+, associated viable sub-networks, and use of operating limitations in the Airplane Flight Manual. Examples of ATS data communication systems are controller pilot data link communications, Automatic Dependent Surveillance-Contract, and Aircraft Communications Addressing and Reporting System. AC 20-140C covers different types of data link systems and interoperability criteria respectively.

Applicants should incorporate FAA accepeted means of compliance (MOC) into their certification planning and coordinate with the Small Airplane Standards Branch of their intent to propose an alternative FAA accepted MOC in accordance with AC 23.2010-1, FAA Accepted Means of Compliance Process for 14 CFR Part 23, that can be incorporated into their certification planning.

Regulatory Reference: 14 CFR 23.1301(a) at amendment 23-63 and prior.
14 CFR 23.2010, 23.2505 at amendment 23-64 and after.

2900 Wireless Local Area Network (LAN) Installation V1.1

If the applicant is incorporating wireless LAN in their design, then they must incorporate FAA accepted means of compliance (MOC).

Policy Statement, PS-ACE-23-2, is an FAA accepted MOC.

Applicants should coordinate with the Small Airplane Standards Branch in order to obtain the latest guidance.

NOTE:

1. Use AC 20-164A, in lieu of AC 20-164, an advisory material cited in PS-ACE-23-2:
AC 20-164A, *"Designing and Demonstrating Aircraft Tolerance to Portable Electronic Devices"*, provides guidance for aircraft certification applicants to demonstrate that their airplane are tolerant to potential electromagnetic effects from Portable Electronic Device (PEDs).

This AC refers to Radio Technical Commission for Aeronautics (RTCA), Inc. Document No. (RTCA/DO)-307A. This document specifies standard procedures that demonstrate an airplane is tolerant to potential electromagnetic effects from PEDs, including portable wireless RF devices.

2. The FAA is currently coordinating an additional policy statement PS-AIR-25-13-R1, this policy is in draft format. This additional policy statement provides additional policy on demonstrating electromagnetic compatibility (EMC) for wireless radio frequency (RF) systems that are installed on transport category airplanes.

At amendment 23-64 and after, applciants should incorporate FAA accepted means of compliance (MOC) into their certification planning.

Regulatory Reference: 14 CFR 23.831, 23.1301, 23.1309, 23.1351, 23.1353, 23.1357, 23.1359, 23.1431, 23.1529, 23.1581 at amendment 23-63 and prior.
14 CFR 23.2010, 23.2505, 23.2510 at amendment 23-64 and after.

2960 Security Considerations (Cybersecurity) V1.1

If the applicant proposes to use wireless connectivity for data transfers to onboard avionics, then they may need to obtain an FAA accepted means of compliance (MOC).

At amendment 23-64 and after, applicants should incorporate FAA accepted means of compliance (MOC) into their certification planning.

Policy Statement PS-AIR-21.16-02 Rev 2 is an FAA accepted MOC.

Regulatory Reference: 14 CFR 23.1309 at amendment 23-63 and prior
14 CFR 23.2500, 23.2505 and 23.2510 at amendment 23-64 and after.

2980 Installation of Rechargeable Lithium Battery and Battery Systems on Airplanes V1.1

If the applicant is installing rechargeable lithium batteries and/or battery systems, then the FAA may be required to apply special conditions to establish the minimum level of safety for any amendment up to and including amendment 23-63.

At amendment 23-64 and after, applicants should incorporate the requirements of the most recent special condition language into their certification planning as an FAA accepted means of compliance (MOC) in lieu of a special condition.

This includes both mainship and non mainship batteries.

Regulatory Reference: No Rule at 14 CFR 23 at amendment 23-63 and prior.
14 CFR 23.2010 at amendment 23-64 and after.

3040 Battery Storage - Loss of Primary Electrical Generating System V1.1

If the applicant proposes to use an aircraft electrical system design that has the storage battery being used as starter power and emergency power, then they may require an Equivalent Level of Safety (ELOS) finding at amendment 23-63 or earlier to comply with 14 CFR 23.1353(h).

Per this design, the aircraft must use the same battery that is used for engine starting as well as to meet the 30 emergency minute requirement.

At amendment 23-64 and after, applicants should incorporate FAA accepted means of compliance (MOC) into certification planning in lieu of an ELOS finding.

Regulatory Reference: 14 CFR 23.1353(h) at amendment 23-63 and prior.

14 CFR 23.2010, 23.2525 at amendment 23-64 and after.

3060 Multi-Core Processors V1.0

If the applicant proposes to use software-based aircraft systems that utilize multi-core microprocessors (i.e., without disabling unused cores, etc.), then they must use or obtain an FAA accepted means of compliance (MOC).

