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## Standard Practice for Application of Federal Aviation Administration (FAA) Federal Aviation Regulations Part 21 Requirements to Unmanned Aircraft Systems (UAS)<sup>1</sup>

This standard is issued under the fixed designation F 2505; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### INTRODUCTION

#### STRUCTURE AND ASSUMPTIONS

*Introduction*—This standard practice (SP) document uses 14 CFR Part 21 as a template, retaining all sections of Part 21, many of which will not be altered by the incorporation of certification procedures for Unmanned Aircraft Systems (UAS). The UAS certification procedures that have been inserted into the Part 21 template may, therefore, be seen in the context of procedures prescribed for other civil air vehicles that undergo airworthiness certification. The resulting document is perhaps misnamed as a “standard practice” since it is, in fact, a prototype for a future version of Part 21 that will accommodate UAS airworthiness certification. Anticipating this future version of Part 21, the SP provides a framework for other ASTM standards development and standard-practice initiatives related to UAS certification.

*Scope of Changes to Part 21 Text*—This version of the SP provides certification procedures for unmanned aircraft systems in the light UAS class and in the Remotely Operated Aircraft (ROA/UAS) Class. Unmanned aircraft systems in the mini UAS and micro UAS Classes are not considered in this SP.

*Certification Pathways*—The SP anticipates that light UAS and the larger ROA/UAS will follow distinctly different certification procedural pathways:

- Light UAS will be certified to consensus standards, in a process similar to that established for light sport aircraft in the current Part 21 (section 21.190). This process will lead to issue of a special certificate of airworthiness for the light UAS; and

- ROA/UAS will follow a conventional certification pathway described in Part 21, section 21.17(a), leading to issue of a type certificate as described in Part 21, section 21.21, and issue of a standard certificate of airworthiness under Part 21, section 21.183.

*Applicable Requirements*—The SP anticipates that the core requirements for the basis of certification for the light UAS and ROA/UAS classes will be based on published design/airworthiness standards that do not yet exist, specifically:

- Industry consensus standards for light UAS, prescribing airworthiness requirements for the issue of a Special Certificate of Airworthiness for the smaller UAS; and
- Regulator-approved Airworthiness Standards prescribing airworthiness requirements for the issue of type certificates and changes to type certificates for ROA/UAS UAS.

*Special-Classes Certification Pathway*—The SP retains the Part 21 concept of special classes aircraft, that is, “non-conventional aircraft for which airworthiness standards have not been issued under this Subchapter (14 CFR Subchapter C).” UAS fit well within this definition of the special classes, quoted here from Part 21, section 21.17(b); furthermore, the means for defining the “applicable requirements” for a UAS basis of certification are clearly stated in section 21.17(b). Use of this pathway for the early UAS certification candidates should be considered.

## 1. Scope

1.1 In this practice, certification procedures are provided for Unmanned Aircraft Systems (UAS) in the Light UAS Class and in the Remotely Operated Aircraft (ROA) UAS Classes. Unmanned Aircraft Systems in the Mini UAS and Micro UAS Classes are not considered in this practice, since they do not undergo airworthiness certification.

1.2 *Citations of Federal Aviation Regulations*—When citing U.S. Federal Aviation Regulations in this practice, the citation references are based on the following Federal Aviation Regulation structure:

1.2.1 The Code of Federal Regulations, Title 14 (14 CFR) comprises Aeronautics and Space Regulations. Chapter 1 of 14 CFR contains the regulations of the Federal Aviation Administration and is subdivided into subchapters and parts:

Subchapter A: Definitions	Part 1
Subchapter B: Procedural Rules	Parts 11–17
Subchapter C: Aircraft	Parts 21–49
Subchapter D: Airmen	Parts 60–67
Subchapter E: Airspace	Parts 71–77
Subchapter F: Air Traffic and General Operating Rules	Parts 91–105
Subchapter G: Air Carriers and Operators	Parts 119–139

1.2.1.1 The Parts are further subdivided into Subparts and sections.

1.2.2 This practice uses Part 21 as a template. Within the text of the practice:

1.2.2.1 14 CFR Chapter 1 means the whole of Chapter 1 of 14 CFR; and

1.2.2.2 Subchapter C means all of the Parts of Subchapter C of 14 CFR.

1.2.3 In compact notation, citation of section 1309 of Part 23, for example, may be designated as “section 23.1309.”

1.3 *Unmanned Aircraft Systems*—An Unmanned Aircraft System (UAS) comprises an unmanned air vehicle, the remote control ground station that provides for the mission management and piloting of the air vehicle, data-links for the exchange of control and sensor payload data and all related interfaces. Any part of the overall system that could affect the airworthiness and safety of the aircraft is subject to the requirements of Part 21.

1.4 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Significance and Use

2.1 This practice is intended for guidance and instruction of the aircraft and unmanned aircraft systems industries when addressing the requirements of Part 21.

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee F38 on Unmanned Aircraft Systems and is the direct responsibility of Subcommittee F38.01 on Airworthiness.

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## 3. Subpart A—General

3.1 *Scope*—This practice prescribes (21.1(a))<sup>2</sup>:

3.1.1 Procedural requirements for the issue of type certificates and changes to those certificates, the issue of production certificates, the issue of airworthiness certificates, and the issue of export airworthiness approvals (21.1(a)(1));

3.1.2 Rules governing the holders of any certificate specified in 3.1.1 (21.1(a)(2)); and

3.1.3 Procedural requirements for the approval of certain materials, parts, processes, and appliances (21.1(a)(3)).

3.2 *Products*—For the purposes of this practice, the word “product” means an aircraft, an unmanned aircraft system, an aircraft engine, or propeller. In addition, for the purposes of Subpart L only, it includes components and parts of aircraft, of unmanned aircraft systems, of aircraft engines, and of propellers and also parts, materials, and appliances approved under the Technical Standard Order system (21.1(b)).

3.3 *Airplanes or Rotorcraft Flight Manual*—With each airplane or rotorcraft that was not type certificated with an airplane or rotorcraft flight manual and that has had no flight time before March 1, 1979, the holder of a type certificate (including a supplemental type certificate) or the licensee of a type certificate shall make available to the owner at the time of delivery of the aircraft a current approved airplane or rotorcraft flight manual (21.5(a)).

3.4 The airplane or rotorcraft flight manual required by 3.3 must contain the following information (21.5(b)):

3.4.1 The operating limitations and information required to be furnished in an airplane or rotorcraft flight manual or in manual material, markings, and placards, by the applicable regulations under which the airplane or rotorcraft was type certificated (21.5(b)(1)).

3.4.2 The maximum ambient atmospheric temperature for which engine cooling was demonstrated must be stated in the performance information section of the flight manual if the applicable regulations under which the aircraft was type certificated do not require ambient temperature on engine cooling operating limitations in the flight manual (21.5(b)(2)).

## 4. Subpart B—Type Certificates

4.1 *Applicability*—This Subpart prescribes (21.11):

4.1.1 Procedural requirements for the issue of type certificates for aircraft, unmanned aircraft systems, aircraft engines, and propellers (21.11(a)), and

4.1.2 Rules governing the holders of those certificates (21.11(b)).

4.2 *Eligibility*—Any interested person may apply for a type certificate (21.13).

