

# ASA's 2024 FAR-AMT Update

Changes to the Federal Aviation Regulations occur via the *Federal Register*, which is published daily. The *Aeronautical Information Manual* is updated every 180 days, and Advisory Circulars are revised as the FAA deems necessary. ASA tracks all relevant changes to keep you current and informed: the ASA FAR/AIM Series is published annually, and all Updates are available at [asa2fly.com/farupdate](http://asa2fly.com/farupdate) and through a free email subscription service that notifies you of changes affecting the information printed in your books.

ASA's 2024 *FAR for Aviation Maintenance Technicians* book is current through July 6, 2023. With this Update, information is current through **July 8, 2024**.



## TITLE 14: AERONAUTICS AND SPACE

### PART 5

#### SAFETY MANAGEMENT SYSTEMS

- **Change Date:** April 26, 2024
- **Effective Date:** May 28, 2024
- **Source:** Amdt. 5-2, 89 FR 33104

The authority citation for Part 5 is revised to read as follows:

**Authority:** 49 U.S.C. 106(f), 106(g), 40101, 40113, 40119, 41706, 44101, 44701-44702, 44705, 44709-44711, 44713, 44716-44717, 44722, 46105; Sec. 102, Pub. L. 116-260, 134 Stat. 2309; Sec 215, Pub. L. 111-216, 124 Stat. 2366.

Revise Subpart A to read as follows:

#### Subpart A—General

Sec

- 5.1 Applicability.
- 5.3 Definitions.
- 5.5 General requirements.
- 5.7 Requirements for domestic, flag, and supplemental operations.
- 5.9 Requirements for commuter and on-demand operations or passenger-carrying flights for compensation or hire.
- 5.11 Requirements for production certificate holders that are holders or licensees of a type certificate for the same product.
- 5.13 Requirements for type certificate holders or licensees applying for a production certificate for the same product.
- 5.15 Requirements for type certificate holders that allow another person to use the type certificate to obtain a production certificate for the same product.
- 5.17 Organizational system description.
- 5.19 Implementation plan.

#### Subpart A—General

##### §5.1 Applicability.

This part applies to all of the following:

(a) Any person that holds or applies for a certificate issued under part 119 of this chapter authorizing the person to conduct operations under part 121 of this chapter.

(b) Any person that holds or applies for a certificate issued under part 119 of this chapter authorizing the person to conduct operations under part 135 of this chapter.

(c) Any person that holds or applies for a Letter of Authorization issued under §91.147 of this chapter.

(d) Any person that holds both a type certificate and a production certificate issued under part 21 of this chapter for the same product.

(e) Any person that holds a production certificate issued under part 21 of this chapter for a product for which the person is a licensee of the type certificate for the same product.

(f) Any person that applies for a production certificate under part 21 of this chapter for a product for which the person is the holder or licensee of the type certificate for the same product.

(g) Any person that holds a type certificate issued under part 21 of this chapter for a product, except for persons that hold only type certificates issued under §21.29 of this chapter, that allows another person to use the type certificate to manufacture the same product under a production certificate.

##### §5.3 Definitions.

**Hazard** means a condition or an object that could foreseeably cause or contribute to an incident or aircraft accident, as defined in 49 CFR 830.2.

**Risk** means the composite of predicted severity and likelihood of the potential effect of a hazard.

**Risk control** means a means to reduce or eliminate the effects of hazards.

**Safety assurance** means processes within the SMS that function systematically to ensure the performance and effectiveness of safety risk controls and that the organization meets or exceeds its safety objectives through the collection, analysis, and assessment of information.

**Safety Management System (SMS)** means the formal, top-down, organization-wide approach to managing safety risk and assuring the effectiveness of safety risk controls. It includes systematic procedures, practices, and policies for the management of safety risk.

**Safety objective** means a measurable goal or desirable outcome related to safety.

**Safety performance** means realized or actual safety accomplishment relative to the organization's safety objectives.

*Safety policy* means the person's documented commitment to safety, which defines its safety objectives and the accountabilities and responsibilities of its employees in regards to safety.

*Safety promotion* means a combination of training and communication of safety information to support the implementation and operation of an SMS in an organization.

*Safety Risk Management* means a process within the SMS composed of describing the system, identifying the hazards, and analyzing, assessing, and controlling risk.

### §5.5 General requirements.

**(a) SMS components.** An SMS under this part must be appropriate to the size, scope, and complexity of the person's organization and include, at a minimum, all of the following components:

(1) Safety policy that meets the requirements of subpart B of this part.