Regulatory Reference: 14 CFR 23.1301, 23.1309 at amendment 23-63 and prior.
14 CFR 23.2010, 23.2510 at amendment 23-64 and after.

3120 Balloon Lifting Envelope Changes V1.1

If an applicant is proposing to replace the lifting envelope of a type certificated balloon with another lifting envelope (i.e. via Supplemental Type Certificate), they must retain and reinstall the original data plate and install an additional supplemental data plate as close as physically possible to the original data plate. This information is provided to communicate the requirements of FAA data plate removal and installation of a supplemental data plate for balloon envelope changes as the data plate is typically attached to the lifting envelope. Deviations from this guidance will necessitate Small Airplane Standards Branch review of the applicant's proposed changes.

This communication is provided due to confusion primarily seen among STC applicants about the appropriate handling of the data plate installed by the original equipment manufacturer and the need for a supplemental data plate.

FAA Order 8130.2J, Section 2-3, paragraph e(2)(c) states: "When an aircraft has been modified to conform to another make/model, verify the supplemental ID plate contains the information specified in 14 CFR part 45.13…"
FAA Advisory Circular, AC 45-2E paragraph 6.7 Notes: "When an aircraft has been modified to conform to another model of the same make, a new ID plate is required to be attached as close as physically possible to the original ID plate. The original ID plate is not to be removed or altered in any manner."

Regulatory Reference: 14 CFR 21.19, 21.101 at all amendment levels

14 CFR 31 at all amendment levels

3160 Balloon Control Force Guidance - Emergency Deflation System Control Forces V1.0

If the applicant is seeking to comply with 14 CFR 31.49 –at any amendment–, then they must consider balloon control force guidance. A policy memo is available upon request. However, the content of the policy memo is as follows (see below).

Balloon control forces are currently addressed in 14 CFR 31.49, Control Systems, which states in paragraph (a):"Each control must operate easily, smoothly, and positively enough to allow proper performance of its functions. Controls must be arranged and identified to provide for convenience of operation and to prevent the possibility of confusion and subsequent inadvertent operation."

The rules go on to define force limits for the emergency deflation ripcord in 31.57(b) of"not less than 25, or more than 75 pounds." Although the term "rip cord" is not specifically used in 31.55, both sections address the emergency deflation systems. The Small Airplane Standards Branch believes that in the absence of other rational approaches, the control force guidelines in 31.55 should reflect the same force values as in 31.57.

Regulatory Reference: 14 CFR 31.49, 31.55, 31.57 at any amendment.

3200 Aircraft in Low Earth Orbit (LEO) V1.0

If the applicant is seeking to operate an aircraft that will reach low-Earth orbit (LEO) or build a vehicle to operate in LEO, then they are under the jurisdiction of Title 51 U.S.C, Chapter 509, and, depending on their proposed operations my also be subject to Title 49 U.S.C and its accompanying regulations as well.

On September 26, 2013, FAA legal counsel issued an interpretation under FAA's aviation and space statues to determine which law applies to a potential balloon applicant for a commercial space tourism vehicle (51 U.S.C. or 49 U.S.C).

The balloon applicant in question was determined to be entirely under the jurisdiction of 51 U.S.C. Chapter 509"partly" because the vehicle would make a rapid transit of and exit from controlled airspace and will not loiter. However... the interpretation only applied to the altitudes being proposed by the specific applicant. When not operating as a launch vehicle, the appliance would be required to operate under the appropriate aviation provision of Title 49 U.S.C. and its accompanying regulations.

NOTE: The legal interpretation rendered no opinion on what constitutes outer space but used 30 kilometers because at 30 kilometers (98,425 feet), water and blood boil, and an unprotected person would rapidly experience fatal decompression. Regardless of whether 30 kilometers constitutes outer space-and the FAA renders no opinion on that question-a person would experience the same physiological responses at 30 kilometers as if exposed to the environment of low-Earth orbit (LEO).

Regulatory Reference: Title 51 U.S.C, Chapter 509

3220 Energy/Thrust Management Systems/Displays for Electronic Propulsion V1.0

If the applicant proposes to use Energy and/or Thrust Management Systems, then they must coordinate their proposals with the Small Airplane Standards Branch to determine the level of FAA involvement with respect to policy or guidance.

Aircraft designed to incorporate electric propulsion systems, distributed propulsion systems, or operate in different flight modes (vertical, transitory, forward flight) may be required to utilize energy and/or thrust management systems which are new to the Part 23 fleet.

Considerations include the monitoring of battery states, individual thrust vectors (magnitude and direction) as well as malfunction annunciations.

The FAA is actively working on draft policy and guidance for the use of this new and novel technology.

Regulatory Reference: 14 CFR 23.1321, 23.1353, 23.1581 at amendment 23-63 and prior.