4.3 *Application for Type Certificate* (21.15):

4.3.1 An application for a type certificate is made on a form and in a manner prescribed by the FAA Administrator and is submitted to the appropriate Aircraft Certification Office (21.15(a)).

4.3.2 An application for an aircraft or an unmanned aircraft system type certificate must be accompanied by a three-view

<sup>2</sup> Items at the end of each section enclosed in parentheses are identifying the applicable FAR Part 21 paragraph.

drawing of that aircraft or unmanned aircraft system and available preliminary basic data (21.15(b)).

4.3.3 An application for an aircraft engine type certificate must be accompanied by a description of the engine design features, the engine operating characteristics, and the proposed engine operating limitations (21.15(c)).

4.4 *Special Conditions*—If the Administrator finds that the airworthiness regulations of Subchapter C do not contain adequate or appropriate safety standards for an aircraft, unmanned aircraft system, aircraft engine, or propeller because of a novel or unusual design feature of the aircraft, unmanned aircraft system, aircraft engine, or propeller, he/she prescribes special conditions and amendments for the product. The special conditions are issued in accordance with Part 11 and contain such safety standards for the aircraft, unmanned aircraft system, aircraft engine, or propeller as the Administrator finds necessary to establish a level of safety equivalent to that established in the regulations (21.16).

4.5 *Designation of Applicable Regulations* (21.17):

4.5.1 Except as provided in Sections 23.2, 25.2, 27.2, 29.2 and in Parts 34 and 36, an applicant for a type certificate must show that the aircraft, unmanned aircraft system, aircraft engine, or propeller concerned meets (21.17(a)):

4.5.1.1 The applicable requirements of Subchapter C that are effective on the date of application for that certificate unless (21.17(a)(1)):

(1) Otherwise specified by the FAA Administrator (21.17(a)(1)(i)), or

(2) Compliance with later effective amendments is elected or required under 4.5 (21.17(a)(1)(ii)), and

(3) Any special conditions prescribed by the FAA Administrator (21.17(a)(2)).

4.5.2 For special classes of aircraft, including the engines and propellers installed (for example, gliders, airships, and other no conventional aircraft) for which airworthiness standards have not been issued under Subchapter C, the applicable requirements will be the portions of those other airworthiness requirements contained in Parts 23, 25, 27, 29, 31, 33, and 35 found by the FAA Administrator to be appropriate for the aircraft and applicable to a specific type design or such airworthiness criteria as the Administrator may find provides an equivalent level of safety to those parts (21.17(b)).

4.5.3 An application for type certification of a transport category aircraft is effective for five years and an application for any other type certificate is effective for 3 years unless an applicant shows at the time of application that his product requires a longer period of time for design, development, and testing and the FAA Administrator approves a longer period (21.17(c)).

4.5.4 In a case in which a type certificate has not been issued, or it is clear that a type certificate will not be issued within the time limit established under 4.5.3, the applicant may (21.17(d)):

4.5.4.1 File a new application for a type certificate and comply with all the provisions of 4.5.1 applicable to an original application (21.17(d)(1)), or

4.5.4.2 File for an extension of the original application and comply with the applicable airworthiness requirements of

Subchapter C that were effective on a date to be selected by the applicant not earlier than the date that precedes the date of issue of the type certificate by the time limit established under 4.5.3 for the original application (21.17(d)(2)).

4.5.5 If an applicant elects to comply with an amendment to Subchapter C that is effective after the filing of the application for a type certificate, he must also comply with any other amendment that the Administrator finds is directly related (21.17(e)).

4.5.6 For primary category aircraft, the requirements are (21.17(f)):

4.5.6.1 The applicable airworthiness requirements contained in Parts 23, 27, 31, 33 and 35, or such other airworthiness criteria as the FAA Administrator may find appropriate and applicable to the specific design and intended use and provide a level of safety acceptable to the Administrator (21.17(f)(1)).

4.5.6.2 The noise standards of Part 36 applicable to primary category aircraft (21.17(f)(2)).

4.6 *Changes Requiring a New Type Certificate*—Each person who proposes to change a product must apply for a new type certificate if the Administrator finds that the proposed change in design, power, thrust, or weight is so extensive that a substantially complete investigation of compliance with the applicable regulations is required (21.19).

4.7 *Issue of Type Certificate: Normal, Utility, Acrobatic, Commuter, and Transport Category aircraft; Unmanned Aircraft Systems; Manned Free Balloons; Special Classes of Aircraft; Aircraft Engines; and Propellers*—An applicant is entitled to a type certificate for an aircraft in the normal, utility, acrobatic, commuter, transport or unmanned aircraft system category, a manned free balloon, special classes of aircraft, or an aircraft engine or propeller, if (21.21):

4.7.1 The product qualifies under 4.11 (21.21(a)), or

4.7.2 The applicant submits the type design, test reports, and computations necessary to show that the product to be certificated meets the applicable airworthiness, aircraft noise, fuel venting, and exhaust emission requirements of the Federal Aviation Regulations and any special conditions prescribed by the FAA Administrator, and the Administrator finds (21.21(b)):

(1) Upon examination of the type design, and after completing all tests and inspections that the type design and the product meet the applicable noise, fuel venting, and emissions requirements of the Federal Aviation Regulations, and further finds that they meet the applicable airworthiness requirements of the Federal Aviation Regulations or that any airworthiness provisions not complied with are compensated for by factors that provide an equivalent level of safety (21.21(b)(1)), and

(2) For an aircraft or an unmanned aircraft system, that no feature or characteristic makes it unsafe for the category or class in which certification is requested (21.21(b)(2)).

4.8 *Reserved*—Intentionally left as reserved to correlate to the FAR Structure (21.23).

4.9 *Issuance of Type Certificate: Primary Category Aircraft* (21.24):

4.9.1 The applicant is entitled to a type certificate for an aircraft in the primary category if (21.24(a)):

4.9.1.1 The aircraft (21.24(a)(1)):

(1) Is unpowered; is an airplane powered by a single, naturally aspirated engine with a 61-knot (3 m/s) or less  $V_{so}$  stall speed as defined in section 23.49; or is a rotorcraft with a 6-lbf/ft<sup>2</sup> (287-Pa) main rotor disk loading limitation, under sea level standard day conditions (21.24(a)(1)(i));

(2) Weighs not more than 2700 lb (1225 kg) or for seaplanes, not more than 3375 lb (1531 kg) (21.24(a)(1)(ii));

(3) Has a maximum seating capacity of not more than four persons, including the pilot (21.24(a)(1)(iii)); and

(4) Has an unpressurized cabin (21.24(a)(1)(iv)).