(2) Safety risk management that meets the requirements of subpart C of this part.

(3) Safety assurance that meets the requirements of subpart D of this part.

(4) Safety promotion that meets the requirements of subpart E of this part.

**(b) Continuing requirements.** Any person required to develop and implement an SMS under this part must maintain the SMS in accordance with this part.

### §5.7 Requirements for domestic, flag, and supplemental operations.

**(a)** Any person authorized to conduct operations under part 121 of this chapter that has an SMS acceptable to the FAA on or before May 28, 2024, must revise its SMS to meet the requirements of this part no later than May 28, 2025.

**(b)** Any person applying for authorization to conduct operations under part 121 of this chapter or with such application pending on or after May 28, 2024, must develop and implement an SMS that meets the requirements of this part.

**(c)** Any person required to develop and implement an SMS under this section must maintain the SMS as long as the person is authorized to conduct operations under part 121 of this chapter.

**(d)** Any person required to develop and implement an SMS under this section must make available to the Administrator, upon request, all necessary information and data that demonstrates that the person has an SMS that meets the requirements set forth in this part.

### §5.9 Requirements for commuter and on-demand operations or passenger-carrying flights for compensation or hire.

**(a)** Any person authorized to conduct operations under part 135 of this chapter or that holds a Letter of Authorization issued under §91.147 of this chapter before May 28, 2024, must:

(1) Develop and implement an SMS that meets the requirements of this part no later than May 28, 2027.

(2) Submit to the FAA, a declaration of compliance with this part in a form and manner acceptable to the Administrator no later than May 28, 2027.

**(b)** Any person applying for authorization to conduct operations under part 135 of this chapter or a Letter of Authorization under §91.147 of this chapter, or with such application pending on or after May 28, 2024, must develop and implement an SMS that meets the requirements of this part.

**(c)** Any person required to develop and implement an SMS under this section must maintain the SMS as long as the person is authorized to conduct operations under either part 135 or §91.147 of this chapter.

**(d)** Any person required to develop and implement an SMS under this section must make available to the Administrator, upon request, all necessary information and data that demonstrates that the person has an SMS that meets the requirements set forth in this part.

**(e)** The following requirements do not apply to those organizations with a single pilot who is the sole individual performing all necessary functions in the conduct and execution related to, or in direct support of, the safe operation of the aircraft: §§5.21(a)(4), 5.21(a)(5), 5.21(c), 5.23(a)(2), 5.23(a)(3), 5.23(b), 5.25(b)(3), 5.25(c), 5.27(a), 5.27(b), 5.71(a)(7), 5.93, and 5.97(d) of this part.

### §5.11 Requirements for production certificate holders that are holders or licensees of a type certificate for the same product.

Any person that holds a production certificate issued under part 21 of this chapter for a product for which the person is the holder or licensee of the type certificate for the same product on or before May 28, 2024, must:

**(a)** Develop and maintain an organizational system description in accordance with §5.17 of this subpart.

**(b)** Submit an implementation plan in accordance with §5.19 of this subpart for FAA approval in a form and manner acceptable to the Administrator no later than November 28, 2024.

**(c)** Develop an SMS that meets the requirements of this part.

**(d)** Implement the SMS in accordance with this part no later than May 28, 2027.

**(e)** Make available to the Administrator, upon request, all necessary information and data that demonstrates that the person has an SMS that meets the requirements set forth in this part.

**(f)** Maintain the SMS as long as the person is both a holder of a production certificate and a holder or licensee of a type certificate for the same product.

### §5.13 Requirements for type certificate holders or licensees applying for a production certificate for the same product.

**(a)** This section applies to any holder or licensee of a type certificate for a product who either:

(1) Applies for a production certificate for that same product under part 21 of this chapter on or after May 28, 2024, or

(2) Has an application for a production certificate for that same product under part 21 of this chapter pending on May 28, 2024.

**(b)** Any person that meets paragraph (a) of this section must:

(1) Develop and maintain an organizational system description in accordance with §5.17 of this subpart.

(2) Submit an implementation plan in accordance with §5.19 of this subpart for FAA approval in a form and manner acceptable to the Administrator during the certification process.

(3) Develop an SMS that meets the requirements of this part.

(4) Implement the SMS in accordance with this part no later than 36 months after submission of the implementation plan.