14 CFR 23.2010, 23.2500, 23.2525, 23.2610, 23.2620 at amendment 23-64 and after.

3280 Aircraft with Different Flight Modes (Vertical, Transition, Forward Flight) [eVTOL] V1.0

If the applicant proposes to design an aircraft to operate in different flight modes (vertical, transitory, and forward flight), then they must coordinate their proposals with the Small Airplanes Standards Branch to determine the level of FAA involvement with respect to policy or guidance.

Aircraft like the new class of Vertical Takeoff and Landing (VTOL) vehicles are capable of flying in different modes of flight (vertical, transitory, and forward) and are new to the Part 23 fleet. There are many considerations not currently addressed in our requirements including new pilot vehicle interfaces, new displays for energy and thrust management, handling qualities, and unique malfunction scenarios.

The FAA is actively working on draft policy and guidance for the use of this new and novel technology. The FAA is currently deciding if these vehicles will be 14 CFR 21.17(b) (special class) or 14 CFR 23 with special conditions.

Regulatory Reference: 14 CFR 21.17(b), 14 CFR 23 Amendment 23-64

3300 Balloon Production Flight Test V1.0

Applicants should be aware of the policy memo issued by the Small Airplane Standards Branch on February 9, 2000 that states the following:

"There has been a request from the field for guidance on production flight test of balloons. In the absence of any written guidance from the Directorate (now the Small Airplane Standards Branch) concerning production flight test the following is offered.

It has been the industry standard for some time that the FAA approved production flight test checklist can be accomplished during a hot inflation of the tethered balloon. This policy is satisfactory and is approved for use for all approved U.S. balloon manufacturers with a FAA approved production certificate."

The policy memo is available upon request.

Regulatory Reference: 14 CFR part 31 at all amendments

3320 Basic Med Operations 14 CFR Part 68 V1.0

If the applicant is seeking to allow 14 CFR part 68 basic med operations in some 14 CFR part 23 airplanes, then they may need to apply for type certificate action either through an amended type certificate or supplemental type certificate (STC) if their airplane is certificated above 6000 pounds maximum take-off weight and/or have seat counts greater than 6.

The FAA has issued a policy memo that addresses these expectations more clearly and that memo is available upon request.

Regulatory Reference: 14 CFR part 68, 14 CFR 91.107(a)(3)

If the applicant proposes to obtain design and production approval for equipment considered to increase airplane safety that incorporates failure modes no greater than minor and is not equipment mandated by regulation, then the design and production approval may be eligible for installation as a minor alternation.

The FAA has developed a policy statement, PS-AIR-21.8-1602, that addresses this subset of non-required safety enhancing equipment (NORSEE) that could be eligible for installation as a minor alteration.

In addition PS-AIR-21.8-1602, (potentially including AOA systems) may be used (with certain conditions) to overcome some of the challenges associated with adding new equipment in older airplanes. The policy is intended to support retrofit of existing aircraft only and does not apply to new production aircraft incorporating AOA systems. This policy does not apply to new or amended TCs or STCs.

The determination of minor alterations is up to the installer and is not addressed by this policy.

The NORSEE policy may be used as a Design and Production Approval for Vendors. These approvals are in lieu of STC and PMA (FAR 21.8d). Some stipulations on the equipment are:

- Non Required Equipment

- Equipment that is a minor change to type Design

- Failure Condition of the equipment is no worse than Minor/Major (i.e. is not Hazardous/Catastrophic)

Once NORSEE approval is granted, an A&P Mechanic needs to determine the Installation process. If the mechanic deems that it is a minor alteration, then only an A&P logbook entry is required.

NOTE: The design specifications for the AOA system are published in ASTM F3011-13 (Standard Specification for Performance of AOA system). The FAA adopted this specification in 2013.

Regulatory Reference: 14 CFR part 21.8(d) and 21.9

3360 Laser Installation V1.1

If the applicant is seeking to install laser technology in an aircraft, then they may require an FAA accepted means of compliance (MOC) if the technology they propose to install is not addressed in FAA AC 20-183, "Laser Airworthiness Installation Guidance".

Local, State, and Federal law enforcement agencies use forward looking infrared (FLIR) equipment with laser illuminators, pointers, and range finders for nighttime, covert surveillance.

A LIDAR uses a laser to perform ranging by measuring the reflected return of a projected laser beam. LIDAR devices can be used in mapping terrain elevation, obstacles, and vegetation; or atmospheric measuring (for example, particulate tracking or turbulence monitoring).

At amendment 23-64 and after, applicants should incorporate FAA accepted Means of Compliance into their certification planning.

Regulatory Reference: 14 CFR 23.1301, 23.1309, 23.1529, 23.1581 at amendment 23-63 and prior.