4.9.1.2 The applicant has submitted (21.24(a)(2)):

(1) Except as provided by 4.9.3, a statement in a form and manner acceptable to the FAA Administrator certifying that the applicant has completed the engineering analysis necessary to demonstrate compliance with the applicable airworthiness requirements; the applicant has conducted appropriate flight, structural, propulsion, and systems tests necessary to show that the aircraft, its components, and its equipment are reliable and function properly; the type design complies with the airworthiness standards and noise requirements established for the aircraft under 4.5.6 and no feature or characteristic makes it unsafe for its intended use (21.24(a)(2)(i));

(2) The flight manual required by 3.1.2, including any information required to be furnished by the applicable airworthiness standards (21.24(a)(2)(ii));

(3) Instructions for continued airworthiness in accordance with 4.23.2 (21.24(a)(2)(iii)); and

(4) A report that summarizes how compliance with each provision of the type certification basis was determined; lists the specific documents in which the type certification data information is provided; lists all necessary drawings and documents used to define the type design; and lists all the engineering reports on tests and computations that the applicant must retain and make available under 4.22 to substantiate compliance with the applicable airworthiness standards (21.24(a)(2)(iv)).

4.9.1.3 The FAA Administrator finds that (21.24(a)(3)):

(1) The aircraft complies with those applicable airworthiness requirements approved under 4.5.6 (21.24(a)(3)(i)), and

(2) The aircraft has no feature or characteristic that makes it unsafe for its intended use (21.24(a)(3)(ii)).

4.9.2 An applicant may include a special inspection and preventive maintenance program as part of the aircraft's type design or supplemental type design (21.24(b)).

4.9.3 For aircraft manufactured outside of the United States in a country with which the United States has a bilateral airworthiness agreement for the acceptance of these aircraft, and from which the aircraft is to be imported into the United States (21.24(c)):

4.9.3.1 The statement required by 4.9.1.2(1) must be made by the civil airworthiness authority of the exporting country (21.24(c)(1)), and

4.9.3.2 The required manuals, placards, listings, instrument markings, and documents required by 4.9.1 and 4.9.2 must be submitted in English (21.24(c)(2)).

4.10 *Issue of Type Certificate: Restricted Category Aircraft* (21.25):

4.10.1 An applicant is entitled to a type certificate for an aircraft or unmanned aircraft system in the restricted category for special purpose operations if he shows compliance with the applicable noise requirements of Part 36 and if he shows that no feature or characteristic of the aircraft or unmanned aircraft system makes it unsafe when it is operated under the limitations prescribed for its intended use, and that the aircraft or unmanned aircraft system (21.25(a)):

4.10.1.1 Meets the airworthiness requirements of an aircraft or unmanned aircraft category except those requirements that the FAA Administrator finds inappropriate for the special purpose for which the aircraft or unmanned aircraft system is to be used (21.25(a)(1)), or

4.10.1.2 Is of a type that has been manufactured in accordance with the requirements of and accepted for use by an Armed Force of the United States and has been later modified for a special purpose (21.25(a)(2)).

4.10.2 For the purposes of 4.10, "special purpose operations" includes (21.25(b)):

4.10.2.1 Agricultural (spraying, dusting, and seeding and livestock and predatory animal control) (21.25(b)(1));

4.10.2.2 Forest and wildlife conservation (21.25(b)(2));

4.10.2.3 Aerial surveying (photography, mapping, and oil and mineral exploration) (21.25(b)(3));

4.10.2.4 Patrolling (pipelines, power lines, and canals) (21.25(b)(4));

4.10.2.5 Weather control (cloud seeding) (21.25(b)(5));

4.10.2.6 Aerial advertising (skywriting, banner towing, airborne signs and public address systems) (21.25(b)(6)); and

4.10.2.7 Any other operation specified by the FAA Administrator (21.25(b)(7)).

4.11 *Issue of Type Certificate: Surplus Aircraft of the Armed Forces* (21.27):

4.11.1 Except as provided in 4.11.2, an applicant is entitled to a type certificate for an aircraft in the normal, utility, acrobatic, commuter, transport, or unmanned aircraft system category that was designed and constructed in the United States, accepted for operational use, and declared surplus by an Armed Force of the United States, and that is shown to comply with the applicable certification requirements in 4.11.6 (21.27(a)).

4.11.2 An applicant is entitled to a type certificate for a surplus aircraft or unmanned aircraft system of the Armed Forces of the United States that is a counterpart of a previously type certificated civil aircraft, if he shows compliance with the regulations governing the original civil aircraft or unmanned aircraft system type certificate (21.27(b)).

4.11.3 Aircraft engines, propellers, and their related accessories installed in surplus Armed Forces aircraft or unmanned aircraft system for which a type certificate is sought under 4.11, will be approved for use on those aircraft if the applicant shows that on the basis of the previous military qualifications, acceptance, and service record, the product provides substantially the same level of airworthiness as would be provided if the engines or propellers were type certificated under Parts 33 or 35 (21.27(c)).

4.11.4 The FAA Administrator may relieve an applicant from strict compliance with a specific provision of the applicable requirements in 4.11.6 if the Administrator finds that the method of compliance proposed by the applicant provides substantially the same level of airworthiness and that strict compliance with those regulations would impose a severe burden on the applicant. The Administrator may use experience that was satisfactory to an Armed Force of the United States in making such a determination (21.27(d)).

4.11.5 The FAA Administrator may require an applicant to comply with special conditions and later requirements than those in 4.11.3 and 4.11.6 if the Administrator finds that compliance with the listed regulations would not ensure an adequate level of airworthiness for the aircraft or unmanned aircraft system (21.27(e)).

4.11.6 Except as provided in 4.11.2-4.11.5, an applicant for a type certificate under 4.11 must comply with the appropriate regulations listed in Table 1 (see Table at Part 21, section 21.27(f)) (21.27(f)).

4.12 *Issue of Type Certificate—Import Products (21.29):*

4.12.1 A type certificate may be issued for a product that is manufactured in a foreign country with which the United States has an agreement for the acceptance of these products for export and import and that is to be imported into the United States if (21.29(a)):

4.12.1.1 The country in which the product was manufactured certifies that the product has been examined, tested, and found to meet (21.29(a)(1)):

(1) The applicable aircraft or unmanned aircraft system noise, fuel venting, and exhaust emissions requirements of Subchapter C as designated in 4.5, or the applicable noise, fuel venting, and exhaust emissions requirements of the country in which the product was manufactured, and any other requirements the FAA Administrator may prescribe to provide noise, fuel venting, and exhaust emission levels no greater than those provided by the applicable noise, fuel venting, and exhaust emission requirements of Subchapter C as designated in 4.5 (21.29(a)(1)(i)); and

(2) The applicable airworthiness requirements of Subchapter C as designated in 4.5, or the applicable airworthiness requirements of the country in which the product was manufactured and any other requirements the FAA Administrator may prescribe to provide a level of safety equivalent to that provided by the applicable airworthiness requirements of Subchapter C as designated in 4.5 (21.29(a)(1)(ii)) (21.29(a)(1)(ii)).

4.12.1.2 The applicant has submitted the technical data concerning aircraft or unmanned aircraft system noise and airworthiness, respecting the product required by the FAA Administrator (21.29(a)(2)); and

4.12.1.3 The manuals, placards, listings, and instrument markings required by the applicable airworthiness (and noise, where applicable) requirements are presented in the English language (21.29(a)(3)).