(5) Make available to the Administrator, upon request, all necessary information and data that demonstrates that the person has an SMS that meets the requirements set forth in this part.

(6) Maintain the SMS as long as the person is both a holder of a production certificate and a holder or licensee of a type certificate for the same product.

**§5.15 Requirements for type certificate holders that allow another person to use the type certificate to obtain a production certificate for the same product.**

(a) This section applies to any person that holds a type certificate issued under part 21 of this chapter for a product, except for persons that hold only type certificates issued under §21.29 of this chapter, that allows another person to use the type certificate to manufacture the same product under a production certificate.

(b) Any person that meets paragraph (a) of this section and has a licensing agreement in accordance with §21.55 of this chapter on May 28, 2024, must:

(1) Develop and maintain an organizational system description in accordance with §5.17 of this subpart.

(2) Submit an implementation plan in accordance with §5.19 of this subpart for FAA approval in a form and manner acceptable to the Administrator no later than November 28, 2024.

(3) Develop an SMS that meets the requirements of this part.

(4) Implement the SMS in accordance with this part no later than May 28, 2027.

(5) Make available to the Administrator, upon request, all necessary information and data that demonstrates that the person has an SMS that meets the requirements set forth in this part.

(6) Maintain the SMS as long as the person continues to meet paragraph (a) of this section.

(c) Any person that meets paragraph (a) of this section and enters into a licensing agreement in accordance with §21.55 of this chapter after May 28, 2024, must:

(1) Develop and maintain an organizational system description in accordance with §5.17 of this subpart.

(2) Submit an implementation plan in accordance with §5.19 of this subpart for FAA approval in a form and manner acceptable to the Administrator when providing written licensing agreements in accordance with §21.55 of this chapter.

(3) Develop an SMS that meets the requirements of this part.

(4) Implement the SMS in accordance with this part no later than 36 months after submission of the person's implementation plan.

(5) Make available to the Administrator, upon request, all necessary information and data that demonstrates that the person has an SMS that meets the requirements set forth in this part.

(6) Maintain the SMS as long as the person continues to meet paragraph (a) of this section.

**§5.17 Organizational system description.**

An organizational system description developed and maintained under this part must include a summary of the following information about the safety of the aviation products or services provided by the person:

(a) The person's aviation-related processes, procedures, and activities.

(b) The function and purpose of the aviation products or services.

(c) The operating environment.

(d) The personnel, equipment, and facilities necessary for operation.

**§5.19 Implementation plan.**

(a) An implementation plan filed under this part must be based on the organizational system description as defined in §5.17 and describe the means of compliance (including, but not limited to, new or existing policies, processes, or procedures) used to meet the requirements of this part.

(b) A person required to submit an implementation plan under this part must make available to the Administrator, upon request, all necessary information and data that demonstrates that the SMS has been or will be implemented in accordance with the implementation plan.

Amend §5.21 by:

a. Revising paragraph (a) introductory text and paragraphs (a)(1) and (2);

b. Adding paragraph (a)(7); and

c. Revising paragraphs (c) and (d).

The revisions and addition read as follows:

**§5.21 Safety policy.**

(a) Any person required to have an SMS under this part must have a safety policy that includes at least the following:

(1) The person's safety objectives.

(2) The person's commitment to fulfill the safety objectives.

\*\*\*\*\*

(7) A code of ethics that is applicable to all employees, including management personnel and officers, which clarifies that safety is the organization's highest priority.

\*\*\*\*\*

(c) The safety policy must be documented and communicated throughout the person's organization.

(d) The safety policy must be regularly reviewed by the accountable executive to ensure it remains relevant and appropriate to the person.

Amend §5.23 by revising paragraph (a) introductory text, paragraphs (a)(3) and (b) to read as follows:

**§5.23 Safety accountability and authority.**

(a) Any person required to have an SMS under this part must define in its safety policy the accountability for safety of the following individuals:

\*\*\*\*\*

(3) Employees relative to the person's safety performance.

(b) The person must identify the levels of management with the authority to make decisions regarding safety risk acceptance.

Revise §5.25 to read as follows:

**§5.25 Designation and responsibilities of required safety management personnel.**

(a) **Designation of the accountable executive.** Any person required to have an SMS under this part must identify an accountable executive who, irrespective of other functions, satisfies the following:

(1) Is the final authority over operations authorized to be conducted under the person's certificate(s) or Letter(s) of Authorization.