14 CFR 23.2010, 23.2500, 23.2610 at amendment 23-64 and after.

3400 Distributed Propulsion Systems V1.0

If the applicant proposes to use distributed propulsion systems, then they must coordinate their proposals with the Small Airplane Standards Branch to determine the level of FAA involvement with respect to policy or guidance.

Highly-augmented, distributed propulsion systems are new to the Part 23 fleet. They are typically defined as a highly-augmented propulsion system consisting of a single throttle controlling a multi-motor system.

The FAA is actively working on draft policy and guidance for the use of this new and novel technology.

Regulatory Reference: 14 CFR 23.777 23.1141, 23.1143 at mendment 23-63 and prior.

14 CFR 23.2010, 23.2400, 23.2410, 23.2440, 23.2500, 23.2600, 23.2610, 23.2615 at amendment 23-64 and after.

3420 Fire Extinguishing/Suppression Agent (Halon Replacement) V1.1

If the applicant proposes the use of non-Halon fire extinguishing/suppression agents for use in lavatory trash receptacle bottles, handheld fire extinguishers, engine/APU fire extinguishing, cargo compartment fire suppression, etc., then they may need to obtain an FAA accepted means of compliance (MOC) to 14 CFR 23.851, 23.855, 23.863, 23.1195, 23.1197, 23.1201, at amendment 23-63 and prior.

Halon is being phased out of airplane applications per ICAO deadlines.

At amendment 23-64 and after, applicants should incorporate FAA accepted means of compliance(MOC) into their certification planning.

Regulatory Reference: 14 CFR 23.851, 23.855, 23.863, 23.1195, 23.1197, 23.1201, at amendment 23-63 and prior.

14 CFR 23.2010, 23.2325, 23.2440 at amendment 23-64 and after.

3460 Heads-Up Display (HUD) - Nonconformal V1.0

If the applicant is seeking to install a nonconformal heads up display, then they must obtain an accepted means of compliance(MOC).

Nonconformal heads-up displays do not take into account external reference information. They act as a repeater to the electrical flight instrument system. They are not considered required equipment but have safety enhancing capability.

Regulatory Reference: 14 CFR 23.773 at amendment 23-63 and prior.
14 CFR 23.2600(a) at amendment 23-64 and after.

3480 Highly Augmented Flight Path Control Systems/Fly By Wire (FBW) V1.0

If the applicant proposes to use Highly Augmented Flight Path Control Systems/Fly By Wire (FBW), then they may require special conditions, Equivalent Level of Safety (ELOS) findings, or may need to obtain FAA accepted means of compliance (MOC) at any part 23 amendment.

FBW control systems are new to the Part 23 fleet and has only been certified to date under Parts 25& 29 with the use of Special Conditions and Equivalent Levels of Safety.

FBW systems are highly integrated flight controls and propulsion systems that may require new display symbology, and may require new performance and handling quality testing requirements.

The FAA is actively working on draft policy and guidance for the use of this new and novel technology.

Regulatory Reference: 14 CFR 23.161, 23.171, 23.173, 23.175, 23.177, 23.181, 23.671, 23.672, 23.691, 23.777, 23.779, 23.1321, 23.1329, 23.1335 at Amendment 23-63 and prior.

14 CFR 23.2010, 23.2140, 23.2145, 23.2245, 23.2250, 23.2300, 23.2500, 23.2505, 23.2510, 23.2515, 23,2600, 23.2605, 23.2610 at amendment 23-64 and after.

3500 Replacing Existing Safe Life Limits with Damage Tolerance Based Inspections V1.0

If the applicant is proposing to eliminate or extend existing life limits, they must contact the Small Airplane Standards Branch.

Small airplanes may have structural life limits on certain components imposed by the airplane's certification basis. Type design holders or STC applicants may propose eliminating the existing life limits and replacing them with damage tolerance based inspection programs, especially as the fleet approaches the life limits.

The FAA believes that it is impractical to develop an adequate inspection program, incorporate damage tolerant design features and materials, and provide sufficient residual strength in an airplane designed and tested for the life limit approach. There exists an unacceptable risk of fatigue cracking beyond the original life limit and an inspection program has limited capability of detecting what may be a relatively large number of cracks as the fleet ages past the original life limit.

The FAA position is that an inspection program cannot eliminate a life limit but it can be used to extend an existing life limit. The FAA may approve an initial life extension of the original life limit with an FAA accepted inspection program.

Regulatory Reference: 14 CFR 23.571, 23.572, 23.573, 23.575, 23.1529 at amendment 23-63 and prior.
14 CFR 23.2240, 23.1529 at amendment 23-64 and after.

3580 Material Design Values V1.1

If the applicant proposes to use material that does not meet 14 CFR 23.613 at amendment 23-63 or prior, then they may require an Equivalent Level of Safety (ELOS) finding.