4.12.2 A product type certificated under 4.12 is considered to be type certificated under the noise standards of Part 36 and the fuel venting and exhaust emission standards of Part 34, where compliance therewith is certified under 4.12.1.1(1), and

under the airworthiness standards of that part of the Federal Aviation Regulations with which compliance is certified under 4.12.1.1(2), or to which an equivalent level of safety is certified under 4.12.1.1(2) (21.29(b)).

4.13 *Type Design*—The type design consists of (21.31):

4.13.1 The drawings and specifications and a listing of those drawings and specifications necessary to define the configuration and the design features of the product shown to comply with the requirements of that Part of Subchapter C applicable to the product (21.31(a)).

4.13.2 Information on dimensions, materials, and processes necessary to define the structural strength of the product (21.31(b)).

4.13.3 The Airworthiness Limitations section of the Instructions for Continued Airworthiness as required by Parts 23, 25, 27, 29, 31, 33, and 35 or as otherwise required by the FAA Administrator, and as specified in the applicable airworthiness criteria for unmanned aircraft systems and special classes of aircraft defined in 4.5.2 (21.31(c)).

4.13.4 If desired, for primary category aircraft, a special inspection and preventive maintenance program designed to be accomplished by an appropriately rated and trained pilot-owner (21.31(d)).

4.13.5 Any other data necessary to allow, by comparison, the determination of the airworthiness, noise characteristics, fuel venting, and exhaust emissions (where applicable) of later products of the same type (21.31(e)).

4.14 *Inspection and Tests (21.33):*

4.14.1 Each applicant must allow the FAA Administrator to make any inspection and any flight and ground test necessary to determine compliance with the applicable requirements of the Federal Aviation Regulations. However, unless otherwise authorized by the FAA Administrator (21.33(a)):

4.14.1.1 No aircraft, unmanned aircraft system, aircraft engine, propeller, or part thereof may be presented to the Administrator for test unless compliance with 4.14.2.2-4.14.2.4 has been shown for that aircraft, unmanned aircraft system, aircraft engine, propeller, or part thereof (21.33(a)(1)); and

4.14.1.2 No change may be made to an aircraft, unmanned aircraft system, aircraft engine, propeller, or part thereof between the time that compliance with 4.14.2.2-4.14.2.4 is shown for that aircraft, unmanned aircraft system, aircraft engine, propeller, or part thereof and the time that it is presented to the FAA Administrator for test (21.33(a)(2)).

4.14.2 Each applicant must make all inspections and tests necessary to determine (21.33(b)):

4.14.2.1 Compliance with the applicable airworthiness, aircraft noise, fuel venting, and exhaust emission requirements (21.33(b)(1));

4.14.2.2 That materials and products conform to the specifications in the type design (21.33(b)(2));

4.14.2.3 That parts of the products conform to the drawings in the type design (21.33(b)(3)); and

4.14.2.4 That the manufacturing processes, construction, and assembly conform to those specified in the type design (21.33(b)(4)).

4.15 *Flight Tests (21.35):*

4.15.1 Each applicant for an aircraft or unmanned aircraft system type certificate (other than under 4.9-4.12) must make the tests listed in 4.15.2. Before making the tests the applicant must show (21.35(a)):

4.15.1.1 Compliance with the applicable structural requirements of Subchapter C (21.35(a)(1));

4.15.1.2 Completion of necessary ground inspections and tests (21.35(a)(2));

4.15.1.3 That the aircraft or unmanned aircraft system conforms with the type design (21.35(a)(3)); and

4.15.1.4 That the FAA Administrator received a flight test report from the applicant (signed, in the case of aircraft to be certificated under Part 25, by the applicant's test pilot) containing the results of his tests (21.35(a)(4)).

4.15.2 Upon showing compliance with 4.15.1, the applicant must make all flight tests that the Administrator finds necessary (21.35(b)):

4.15.2.1 To determine compliance with the applicable requirements Subchapter C (21.35(b)(1)); and

4.15.2.2 For aircraft or unmanned aircraft systems to be certificated under Subchapter C, except gliders and airplanes of 6000 lb (2722 kg) or less maximum certificated weight that are to be certificated under Part 23, to determine whether there is reasonable assurance that the aircraft or unmanned aircraft system, its components, and its equipment are reliable and function properly (21.35(b)(2)).

4.15.3 Each applicant must, if practicable, make the tests prescribed in 4.15.2.2 upon the aircraft or unmanned aircraft system that was used to show compliance with (21.35(c)):

4.15.3.1 Section 4.15.2.1 (21.35(c)(1)); and

4.15.3.2 For rotorcraft or unmanned rotorcraft systems, the rotor drive endurance tests prescribed in sections 27.923, 29.923 or, equivalent rotor drive endurance tests prescribed by the unmanned rotorcraft system design standard, as applicable (21.35(c)(2)).

4.15.4 Each applicant must show for each flight test (except in a glider, a manned free balloon, or unmanned aircraft systems) that adequate provision is made for the flight test crew for emergency egress and the use of parachutes (21.35(d)).

4.15.5 Except in gliders and manned free balloons, an applicant must discontinue flight tests under this section until he shows that corrective action has been taken, whenever (21.35(e)):

4.15.5.1 The applicant's test pilot or for unmanned aircraft system, the remote control pilot, is unable or unwilling to make any of the required flight tests (21.35(e)(1)), or

4.15.5.2 Items of noncompliance with requirements are found that may make additional test data meaningless or that would make further testing unduly hazardous (21.35(e)(2)).

4.15.6 The flight tests prescribed in 4.15.2.2 must include (21.35(f)):

4.15.6.1 For aircraft or unmanned aircraft system incorporating turbine engines of a type not previously used in a type-certificated aircraft or unmanned aircraft system, at least 300 h of operation with a full complement of engines that conform to a type certificate (21.35(f)(1)), and

4.15.6.2 For all other aircraft and unmanned aircraft system, at least 150 h of operation (21.35(f)(2)).

4.16 *Flight Test Pilot/Remote Control Pilot*—Each applicant for a normal, utility, acrobatic, commuter, transport or unmanned aircraft system category type certificate must provide a person holding an appropriate pilot certificate to make the flight tests required by this practice. For unmanned aircraft systems, the applicant must provide a person holding an appropriate UAS Pilot Certification (21.37).

4.17 *Flight Test Instrument Calibration and Correction Report* (21.39):

4.17.1 Each applicant for a type certificate for a normal, utility, acrobatic, commuter, or transport category aircraft, or an unmanned aircraft system must submit a report to the FAA Administrator showing the computations and tests required in connection with the calibration of instruments used for test purposes and in the correction of test results to standard atmospheric conditions (21.39(a)).

4.17.2 Each applicant must allow the FAA Administrator to conduct any flight tests that he finds necessary to check the accuracy of the report submitted under 4.17.1 (21.39(b)).