(2) Controls the financial resources required for the operations to be conducted under the person's certificate(s) or Letter(s) of Authorization.

(3) Controls the human resources required for the operations authorized to be conducted under the person's certificate(s) or Letter(s) of Authorization.

(4) Retains ultimate responsibility for the safety performance of the operations conducted under the person's certificate(s) or Letter(s) of Authorization.

**(b) Responsibilities of the accountable executive.** The accountable executive must accomplish the following:

(1) Ensure that the SMS is properly implemented and is performing across all pertinent areas.

(2) Develop and sign the safety policy.

(3) Communicate the safety policy throughout the person's organization.

(4) Regularly review the safety policy to ensure it remains relevant and appropriate to the person.

(5) Regularly review the safety performance and direct actions necessary to address substandard safety performance in accordance with §5.75.

**(c) Designation of management personnel.** The accountable executive must designate sufficient management personnel who, on behalf of the accountable executive, are responsible for the following:

(1) Coordinate implementation, maintenance, and integration of the SMS throughout the person's organization.

(2) Facilitate hazard identification and safety risk analysis.

(3) Monitor the effectiveness of safety risk controls.

(4) Ensure safety promotion throughout the person's organization as required in subpart E of this part.

(5) Regularly report to the accountable executive on the performance of the SMS and on any need for improvement.

Revise §5.27 to read as follows:

#### **§5.27 Coordination of emergency response planning.**

Where emergency response procedures are necessary, any person required to have an SMS under this part must develop, and the accountable executive must approve as part of the safety policy, an emergency response plan that addresses at least the following:

**(a)** Delegation of emergency authority throughout the person's organization.

**(b)** Assignment of employee responsibilities during the emergency.

**(c)** Coordination of the emergency response plans with the emergency response plans of other organizations it must interface with during the provision of its services.

Amend §5.51 by revising the introductory text to read as follows:

#### **§5.51 Applicability.**

Any person required to have an SMS under this part must apply safety risk management to the following:

\* \* \* \* \*

Amend §5.53 by:

- a. Revising paragraph (a);
- b. Adding paragraph (b)(5); and
- c. Revising paragraph (c).

The revisions and addition read as follows:

#### **§5.53 System analysis and hazard identification.**

**(a)** When applying safety risk management, any person required to have an SMS under this part must analyze the systems identified in §5.51. Those system analyses must be used to identify hazards under paragraph (c) of this section and in developing and implementing risk controls related to the system under §5.55(c).

**(b)** \* \* \*

(5) The interfaces of the system.

**(c)** Any person required to have an SMS under this part must develop and maintain processes to identify hazards within the context of the system analysis.

Revise §5.55 to read as follows:

#### **§5.55 Safety risk assessment and control.**

Any person required to have an SMS under this part must:

**(a)** Develop and maintain processes to analyze safety risk associated with the hazards identified in §5.53(c).

**(b)** Define a process for conducting risk assessment that allows for the determination of acceptable safety risk.

**(c)** Develop and maintain processes to develop safety risk controls that are necessary as a result of the safety risk assessment process under paragraph (b) of this section.

**(d)** Evaluate whether the risk will be acceptable with the proposed safety risk control applied before the safety risk control is implemented.

Add §5.57 to Subpart C to read as follows:

#### **§5.57 Notification of hazards to interfacing persons.**

If a person required to have an SMS under this part identifies a hazard in the operating environment, the person must provide notice of the hazard to any interfacing person that, to the best of the person's knowledge, could address the hazard or mitigate the risk. For the purpose of this section, interfacing persons are those that contribute to the safety of the certificate or Letter of Authorization holder's aviation-related products and services.

Revise and republish §5.71 to read as follows:

#### **§5.71 Safety performance monitoring and measurement.**

**(a)** Any person required to have an SMS under this part must develop and maintain processes and systems to acquire data with respect to its operations, products, and services to monitor the safety performance of the organization. These processes and systems must include, at a minimum, the following:

(1) Monitoring of operational processes.

(2) Monitoring of the operational environment to detect changes.

(3) Auditing of operational processes and systems.

(4) Evaluations of the SMS and operational processes and systems.

(5) Investigations of incidents and accidents.

(6) Investigations of reports regarding potential non-compliance with regulatory standards or other safety risk controls established by the person through the safety risk management process established in subpart C of this part.

(7) A confidential employee reporting system in which employees can report hazards, issues, concerns, occurrences, incidents, as well as propose solutions and safety improvements, without concern of reprisal for reporting.