The use of S-Basis design values (material allowables) do not comply with probability requirements of 14 CFR 23.613(a), (b), and (e), amendment 23-45. This requires that material strength properties be based on a sufficient number of tests to establish a statistical basis for the design values. For single load path structure, 14 CFR 23.613 further requires the design values must be established with a 99 % probability and 95 % confidence ("A"basis) value. For multiple load path structure, the design values must be established with a 90 % probability and a 95 % confidence ("B" basis) value. However, S-Basis design values have an unknown statistical assurance.

Currently, there is no alternate allowed for structure to use statistically determined minimum design values other than"A" or "B" basis. In addition, there is no option to utilize a procurement specification value as a design value verified with receiving inspection test sampling processes.

At amendment 23-64 and after, applicants should incorporate FAA accepted means of compliance (MOC) into their certification planning in lieu of an ELOS finding.

Regulatory Reference: 14 CFR 23.613 at amendment 23-63 and prior.

14 CFR 23.2010 at amendment 23-64 and after.

3620 Novel, Unique, or Unusual Design Features V1.0

If a technology or product change is novel, unique, or has unusual design features, then applicants and ACO staff should contact the applicable standards branch.

Special Conditions are issued if the existing applicable airworthiness standards do not contain adequate or appropriate safety standards for the airplane, airplane engine, or propeller because of novel, unique or unusual design features of the product to be type certificated (refer to 14 CFR 11.19, 21.16, and 21.101(d)). Equivalent Level of Safety (ELOS) findings may also be applicable when literal compliance with an airworthiness standard cannot be shown and compensating factors exist that can be shown to provide an ELOS to the regulation in which an ELOS is sought. (refer to § 21.21(b)(1)).

Novel, unique, or unusual design features may include but are not limited to the following issues(s): 1) Materials; 2) Processes; 3) Design feature(s) that would produce an unsafe condition; 4) Significant technology issues that are of controversial design; 5) Unique operational consideration(s); and 6) Other.

When proposing changes to small airplane products certificated prior to amendment 23-64, applicants are encouraged to comply with later provisions of amendment 23-64 when doing so eliminates the need for special conditions or ELOS findings. Complying with amendment 23-64 performance-based requirements, special conditions and ELOS findings formerly required in its prescriptive predecessors—amendment 23-63 or earlier—could be potentially converted to means of compliance (MOC). The provisions and details of those former special conditions and ELOS could be incorporated into the applicant's certification planning as an FAA accepted MOC under the provisions of § 23.2010; FAA Accepted Means of Compliance Process for 14 CFR Part 23, thereby, potentially saving a significant amount of time and administrative effort for both the applicant and the FAA.

Regulatory Reference: 14 CFR part 21.16, 21.101(d) and 21.101(f) at all amendment levels

3640 Primary Category - Conversion from Part 23 V1.0

If the applicant is seeking to move a Part 23 airplane into primary category, then they must coordinate with the Small Airplane Standards Branch.

The Small Airplane Standards Branch addressed the topic of converting part 23 airplanes to primary category during the part 23 Aviation Rulemaking Committee. It was decided at that time to not allow this.

Regulatory Reference:

3660 Life Limits - Safe Life Airplanes and Significant Change V1.0

Significant Change under 14 CFR 21.101 requires the applicant comply with all applicable rules for the product being changed that are effective on their date of application for the proposed change UNLESS it is determined that compliance to the later requirement is (1) Not in an area affected by the change, (2) Does not significantly contribute the Level of Safety or (3) Is impractical.

Damage Tolerance is part of the latest certification basis for structural changes. However, airplanes that have been originally certificated to Safe Life or Fail Safe requirements need to be reviewed to determine if they can be certificated to Damage Tolerance requirements at the latest rule.

Regulatory Reference: 14 CFR 21.101

3680 Remotely Piloted Systems/ Command & Control (C2) Systems V1.0

If the applicant proposes to use Remotely Piloted Systems, then they must coordinate their proposals with the Small Airplane Standards Branch to determine the level of FAA involvement with respect to policy and guidance.

Remotely piloted aircraft are found in the Unmanned Aircraft Systems (UAS) community and are new to the Part 23 fleet. There is UAS guidance for remotely piloted vehicles that includes definitions, specifications and testing requirements for command and control systems but this may have to be modified to adapt it to Part 23 aircraft. Additional considerations include where and how this aircraft is to be operated and whether or not it is carrying passengers.

The FAA is actively working on draft policy and guidance for the use of this new and novel technology.

Regulatory Reference: No rule at any part 23 amendment.

14 CFR 23.2010 at amendment 23-64 and after.

3720 Restricted Cat. Airplanes - Airplanes already certificated Commuter V1.0

Per 14 CFR 23.3(e), An airplane cannot have both Commuter Category Certification and one or more of Normal, Utility, Acrobatic certification.