4.18 *Type Certificate*—Each type certificate is considered to include the type design, the operating limitations, the certificate data sheet, and the applicable regulations of Subchapter C with which the FAA Administrator records compliance and any other conditions or limitations prescribed for the product in Subchapter C (21.41).

4.19 *Location of Manufacturing Facilities*—Except as provided in 4.12, the FAA Administrator does not issue a type certificate if the manufacturing facilities for the product are located outside of the United States, unless the Administrator finds that the location of the manufacturer's facilities places no undue burden on the FAA in administering applicable airworthiness requirements (21.43).

4.20 *Privileges*—The holder or licensee of a type certificate for a product may (21.45):

4.20.1 In the case of aircraft or unmanned aircraft system, upon compliance with 10.2-10.12, obtain airworthiness certificates (21.45(a));

4.20.2 In the case of aircraft engines or propellers, obtain approval for installation on certified aircraft or unmanned aircraft systems (21.45(b));

4.20.3 In the case of any product, upon compliance with 9.2-9.15, obtain a production certificate for the type certificated product (21.45(c)); and

4.20.4 Obtain approval of replacement parts for that product (21.45(d)).

4.21 *Transferability*—A type certificate may be transferred to or made available to third persons by licensing agreements. Each grantor shall, within 30 days after the transfer of a certificate or execution or termination of a licensing agreement, notify in writing the appropriate Aircraft Certification Office. The notification must state the name and address of the transferee or licensee, date of the transaction, and in the case of a licensing agreement, the extent of authority granted the licensee (21.47).

4.22 *Availability*—The holder of a type certificate shall make the certificate available for examination upon the request of the FAA Administrator or the National Transportation Safety Board (21.49).

4.23 *Instructions for Continued Airworthiness and Manufacturer's Maintenance Manuals Having Airworthiness Limitations Sections (21.50):*

4.23.1 The holder of a type certificate for a rotorcraft for which a Rotorcraft Maintenance Manual containing an Airworthiness Limitations section has been issued under sections 27.1529 (a)(2) or 29.1529 (a)(2), and who obtains approval of changes to any replacement time, inspection interval, or related procedure in that section of the manual, shall make those changes available upon request to any operator of the same type of rotorcraft (21.50(a)).

4.23.2 The holder of a design approval, including either the type certificate or supplemental type certificate for an aircraft, unmanned aircraft system, aircraft engine, or propeller for which application was made after January 28, 1981, shall furnish at least one set of complete Instructions for Continued Airworthiness, prepared in accordance with sections 23.1529, 25.1529, 27.1529, 29.1529, 31.82, 33.4, or 35.4, or as specified in the applicable airworthiness criteria for unmanned aircraft systems or special classes of aircraft defined in 4.5.2, as applicable, to the owner of each type of aircraft, unmanned aircraft system, aircraft engine, or propeller upon its delivery, or upon issuance of the first standard airworthiness certificate for the affected aircraft or unmanned aircraft system, whichever occurs later, and thereafter make those instructions available to any other person required by 14 CFR Chapter 1 to comply with any of the terms of these instructions. In addition, changes to the Instructions for Continued Airworthiness shall be made available to any person required by 14 CFR Chapter 1 to comply with any of those instructions (21.50(b)).

4.24 *Duration*—A type certificate is effective until surrendered, suspended, revoked, or a termination date is otherwise established by the FAA Administrator (21.51).

4.25 *Statement of Conformity (21.53):*

4.25.1 Each applicant must submit a statement of conformity (FAA Form 317) to the FAA Administrator for each aircraft engine and propeller presented to the Administrator for type certification. This statement of conformity must include a statement that the aircraft engine or propeller conforms to the type design (21.53(a)).

4.25.2 Each applicant must submit a statement of conformity to the FAA Administrator for each aircraft, unmanned aircraft system, or part thereof presented to the Administrator for tests. This statement of conformity must include a statement that the applicant has complied with 4.14.1 (unless otherwise authorized under 4.14.1) (21.53(b)).

## 5. Subpart C—Provisional Type Certificates

5.1 *Applicability*—This Subpart prescribes (21.71):

5.1.1 Procedural requirements for the issue of provisional type certificates, amendments to provisional type certificates, and provisional amendments to type certificates (21.71(a)), and

5.1.2 Rules governing the holders of those certificates (21.71(b)).

5.2 *Eligibility (21.73):*

5.2.1 Any manufacturer of aircraft or unmanned aircraft systems manufactured within the United States who is a U.S. citizen may apply for Class I or Class II provisional type certificates, for amendments to provisional type certificates

held by him, and for provisional amendments to type certificates held by him (21.73(a)).

5.2.2 Any manufacturer of aircraft or unmanned aircraft systems manufactured in a foreign country with which the United States has an agreement for the acceptance of those aircraft for export and import may apply for a Class II provisional type certificate, for amendments to provisional type certificates held by him, and for provisional amendments to type certificates held by him (21.73(b)).

5.2.3 An aircraft engine manufacturer who is a U.S. citizen and has altered a type-certificated aircraft or unmanned aircraft system by installing different type-certificated aircraft engines manufactured by him within the United States may apply for a Class I provisional type certificate for the aircraft or unmanned aircraft system, and for amendments to Class I provisional type certificates held by him if the basic aircraft or unmanned aircraft system, before alteration, was type certificated in the normal, utility, acrobatic, commuter, transport or unmanned aircraft system category (21.73(c)).

5.3 *Application*—Applications for provisional type certificates, for amendments thereto, and for provisional amendments to type certificates must be submitted to the Manager of the Aircraft Certification Office for the geographic area in which the applicant is located (or in the case of European, African, or Middle East Region, the Manager, Aircraft Engineering Division) and must be accompanied by the pertinent information specified in this Subpart (21.75).

5.4 *Duration (21.77):*

5.4.1 Unless sooner surrendered, superseded, revoked, or otherwise terminated, provisional type certificates and amendments thereto are effective for the periods specified in 5.4 (21.77(a)).

5.4.2 A Class I provisional type certificate is effective for 24 months after the date of issue (21.77(b)).

5.4.3 A Class II provisional type certificate is effective for 12 months after the date of issue (21.77(c)).

5.4.4 An amendment to a Class I or Class II provisional type certificate is effective for the duration of the amended certificate (21.77(d)).

5.4.5 A provisional amendment to a type certificate is effective for six months after its approval or until the amendment of the type certificate is approved, whichever is first (21.77(e)).

5.5 *Transferability*—Provisional type certificates are not transferable (21.79).

5.6 *Requirements for Issue and Amendment of Class I Provisional Type Certificates (21.81):*

5.6.1 An applicant is entitled to the issue or amendment of a Class I provisional type certificate if he shows compliance with 5.6 and the FAA Administrator finds that there is no feature, characteristic, or condition that would make the aircraft unsafe when operated in accordance with the limitations established in 5.6.5 and section 91.317 (21.81(a)).

5.6.2 The applicant must apply for the issue of a type or supplemental type certificate for the aircraft or unmanned aircraft system (21.81(b)).