(8) Investigations of hazard notifications that have been received from external sources.

**(b)** Any person required to have an SMS under this part must develop and maintain processes that analyze the data acquired through the processes and systems identified under paragraph (a) of this section and any other relevant data with respect to its operations, products, and services.

**(c)** Any person that holds both a type certificate and a production certificate issued under part 21 of this chapter for the same product must submit a summary of the confidential employee reports received under paragraph (a)(7) of this section to the Administrator once every 6 months.

Amend §5.73 by revising paragraph (a) introductory text, and paragraphs (a)(1) and (b) to read as follows:

**§5.73 Safety performance assessment.**

(a) Any person required to have an SMS under this part must conduct assessments of its safety performance against its safety objectives, which include reviews by the accountable executive, to:

(1) Ensure compliance with the safety risk controls established by the person.

\*\*\*\*\*

(b) Upon completion of the assessment, if ineffective controls or new hazards are identified under paragraphs (a)(2) through (5) of this section, the person must use the safety risk management process described in subpart C of this part.

Revise §5.75 to read as follows:

**§5.75 Continuous improvement.**

Any person required to have an SMS under this part must establish and implement processes to correct safety performance deficiencies identified in the assessments conducted under §5.73.

Revise §5.91 to read as follows:

**§5.91 Competencies and training.**

Any person required to have an SMS under this part must provide training to each individual identified in §5.23 of this part to ensure the individuals attain and maintain the competencies necessary to perform their duties relevant to the operation and performance of the SMS.

Amend §5.93 by revising the introductory text to read as follows:

**§5.93 Safety communication.**

Any person required to have an SMS under this part must develop and maintain means for communicating safety information that, at a minimum:

\*\*\*\*\*

Amend §5.95 by revising the introductory text to read as follows:

**§5.95 SMS documentation.**

Any person required to have an SMS under this part must develop and maintain the following SMS documentation:

\*\*\*\*\*

Revise §5.97 to read as follows:

**§5.97 SMS records.**

Any person required to have an SMS under this part must:

(a) Maintain records of outputs of safety risk management processes as described in subpart C of this part. Such records must be retained for as long as the control remains relevant to the operation.

(b) Maintain records of outputs of safety assurance processes as described in subpart D of this part. Such records must be retained for a minimum of 5 years.

(c) Maintain a record of all training provided under §5.91 for each individual. Such records must be retained for as long as the individual is employed by the person.

(d) Retain records of all communications provided under §5.93 or §5.57 for a minimum of 24 consecutive calendar months.

**PART 13**

**INVESTIGATIVE AND ENFORCEMENT PROCEDURES**

► **Change Date:** December 28, 2023

► **Effective Date:** December 28, 2023

► **Source:** 88 FR 89557

Amend §13.301 by revising paragraphs (b) and (c) to read as follows:

**§13.301 Inflation adjustments of civil monetary penalties.**

\*\*\*\*\*

(b) Each adjustment to a maximum civil monetary penalty or to minimum and maximum civil monetary penalties that establish a civil monetary penalty range applies to actions initiated under this part for violations occurring on or after December 28, 2023, notwithstanding references to specific civil penalty amounts elsewhere in this part.

(c) Minimum and maximum civil monetary penalties are as follows:

TABLE 1 TO §13.301—MINIMUM AND MAXIMUM CIVIL MONETARY PENALTY AMOUNTS FOR CERTAIN VIOLATIONS

United States Code citation	Civil monetary penalty description	2023 minimum penalty amount	New adjusted minimum penalty amount for violations occurring on or after December 28, 2023	2023 maximum penalty amount	New adjusted maximum penalty amount for violations occurring on or after December 28, 2023
49 U.S.C. 5123(a)(1)	Violation of hazardous materials transportation law.	N/A	N/A	\$96,624	\$99,756
49 U.S.C. 5123(a)(2)	Violation of hazardous materials transportation law resulting in death, serious illness, severe injury, or substantial property destruction.	N/A	N/A	\$225,455	\$232,762
49 U.S.C. 5123(a)(3)	Violation of hazardous materials transportation law relating to training.	\$582	\$601	\$96,624	\$99,756
49 U.S.C. 44704(d)(3)	Knowing presentation of a nonconforming aircraft for issuance of an initial airworthiness certificate by a production certificate holder.	N/A	N/A	\$1,144,488	\$1,181,581

(continued)