Regulatory Reference: 14 CFR 21.25
14 CFR 23.3(e) at amendment 23-63 and prior.
14CFR 23.2005 at amendment 23-64 and after.

3760 Seat & Passenger Reduction Via STC or Amended TC V1.1

Applicants and ACOs should be aware of the policy memo issued by the Small Airplane Standards Branch on August 14, 2015. This policy memo addresses the confusion on whether a Passenger limitation set below the Type Certificate Data Sheet also requires removal of seats.

The memo states the following:

"As indicated in the referenced regulations and directive, seating configurations are established as part of the aircraft type design and are listed on the Type Certificate Data Sheet (TCDS). Maximum seating configurations may be changed by amending the Type Certificate (TC) or by a Supplemental Type Certificate (STC). The established maximum seating configuration as listed on a TC or STC does not refer to the maximum number of seats occupied, but instead, the maximum number of seats installed in the airplane. The seating configuration used to dictate aircraft maintenance requirements can only be determined by the TC or STC configuration. An STC must actually remove seats down to the limit established. If seat count is reduced by STC there must be a limitation on the face of the STC that clearly indicates number of seats. If seating is "integral" to the product (i.e. a toilet) it must be (1) placarded that the seat may not be occupied for takeoff and landing or (2) it must be counted as part of the total seat count."

This policy memo is available upon request.

Regulatory Reference: 14 CFR 21.41, 14 CFR 23.1501 at amendment 23-21 and prior and 14 CFR 135.411

3780 Seats - Side Facing Seats V1.1

If the applicant is seeking approval and implementation of single-place side facing seats at amendment 23-63 or earlier based on the requirements of 14 CR 25.562 and §25.785, then they must coordinate with the Small Airplane Standards Branch to apply special conditions to establish adequate requirements.

If the applicant is seeking approval and implementation of multiple place side facing seats at amendment 23-63 or earlier based on the requirements of 14 CFR 25.562 and §25.785, then they must coordinate with the Small Airplane Standards Branch to request an exemption.

In addition, if the seat installations mentioned above require airbags to meet the requirements of §25.562 and §25.785 a special condition is required for this as well.

The FAA has developed a policy statement, PS-ANM-25-03-R1 that identifies areas of regulatory compliance.

At amendment 23-64 and after, applicants should coordinate with the Small Airplane Standards Branch to incorporate the requirements of the special conditions into their certification planning as FAA accepted means of compliance (MOC) in lieu of a special condition.

Regulatory Reference: No rule at 14 CFR Part 23 Amendmnent 23-63 and prior.
Reference 14 CFR Part 25 Sections 25.562 (amendment 25-64) and 25.785(amendment 25-64) as referenced in PS-ANM-25-03-R1.

14 CFR 23.2010 at amendment 23-64 and after.

3820 Significant Change - No Small Airplane Standards Branch Involvement V1.0

If the applicant is seeking to comply with an amendment earlier than that established on their date of application, then they must provide an argument per AC21.101-1A and this may be documented in their certification plan.

The applicant's certification plan must be reviewed along with a determination on whether the applicant is complying with the latest regulations for the areas of change and if not, then they must provide an argument as to whether the level of safety is not materially improved or that compliance to the latest amendment is impractical.

If a change is considered significant but with NO Small Airplane Standards Branch involvement, then the ACO should follow AC21.101-1A to ensure the process is followed.

Please also see Part 23 Amendment 23-62 Errors corrections to see how to incorporate the challenges associated with the errors discovered in Amdt 62 in dealing with amended TCs and new and amended STCs.

Regulatory Reference: 14 CFR 21.101

3860 Strategy for Software and Hardware Design Assurance for Unmanned Aircraft Systems (UAS) V1.0

If the applicant is seeking to establish the software and airborne electronic hardware (AEH) design assurance airworthiness criteria in accordance with 14 CFR 21.17(b), then they must use or obtain an FAA accepted means of compliance (MOC).

The requirements currently established for Software and AEH design assurance may not be appropriate depending on the UAS design and concept of operations (CONOPS).

Regulatory Reference: 14 CFR 21.17(b)

14 CFR 23.2505, 23.2510 at amendent 23-64 and after.

3880 Streamlining the installation of simple autopilots into the part 23 fleet V1.0

If the applicant is seeking to install simple autopilots, then they should contact the Small Airplane Standards Branch for additional guidance.

Regulatory Reference: 14 CFR 23.1329 at amendment 23-63 and prior.
14 CFR 23.2300, 23.2500, 23.2505, 23.2510, 23.2600, 23.2605 at amendment 23-64 and after.