5.6.3 The applicant must certify that (21.81(c)):

5.6.3.1 The aircraft or unmanned aircraft system has been designed and constructed in accordance with the airworthiness requirements applicable to the issue of the type or supplemental type certificate applied for (21.81(c)(1));

5.6.3.2 The aircraft or unmanned aircraft system substantially meets the applicable flight characteristic requirements for the type or supplemental type certificate applied for (21.81(c)(2)); and

5.6.3.3 The aircraft or unmanned aircraft system can be operated safely under the appropriate operating limitations specified in 5.6.1 (21.81(c)(3)).

5.6.4 The applicant must submit a report showing that the aircraft or unmanned aircraft system had been flown in all maneuvers necessary to show compliance with the flight requirements for the issue of the type or supplemental type certificate applied for and to establish that the aircraft or unmanned aircraft system can be operated safely in accordance with the limitations contained in Subchapter C (21.81(d)).

5.6.5 The applicant must establish all limitations required for the issue of the type or supplemental type certificate applied for, including limitations on weights, speeds, flight maneuvers, loading, and operation of controls and equipment unless, for each limitation not so established, appropriate operating restrictions are established for the aircraft (21.81(e)).

5.6.6 The applicant must establish an inspection and maintenance program for the continued airworthiness of the aircraft or unmanned aircraft system (21.81(f)).

5.6.7 The applicant must show that a prototype aircraft has been flown for at least 50 h under an experimental certificate issued under 10.14-10.16 or under the auspices of an Armed Force of the United States. However, in the case of an amendment to a provisional type certificate, the Administrator may reduce the number of required flight hours (21.81(g)).

5.7 *Requirements for Issue and Amendment of Class II Provisional Type Certificates* (21.83):

5.7.1 An applicant who manufactures aircraft within the United States is entitled to the issue or amendment of a Class II provisional type certificate if he shows compliance with 5.7 and the FAA Administrator finds that there is no feature, characteristic, or condition that would make the aircraft unsafe when operated in accordance with the limitations in 5.7.8 and sections 91.317 and 121.207 (21.83(a)).

5.7.2 An applicant who manufactures aircraft in a country with which the United States has an agreement for the acceptance of those aircraft for export and import is entitled to the issue or amendment of a Class II provisional type certificate if the country in which the aircraft or was manufactured certifies that the applicant has shown compliance with 5.7, that the aircraft meets the requirements of 5.7.6 and that there is no feature, characteristic, or condition that would make the aircraft unsafe when operated in accordance with the limitations in 5.7.8 and applicable sections of 91.317 and 121.207 (21.83(b)).

5.7.3 The applicant must apply for a type certificate, in the transport category, for the aircraft (21.83(c)).

5.7.4 The applicant must hold a U.S. type certificate for at least one other aircraft in the same transport category as the subject aircraft (21.83(d)).

5.7.5 The FAA's official flight test program or the flight test program conducted by the authorities of the country in which the aircraft was manufactured, with respect to the issue of a type certificate for that aircraft, must be in progress (21.83(e)).

5.7.6 The applicant, or in the case of a foreign manufactured aircraft, the country in which the aircraft was manufactured, must certify that (21.83(f)):

5.7.6.1 The aircraft has been designed and constructed in accordance with the airworthiness requirements applicable to the issue of the type certificate applied for (21.83(f)(1));

5.7.6.2 The aircraft substantially complies with the applicable flight characteristic requirements for the type certificate applied for (21.83(f)(2)); and

5.7.6.3 The aircraft can be operated safely under the appropriate operating limitations in Subchapter C (21.83(f)(3)).

5.7.7 The applicant must submit a report showing that the aircraft has been flown in all maneuvers necessary to show compliance with the flight requirements for the issue of the type certificate and to establish that the aircraft can be operated safely in accordance with the limitations in Subchapter C (21.83(g)).

5.7.8 The applicant must prepare a provisional aircraft flight manual containing all limitations required for the issue of the type certificate applied for, including limitations on weights, speeds, flight maneuvers, loading, and operation of controls and equipment unless, for each limitation not so established, appropriate operating restrictions are established for the aircraft (21.83(h)).

5.7.9 The applicant must establish an inspection and maintenance program for the continued airworthiness of the aircraft (21.83(i)).

5.7.10 The applicant must show that a prototype aircraft has been flown for at least 100 h. In the case of an amendment to a provisional type certificate, the FAA Administrator may reduce the number of required flight hours (21.83(j)).

5.8 *Provisional Amendments to Type Certificates* (21.85):

5.8.1 An applicant who manufactures aircraft or unmanned aircraft system within the United States is entitled to a provisional amendment to a type certificate if he shows compliance with 5.8 and the FAA Administrator finds that there is no feature, characteristic, or condition that would make the aircraft or unmanned aircraft system unsafe when operated under the appropriate limitations contained in Subchapter C (21.85(a)).

5.8.2 An applicant who manufactures aircraft or unmanned aircraft systems in a foreign country with which the United States has an agreement for the acceptance of those aircraft or unmanned aircraft systems for export and import is entitled to a provisional amendment to a type certificate if the country in which the aircraft or unmanned aircraft system was manufactured certifies that the applicant has shown compliance with 5.8, that the aircraft meets the requirements of 5.8.5, and that there is no feature, characteristic, or condition that would make the aircraft or unmanned aircraft system unsafe when operated under the appropriate limitations contained in Subchapter C (21.85(b)).

5.8.3 The applicant must apply for an amendment to the type certificate (21.85(c)).



5.8.4 The FAA’s official flight test program or the flight test program conducted by the authorities of the country in which the aircraft or unmanned aircraft system was manufactured, with respect to the amendment of the type certificate, must be in progress (21.85(d)).

5.8.5 The applicant, or in the case of foreign manufactured aircraft or unmanned aircraft system, the country in which the aircraft or unmanned aircraft system was manufactured, must certify that (21.85(e)):

5.8.5.1 The modification involved in the amendment to the type certificate has been designed and constructed in accordance with the airworthiness requirements applicable to the issue of the type certificate for the aircraft or unmanned aircraft system (21.85(e)(1));

5.8.5.2 The aircraft or unmanned aircraft system substantially complies with the applicable flight characteristic requirements for the type certificate (21.85(e)(2)); and

5.8.5.3 The aircraft or unmanned aircraft system can be operated safely under the appropriate operating limitations in Subchapter C (21.85(e)(3)).

5.8.6 The applicant must submit a report showing that the aircraft or unmanned aircraft system incorporating the modifications involved has been flown in all maneuvers necessary to show compliance with the flight requirements applicable to those modifications and to establish that the aircraft or unmanned aircraft system can be operated safely in accordance with the applicable limitations specified in sections 91.317 and 121.207 (21.85(f)).

5.8.7 The applicant must establish and publish, in a provisional aircraft or unmanned aircraft system flight manual or other document and on appropriate placards, all limitations required for the issue of the type certificate applied for, including weight, speed, flight maneuvers, loading, and operation of controls and equipment, unless, for each limitation not so established, appropriate operating restrictions are established for the aircraft or unmanned aircraft system (21.85(g)).

5.8.8 The applicant must establish an inspection and maintenance program for the continued airworthiness of the aircraft or unmanned aircraft system (21.85(h)).