United States Code citation	Civil monetary penalty description	2023 minimum penalty amount	New adjusted minimum penalty amount for violations occurring on or after December 28, 2023	2023 maximum penalty amount	New adjusted maximum penalty amount for violations occurring on or after December 28, 2023
49 U.S.C. 44704(e)(4)	Knowing failure by an applicant for or holder of a type certificate to submit safety critical information or include certain such information in an airplane flight manual or flight crew operating manual.	N/A	N/A	\$1,144,488	\$1,181,581
49 U.S.C. 44704(e)(5)	Knowing false statement by an airline transport pilot (ATP) certificate holder with respect to the submission of certain safety critical information.	N/A	N/A	See entries for 49 U.S.C. 46301(a)(1) and (a)(5).	See entries for 49 U.S.C. 46301(a)(1) and (a)(5).
49 U.S.C. 44742	Interference by a supervisory employee of an organization designation authorization (ODA) holder that manufactures a transport category airplane with an ODA unit member's performance of authorized functions.	N/A	N/A	See entries for 49 U.S.C. 46301(a)(1).	See entries for 49 U.S.C. 46301(a)(1).
49 U.S.C. 44802 note	Operation of an unmanned aircraft or unmanned aircraft system equipped or armed with a dangerous weapon.	N/A	N/A	\$29,462	\$30,417
49 U.S.C. 46301(a)(1)	Violation by a person other than an individual or small business concern under 49 U.S.C. 46301(a)(1)(A) or (B).	N/A	N/A	\$40,272	\$41,577
49 U.S.C. 46301(a)(1)	Violation by an airman serving as an airman under 49 U.S.C. 46301(a)(1)(A) or (B) (but not covered by 46301(a)(5) (A) or (B)).	N/A	N/A	\$1,771	\$1,828
49 U.S.C. 46301(a)(1)	Violation by an individual or small business concern under 49 U.S.C. 46301(a)(1)(A) or (B) (but not covered in 49 U.S.C. 46301(a)(5)).	N/A	N/A	\$1,771	\$1,828
49 U.S.C. 46301(a)(3)	Violation of 49 U.S.C. 47107(b) (or any assurance made under such section) or 49 U.S.C. 47133.	N/A	N/A	Increase above otherwise applicable maximum amount not to exceed 3 times the amount of revenues used in violation of such section.	No change
49 U.S.C. 46301(a)(5)(A).	Violation by an individual or small business concern (except an airman serving as an airman) under 49 U.S.C. 46301(a)(5)(A)(i) or (ii).	N/A	N/A	\$16,108	\$16,630
49 U.S.C. 46301(a)(5)(B)(i).	Violation by an individual or small business concern related to the transportation of hazardous materials.	N/A	N/A	\$16,108	\$16,630
49 U.S.C. 46301(a)(5)(B)(ii).	Violation by an individual or small business concern related to the registration or recordation under 49 U.S.C. chapter 441, of an aircraft not used to provide air transportation.	N/A	N/A	\$16,108	\$16,630
49 U.S.C. 46301(a)(5)(B)(iii).	Violation by an individual or small business concern of 49 U.S.C. 44718(d), relating to limitation on construction or establishment of landfills.	N/A	N/A	\$16,108	\$16,630
49 U.S.C. 46301(a)(5)(B)(iv).	Violation by an individual or small business concern of 49 U.S.C. 44725, relating to the safe disposal of life-limited aircraft parts.	N/A	N/A	\$16,108	\$16,630
49 U.S.C. 46301 note	Individual who aims the beam of a laser pointer at an aircraft in the airspace jurisdiction of the United States, or at the flight path of such an aircraft.	N/A	N/A	\$30,820	\$31,819
49 U.S.C. 46301(b)	Tampering with a smoke alarm device	N/A	N/A	\$5,171	\$5,339
49 U.S.C. 46302	Knowingly providing false information about alleged violation involving the special aircraft jurisdiction of the United States.	N/A	N/A	\$28,085	\$28,995

(continued)