3900 Tethered Balloon V1.0

Applicants should be aware of the policy memo issued by the FAA on May 19, 2004 on whether a tethered balloon is an aircraft.

The memo reads (in part):

"A tethered balloon does not meet either the regulatory or the statutory definitions of an aircraft. The design and intended use of a tethered balloon is to prevent flight, in that it is permanently attached to a cable system that prohibits its independent movement. It cannot ascend, descend, or move laterally except as controlled by the tether cable. The fact that it may be controlled within limited and predetermined parameters, in case of the highly improbable separation of the tethered balloon from its cable, does not change the fact that its design is intended to prevent flight."

This policy memo is available upon request.

Regulatory Reference: 14 CFR 31.17 and 31.20 at all amendment levels.

3920 Airbags V1.0

If the applicant is seeking to install airbags on the airframe, then they may need to obtain an FAA accepted means of compliance (MOC) or may be required to apply a special condition.

Applicants should contact the Small Airplane Standards Branch for any updated information or guidance.

Regulatory Reference: No rule at 14 CFR 23 at amendment 23-63 and prior.

14 CFR part 23.2010 at amendment 23-64 and after.

3940 Inceptor Feel Characteristics for active sticks V1.0

If the applicant proposes to use Active Stick Technology, then they must coordinate their proposals with the Small Airplane Standards Branch to determine the level of FAA involvement with respect to policy or guidance.

Active stick technology is typically associated with Fly By Wire (FBW) control systems are new to the Part 23 fleet. Active stick systems are not covered at Amendment 23-63 and earlier and may require new means of compliance (MOCs) at Amendment 23-64 and later. They may require new inceptor feel characteristics, human qualities, and performance & handling quality testing requirements.

The FAA is actively working on draft policy and guidance for the use of this new and novel technology.

Regulatory Reference: 14 CFR 23.143, 23.155 at amendment 23-63 and prior.

14 CFR 23.2010, 23.2135 at Amendment 23-64 and after.

3960 Propulsion as a Flight Control Effector V1.0

If the applicant is proposing to use propulsion as a flight control effector, then they must coordinate their proposals with the Small Airplane Standards Branch to determine the level of FAA involvement with respect to policy and guidance.

The use of propulsion as a flight control effector is new to the Part 23 fleet. Examples of this unique type of controller may be found in a distributed propulsion system or with an aircraft designed to operate in multiple flight modes.

The FAA is actively working on draft policy and guidance for the use of this new and novel technology.

Regulatory Reference: 14 CFR 23.671, 23.672, 23.777, 23.779, 23.1141, 23.1143 at amendment 23-63 and prior.

14 CFR 23.2010, 23.2245, 23.2300, 23.2510, 23.2515, 23.2600, 23.2610 at amendment 23-64 and after.

3970 Unlimited Acrobatic Stability Special Conditions/Means of Compliance V1.1

If the applicant is seeking to show compliance to stability regulations for unlimited acrobatic airplanes, then they may need a special condition for amendment 23-63 or earlier.

At amendment 23-64 and after, applicants should incorporate the requirements of the special condition into their certification planning as an FAA accepted means of compliance (MOC) in lieu of a special condition.

Regulatory Reference: 14 CFR 23.171, 23.173, 23.175, 23.177 at amendment 23-63 and prior.

14 CFR 23.2010, 23.2145 at amendment 23-64 and after.

4000 Envelope Protection and Emergency Descent Mode V1.1

If the applicant is proposing to install new control functions within the autopilot on a new or existing avionics system which provides automatic stability augmentation and envelope protection or the addition of an emergency descent mode, then they must obtain an FAA accepted means of compliance (MOC).

At amendment 23-64 and after, applicants should incorporate FAA accepted means of compliance (MOC) into their certification planning.

Regulatory Reference: 14 CFR 21.17(b), 21.21(b)(3)
14 CFR §23.207, 23.672, 23.691 , 23.1301, 23.1309, 23.1322,
23.1329, 23.1335 and 23.1541 at amendment 23-63 and prior.
14 CFR 23.2010, 23.2150, 23.2250, 23.2300, 23.2500, 23.2505, 23.2510, 23.2600, 23.2605, 23.2610,
23.2510, at amendment 23-64 and after.

4020 Run Time Assurance/Health Monitoring Executive Systems V1.0

If the applicant proposes to use Run-Time Assurance/Health Monitoring Executive Systems, then they must coordinate their proposals with the Small Airplane Standards Branch to determine the level of FAA involvement with respect to policy and guidance.

Run-Time Assurance/Health Monitoring Executive Systems are high-level monitoring and protection systems and are new to the Part 23 fleet.

The FAA is actively working on draft policy and guidance for the use of this new and novel technology.