5.8.9 The applicant must operate a prototype aircraft or unmanned aircraft system modified in accordance with the corresponding amendment to the type certificate for the number of hours found necessary by the Administrator (21.85(i)).

## 6. Subpart D—Changes to Type Certificates

6.1 *Applicability*—This Subpart prescribes procedural requirements for the approval of changes to type certificates (21.91).

6.2 *Classification of Changes in Type Design* (21.93):

6.2.1 In addition to changes in type design specified in 6.2.2, changes in type design are classified as minor and major. A “minor change” is one that has no appreciable effect on the weight, balance, structural strength, reliability, operational characteristics, or other characteristics affecting the airworthiness of the product. All other changes are “major changes” (except as provided in 6.2.2) (21.93(a)).

6.2.2 For the purpose of complying with Part 36, and except as provided in 6.2.2.2-6.2.2.4, any voluntary change in the type design of an aircraft or unmanned aircraft system that may

increase the noise levels of that aircraft or unmanned aircraft system is an “acoustical change” (in addition to being a minor or major change as classified in 6.2.1) for the following aircraft (21.93(b)):

6.2.2.1 Transport category large airplanes (21.93(b)(1));

6.2.2.2 Jet (turbojet-powered) airplanes (regardless of category). For airplanes to which 6.2 applies, “acoustical changes” do not include changes in type design that are limited to one of the following (21.93(b)(2)):

(1) Gear down flight with one or more retractable landing gear down during the entire flight (21.93 (b)(2)(i)),

(2) Spare engine and nacelle carriage external to the skin of the airplane (and return of the pylon or other external mount) (21.93(b)(2)(ii)), or

(3) Time-limited engine or nacelle changes or both where the change in type design specifies that the airplane may not be operated for a period of more than 90 days unless compliance with the applicable acoustical change provisions of Part 36 is shown for that change in type design (21.93(b)(2)(iii)).

6.2.2.3 Propeller-driven commuter category and small airplanes in the primary, normal, utility, acrobatic, transport, unmanned aircraft systems and restricted categories, except for airplanes that are (21.93(b)(3)):

(1) Designated for “agricultural aircraft or unmanned aircraft system operations” (as defined in section 137.3, effective January 1, 1966) to which section 36.1583 does not apply (21.93(b)(3)(i));

(2) Designated for dispensing fire fighting materials to which section 36.1583 does not apply (21.93(b)(3)(ii));

(3) U.S. registered and that had flight time before January 1, 1955 (21.93(b)(3)(iii)); or

(4) Land-configured aircraft reconfigured with floats or skis. This reconfiguration does not permit further exception from the requirements of this 6.2 upon any acoustical change not enumerated in 6.2.2 (21.93(b)(3)(iv)).

6.2.2.4 Helicopters except (21.93(b)(4)):

(1) Those helicopters or unmanned rotorcraft systems that are designated exclusively (21.93(b)(4)(i)):

(a) For “agricultural operations,” as defined in section 137.3, as effective on January 1, 1966 (21.93(b)(4)(i)(A));

(b) For dispensing firefighting materials (21.93(b)(4)(i)(B)); or

(c) For carrying external loads, as defined in section 133.1(b), as effective on December 20, 1976 (21.93(b)(4)(i)(C)).

(2) Those helicopters or unmanned rotorcraft systems modified by installation or removal of external equipment. For purposes of 6.2, “external equipment” means any instrument, mechanism, part, apparatus, appurtenance, or accessory that is attached to or extends from the helicopter or unmanned rotorcraft system exterior, but is not used nor intended to be used in operating or controlling a helicopter or unmanned rotorcraft system in flight and is not part of an airframe or engine. An “acoustical change” does not include (21.93(b)(4)(ii)):

(a) Addition or removal of external equipment (21.93(b)(4)(ii)(A));

(b) Changes in the airframe made to accommodate the addition or removal of external equipment, to provide for an external load attaching means, to facilitate the use of external equipment or external loads, or to facilitate the safe operation of the helicopter or unmanned rotorcraft system with external equipment mounted to or external loads carried by the helicopter or unmanned rotorcraft system (21.93(b)(4)(ii)(B));

(c) Reconfiguration of the helicopter or unmanned rotorcraft system by the addition or removal of floats and skis (21.93(b)(4)(ii)(C));

(d) Flight with one or more doors or windows, or both, removed or in an open position (21.93(b)(4)(ii)(D)); or

(e) Any changes in the operational limitations placed on the helicopter or unmanned rotorcraft system as a consequence of the addition or removal of external equipment, floats, and skis, or flight operations with doors or windows, or both, removed or in an open position (21.93(b)(4)(ii)(E)).

6.2.3 For purposes of complying with Part 34, any voluntary change in the type design of the airplane, unmanned aircraft system or engine that may increase fuel venting or exhaust emissions is an “emissions change” (21.93(c)).

6.3 *Approval of Minor Changes in Type Design*—Minor changes in a type design may be approved under a method acceptable to the FAA Administrator before submitting to the Administrator any substantiating or descriptive data (21.95).

6.4 *Approval of Major Changes in Type Design* (21.97):

6.4.1 In the case of a major change in type design, the applicant must submit substantiating data and necessary descriptive data for inclusion in the type design (21.97(a)).

6.4.2 Approval of a major change in the type design of an aircraft or unmanned aircraft system engine is limited to the specific engine configuration upon which the change is made unless the applicant identifies in the necessary descriptive data for inclusion in the type design the other configurations of the same engine type for which approval is requested and shows that the change is compatible with the other configurations (21.97(b)).

6.5 *Required Design Changes* (21.99):

6.5.1 When an Airworthiness Directive is issued under Part 39, the holder of the type certificate for the product concerned must (21.99(a)):

6.5.1.1 If the FAA Administrator finds that design changes are necessary to correct the unsafe condition of the product, and upon his request, submit appropriate design changes for approval (21.99(a)(1)), and

6.5.1.2 Upon approval of the design changes, make available the descriptive data covering the changes to all operators of products previously certificated under the type certificate (21.99(a)(2)).

6.5.2 In a case in which there are no current unsafe conditions, but the FAA Administrator or the holder of the type certificate finds through service experience that changes in type design will contribute to the safety of the product, the holder of the type certificate may submit appropriate design changes for approval. Upon approval of the changes, the manufacturer shall make information on the design changes available to all operators of the same type of product (21.99(b)).

6.6 *Designation of Applicable Regulations* (21.101):

6.6.1 An applicant for a change to a type certificate must show that the changed product complies with the airworthiness requirements applicable to the category of the product in effect on the date of the application for the change and with Parts 34 and 36. Exceptions are detailed in 6.6.2 and 6.6.3 (21.101(a)).