United States Code citation	Civil monetary penalty description	2023 minimum penalty amount	New adjusted minimum penalty amount for violations occurring on or after December 28, 2023	2023 maximum penalty amount	New adjusted maximum penalty amount for violations occurring on or after December 28, 2023
49 U.S.C. 46318	Physical or sexual assault or threat to physically or sexually assault crewmember or other individual on an aircraft, or action that poses an imminent threat to the safety of the aircraft or individuals on board.	N/A	N/A	\$42,287	\$43,658
49 U.S.C. 46319	Permanent closure of an airport without providing sufficient notice.	N/A	N/A	\$16,108	\$16,630
49 U.S.C. 46320	Operating an unmanned aircraft and in so doing knowingly or recklessly interfering with a wildfire suppression, law enforcement, or emergency response effort.	N/A	N/A	\$24,656	\$25,455
49 U.S.C. 47531	Violation of 49 U.S.C. 47528–47530 or 47534, relating to the prohibition of operating certain aircraft not complying with stage 3 noise levels.	N/A	N/A	See entries for 49 U.S.C. 46301(a)(1) and (a)(5).	See entries for 49 U.S.C. 46301(a)(1) and (a)(5).

## PART 21 CERTIFICATION PROCEDURES FOR PRODUCTS AND ARTICLES

- **Change Date:** April 26, 2024
- **Effective Date:** May 28, 2024
- **Source:** Amdt. 21–108, 89 FR 33108

The authority citation for Part 21 is revised to read as follows:

**Authority:** 42 U.S.C. 7572; 49 U.S.C. 106(f), 106(g), 40105, 40113, 44701–44702, 44704, 44707, 44709, 44711, 44713, 44715, 45303; Sec. 102, Pub. L. 116–260, 134 Stat. 2309.

- **Change Date:** February 16, 2024
- **Effective Date:** April 16, 2024
- **Source:** Amdt. 21–107, 89 FR 12653

Amend §21.5 by adding paragraph (b)(3) to read as follows:

### §21.5 Airplane or Rotorcraft Flight Manual.

\*\*\*\*\*

(b) \*\*\*

(3) Documentation of compliance with part 38 of this chapter, in an FAA-approved section of any approved airplane flight manual. Such material must include the fuel efficiency metric value as calculated under §38.11 of this chapter, and the specific paragraph of §38.17 of this chapter with which compliance has been shown for that airplane.

Amend §21.17 by revising paragraph (a) introductory text to read as follows:

### §21.17 Designation of applicable regulations.

(a) Except as provided in §§25.2, 27.2, and 29.2 of this subchapter, and in parts 26, 34, 36, and 38 of this subchapter, an applicant for a type certificate must show that the aircraft, aircraft engine, or propeller concerned meets—

\*\*\*\*\*

Amend §21.21 by revising paragraphs (b) introductory text and (b)(1) to read as follows:

### §21.21 Issue of type certificate: normal, utility, acrobatic, commuter, and transport category aircraft; manned free balloons; special classes of aircraft; aircraft engines; propellers.

\*\*\*\*\*

(b) 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, exhaust emission, and fuel efficiency requirements of this subchapter and any special conditions prescribed by the FAA, and the FAA finds—

(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, emissions, and fuel efficiency requirements of this subchapter, and further finds that they meet the applicable airworthiness requirements of this subchapter or that any airworthiness provisions not complied with are compensated for by factors that provide an equivalent level of safety; and

\*\*\*\*\*

Amend §21.29 by revising paragraphs (a)(1)(i) and (b) to read as follows:

### §21.29 Issue of type certificate: import products.

(a) \*\*\*

(1) \*\*\*

(i) The applicable aircraft noise, fuel venting, exhaust emissions, and fuel efficiency requirements of this subchapter as designated in §21.17, or the applicable aircraft noise, fuel venting, exhaust emissions, and fuel efficiency requirements of the State of Design, and any other requirements the FAA may prescribe to provide noise, fuel venting, exhaust emission, and fuel efficiency levels no greater than those provided by the applicable aircraft noise, fuel venting, exhaust emissions, and fuel efficiency requirements of this subchapter as designated in §21.17; and

\*\*\*\*\*

(b) A product type certificated under this section is determined to be compliant with the fuel venting and exhaust emission standards of part 34 of this subchapter, the noise standards of part 36 of this subchapter, and the fuel efficiency requirements of part 38 of this subchapter. Compliance with parts 34, 36, and 38 of this subchapter is certified under paragraph (a)(1)(i) of this section, and the applicable airworthiness standards of this subchapter, or an equivalent level of safety, with which compliance is certified under paragraph (a)(1)(ii) of this section.