Regulatory Reference: No Rule at any part 23 amendment

14 CFR 23.2010 at amendment 23-64 and after.

4040 Real Time Parameter Identification Systems V1.0

If the applicant proposes to use Real-Time Parameter Identification Systems, then they must coordinate their proposals with the Small Airplane Standards Branch to determine the level of FAA involvement with respect to policy and guidance.

Real-Time Parameter Identification Systems are non-deterministic systems used to mathematically model something in real-time and are new to the Part 23 fleet.

The FAA is actively working on draft policy and guidance for the use of this new and novel technology.

Regulatory Reference: No Rule 14 CFR 23 at amendment 23-63 and prior.

14 CFR 23.2010 at amendment 23-64 and after.

4060 Adaptive Controllers/Autopilots V1.0

If the applicant proposes to use Adaptive Controllers/Autopilots, then they must coordinate their proposals with the Small Airplane Standards Branch to determine the level of FAA involvement with respect to policy or guidance.

Adaptive controllers/autopilots are non-deterministic systems and are new to the Part 23 fleet.

The FAA is actively working on draft policy and guidance for the use of this new and novel technology.

Regulatory Reference: No Rule 14 CFR 23 at amendment 23-63 and prior.

14 CFR 23.2010 at amendment 23-64 and after.

4080 Autoland Systems V1.1

If the applicant is proposing the installation of systems that provide automatic landing capability in a piloted airplane, then they must coordinate with the Small Airplane Standards Branch. Applicants may be required to apply special conditions to establish adequate requirements at 14 CFR part 23 amendment 23-63 or earlier based on the requirements found in 14 CFR 25.1329 (amendment 25-119), or may need to obtain FAA accepted means of compliance(MOC).

AC 25.1329-1C may provide an accepted means of compliance for piloted airplanes. This issue will likely be in combination with, or installed after an autothrust system.

Autoland capability is also assumed an inherent function installed in UAS and pilotless aircraft, which already have involvement by the Standards Branch staff.

Operator certification (pilot training and maintenance program) is generally required to utilize the autoland function once the type design is approved.

At amendment 23-64 and after, applicants should incorporate the requirements of the special condition into their certification planning as FAA accepted means of compliance (MOC) in lieu of a special condition.

Regulatory Reference: 14 CFR 23.1309 at amendment 23-63 and prior.

Reference 14 CFR Part 25 section 25.1329 (amendment 25-119) via special condition.

14 CFR 23.2010, 23.2500, 23.2505, 23.2510, 23.2605, 23.2610, 23.2615 at amendment 23-64 and after.

4100 Fully Autonomous Flight Control Systems V1.0

If the applicant is proposing to use Adaptive Controllers/Autopilots, then they must coordinate their proposals with the Small Airplane Standards Branch to determine the level of involvement the FAA requires with respect to policy or guidance.

Adaptive controllers/autopilots are non-deterministic systems and are new to the Part 23 fleet.

The FAA is actively working on draft policy and guidance for the use of this new and novel technology.

Regulatory Reference: No rule at any part 23 amendment.

14 CFR 23.2010 at amendment 23-64 and after.

If the applicant proposes to add emergency use only functionality that provides for automatic landing of the airplane, then the Small Airplane Standards Branch will be involved in the project.

Note: This functionality is not to be confused with "normal" autoland capability. This functionality provides for autonomous control and landing of the airplane to a system-determined suitable airport. The need for equivalent level of safety (ELOS) findings and corresponding means of compliance (MOC) must be determined on a case-by-case basis for each installation. The FAA has developed draft policy.

The applicant should define the specific intended functions for § 23.1301 compliance, and provide a definition of appropriate failure conditions and classifications for § 23.1309 compliance. The FAA has developed an issue paper template (S-1) to address MOC for these two regulations, up to and including amendment 23-63.

Certain aspects of the emergency use autoland may not be able to be shown to comply with existing pilot-centric 14 CFR part 23 regulations. The applicant should identify the affected regulations and the compensating features that provide for an equivalent level of safety intended by the regulations and request an ELOS finding by the FAA for those aspects. The FAA has developed an issue paper template (S-2) to address the potential regulatory requirements that may need an ELOS.

At amendment 23-64 and after, applicants, applicants should incorporate FAA accepted means of compliance (MOC) into their certification planning in lieu of an ELOS finding.

Regulatory Reference: 14 CFR 23. 697, 23.729, 23.777, 23.779, 23.991, 23.1141, 23.1155, 23.1189, 23.1301, 23.1303, 23.1305, 23.1309, 23.1311, 23.1321, 23.1322, 23.1337, 23.1555 at amendment 23-63 and prior.

14 CFR 23.2010, 23.2405, 23.2410, 23.2500, 23.2505, 23.2510, 23.2600, 23.2605, 23.2610, 23.2615 at amendment 23-64 and after.