6.6.2 If 6.6.2.1, 6.6.2.2 or 6.6.2.3 apply, an applicant may show that the changed product complies with an earlier amendment of a regulation required by 6.2.1 and of any other regulation the FAA Administrator finds is directly related. However, the earlier amended regulation may not precede either the corresponding regulation incorporated by reference in the type certificate, or any regulation in sections 23.2, 25.2, 27.2, or 29.2 that is related to the change. The applicant may show compliance with an earlier amendment of a regulation for any of the following (21.101(b)):

6.6.2.1 A change that the FAA Administrator finds not to be significant. In determining whether a specific change is significant, the Administrator considers the change in context with all previous relevant design changes and all related revisions to the applicable regulations incorporated in the type certificate for the product. Changes that meet one of the following criteria are automatically considered significant (21.101(b)(1)):

(1) The general configuration or the principles of construction are not retained (21.101(b)(1)(i)).

(2) The assumptions used for certification of the product to be changed do not remain valid (21.101(b)(1)(ii)).

6.6.2.2 Each area, system, component, equipment, or appliance that the FAA Administrator finds is not affected by the change (21.101(b)(2)).

6.6.2.3 Each area, system, component, equipment, or appliance that is affected by the change for which the FAA Administrator finds that compliance with a regulation described in 6.6.1 would not contribute materially to the level of safety of the changed product or would be impractical (21.101(b)(3)).

6.6.3 An applicant for a change to an aircraft (other than a rotorcraft) of 6000 lb (2722 kg) or less maximum weight, or to a non-turbine rotorcraft of 3000 lb (1361 kg) or less maximum weight may show that the changed product complies with the regulations incorporated by reference in the type certificate. However, if the FAA Administrator finds that the change is significant in an area, the Administrator may designate compliance with an amendment to the regulation incorporated by reference in the type certificate that applies to the change and any regulation that the FAA Administrator finds is directly related, unless the Administrator also finds that compliance with that amendment or regulation would not contribute materially to the level of safety of the changed product or would be impractical (21.101(c)).

6.6.4 If the FAA Administrator finds that the regulations in effect on the date of the application for the change do not provide adequate standards with respect to the proposed change because of a novel or unusual design feature, the applicant must also comply with special conditions, and amendments to those special conditions, prescribed under the provisions of 4.4, to provide a level of safety equal to that established by the regulations in effect on the date of the application for the change (21.101(d)).

6.6.5 An application for a change to a type certificate for a transport category aircraft is effective for 5 years, and an application for a change to any other type certificate is effective for three years. If the change has not been approved, or if it is clear that it will not be approved under the time limit established under this section, the applicant may do either of the following (21.101(e)):

6.6.5.1 File a new application for a change to the type certificate and comply with all the provisions of 6.6.1 applicable to an original application for a change (21.101(e)(1)).

6.6.5.2 File for an extension of the original application and comply with the provisions of 6.6.1. The applicant must then select a new application date. The new application date may not precede the date the change is approved by more than the time period established under this section (21.101(e)(2)).

6.6.6 For aircraft or unmanned aircraft systems certificated under 4.5.2 and 4.9-4.11, the airworthiness requirements applicable to the category of the product in effect on the date of the application for the change include each airworthiness requirement that the FAA Administrator finds to be appropriate for the type certification of the aircraft or unmanned aircraft systems in accordance with those sections (21.101(f)).

## 7. Subpart E—Supplemental Type Certificates

7.1 *Applicability*—This Subpart prescribes procedural requirements for the issue of supplemental type certificates (21.111).

7.2 *Requirement of Supplemental Type Certificate*—Any person who alters a product by introducing a major change in type design not great enough to require a new application for a type certificate under 4.6 shall apply to the FAA Administrator for a supplemental type certificate, except that the holder of a type certificate for the product may apply for amendment of the original type certificate. The application must be made in a form and manner prescribed by the Administrator (21.113).

7.3 *Applicable Requirements* (21.115):

7.3.1 Each applicant for a supplemental type certificate must show that the altered product meets applicable requirements specified in 6.6 and, in the case of an acoustical change described in 6.2.2, show compliance with the applicable noise requirements of Part 36 and, in the case of an emissions change described in 6.2.3, show compliance with the applicable fuel venting and exhaust emissions requirements of Part 34 (21.115(a)).

7.3.2 Each applicant for a supplemental type certificate must meet 4.14 and 4.25 with respect to each change in the type design (21.115(b)).

7.4 *Issue of Supplemental Type Certificates* (21.117):

7.4.1 An applicant is entitled to a supplemental type certificate if he meets the requirements of 7.2 and 7.3 (21.117(a)).

7.4.2 A supplemental type certificate consists of (21.117(b)):

7.4.2.1 The approval by the FAA Administrator of a change in the type design of the product (21.117(b)(1)), and

7.4.2.2 The type certificate previously issued for the product (21.117(b)(2)).

7.5 *Privileges*—The holder of a supplemental type certificate may (21.119):

7.5.1 In the case of aircraft or unmanned aircraft systems, obtain airworthiness certificates (21.119(a));

7.5.2 In the case of other products, obtain approval for installation on certificated aircraft or unmanned aircraft systems (21.119(b)); and

7.5.3 Obtain a production certificate for the change in the type design that was approved by that supplemental type certificate (21.119(c)).

## 8. Subpart F—Production Under Type Certificate Only

8.1 *Applicability*—This Subpart prescribes rules for production under a type certificate only (21.121).

8.2 *Production Under Type Certificate*—Each manufacturer of a product being manufactured under a type certificate only shall (21.123):

8.2.1 Make each product available for inspection by the FAA Administrator (21.123(a));

8.2.2 Maintain at the place of manufacture the technical data and drawings necessary for the FAA Administrator to determine whether the product and its parts conform to the type design (21.123(b));

8.2.3 Except as otherwise authorized by the Aircraft Certification Directorate Manager for the geographic area in which the manufacturer is located, for products manufactured more than six months after the date of issue of the type certificate, establish and maintain an approved production inspection system that insures that each product conforms to the type design and is in condition for safe operation (21.123(c)); and

8.2.4 Upon the establishment of the approved production inspection system (as required by 8.2.3) submit to the FAA Administrator a manual that describes that system and the means for making the determinations required by 8.3.2 (21.123(d)).

8.3 *Production Inspection System: Materials Review Board* (21.125):

8.3.1 Each manufacturer required to establish a production inspection system by 8.2.3 shall (21.125(a)):

8.3.1.1 Establish a Materials Review Board (to include representatives from the inspection and engineering departments) and materials review procedures (21.125(a)(1)), and

8.3.1.2 Maintain complete records of Materials Review Board action for at least two years (21.125(a)(2)).

8.3.2 The production inspection system required in 8.2.3 must provide a means for determining at least the following (21.125(b)):

8.3.2.1 Incoming materials and bought or subcontracted parts used in the finished product must be as specified in the type design data or must be suitable equivalents (21.125(b)(1)).

8.3.2.2 Incoming materials and bought or subcontracted parts must be properly identified if their physical or chemical properties cannot be readily and accurately determined (21.125(b)(2)).

8.3.2.3 Materials subject to damage and deterioration must be suitably stored and adequately protected (21.125(b)(3)).

8.3.2.4 Processes affecting the quality and safety of the finished product must be accomplished in accordance with acceptable industry or U.S. specifications (21.125(b)(4)).