Amend §21.31 by revising paragraph (e) to read as follows:

**§21.31 Type design.**

\*\*\*\*\*

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

- **Change Date:** April 26, 2024
- **Effective Date:** May 28, 2024
- **Source:** Amdt. 21–108, 89 FR 33108

Revise §21.55 to read as follows:

**§21.55 Responsibilities of type certificate holders who license the type certificate.**

A type certificate holder who allows a person to use the type certificate to manufacture a new aircraft, aircraft engine, or propeller must meet the applicable requirements of part 5 of this chapter and provide that person with a written licensing agreement acceptable to the FAA.

- **Change Date:** February 16, 2024
- **Effective Date:** April 16, 2024
- **Source:** Amdt. 21–107, 89 FR 12653

Amend §21.93 by adding paragraph (d) to read as follows:

**§21.93 Classification of changes in type design.**

\*\*\*\*\*

(d) For the purpose of maintaining compliance with part 38 of this chapter, any voluntary change in the type design of an airplane that may increase the fuel efficiency metric value or the MTOM of that airplane is a “fuel efficiency change”, in addition to being a minor or major change as classified in paragraph (a) of this section.

Amend §21.101 by revising paragraph (a) to read as follows:

**§21.101 Designation of applicable regulations.**

(a) An applicant for a change to a type certificate must show that the change and areas affected by the change comply 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, 36, and 38 of this chapter. Exceptions are detailed in paragraphs (b) and (c) of this section.

\*\*\*\*\*

Amend §21.115 by revising paragraph (a) to read as follows:

**§21.115 Applicable requirements.**

(a) Each applicant for a supplemental type certificate must show that the altered product meets applicable requirements specified in §21.101 and—

(1) In the case of an acoustical change described in §21.93(b), show compliance with the applicable noise requirements of part 36 of this chapter;

(2) In the case of an emissions change described in §21.93(c), show compliance with the applicable fuel venting and exhaust emissions requirements of part 34 of this chapter; and

(3) In the case of a fuel efficiency change described in §21.93(d), show compliance with the applicable fuel efficiency requirements of part 38 of this chapter.

\*\*\*\*\*

- **Change Date:** April 26, 2024
- **Effective Date:** May 28, 2024
- **Source:** Amdt. 21–108, 89 FR 33108

Amend §21.135 by adding paragraph (c) to read as follows:

**§21.135 Organization.**

\*\*\*\*\*

(c) Each applicant for or holder of a production certificate, except those based only on a supplemental type certificate or on the rights to the benefits of a supplemental type certificate under a licensing agreement, must meet the applicable requirements of part 5 of this chapter.

Amend §21.147 by revising paragraph (b) to read as follows:

**§21.147 Amendment of production certificates.**

\*\*\*\*\*

(b) An applicant for an amendment to a production certificate to add a type certificate or model, or both, must comply with §21.135(c), 21.137, 21.138, and 21.150.

\*\*\*\*\*

- **Change Date:** February 16, 2024
- **Effective Date:** April 16, 2024
- **Source:** Amdt. 21–107, 89 FR 12654

Amend §21.183 by adding reserved paragraph (i) and adding paragraph (j) to read as follows:

**§21.183 Issue of standard airworthiness certificates for normal, utility, acrobatic, commuter, and transport category aircraft; manned free balloons; and special classes of aircraft.**

\*\*\*\*\*

(i) [Reserved]

(j) **Fuel efficiency requirements.** No original standard airworthiness certificate may be issued under this section unless the applicant has demonstrated that the type design complies with the applicable fuel efficiency requirements of part 38 of this chapter.

Amend §21.187 by revising paragraph (a) to read as follows:

**§21.187 Issue of multiple airworthiness certification.**

(a) An applicant for an airworthiness certificate in the restricted category, and in one or more other categories except primary category, is entitled to the certificate, if—

(1) The applicant shows compliance with the requirements for each category, when the aircraft is in the configuration for that category;

(2) The applicant shows that the aircraft can be converted from one category to another by removing or adding equipment by simple mechanical means;



(3) The aircraft complies with the applicable requirements of part 34 of this subchapter; and

(4) The airplane complies with the applicable requirements of part 38 of this subchapter.

\*\*\*\*\*

## PART 34

### FUEL VENTING AND EXHAUST EMISSION REQUIREMENTS FOR TURBINE ENGINE POWERED AIRPLANES

■ **Change Date:** April 24, 2024

■ **Effective Date:** May 24, 2024

■ **Source:** Amdt. 34–7, 89 FR 31085

Amend §34.1 by:

- a. Revising and republishing the definition for *Characteristic level*;
- b. Revising the definition for *Derivative engines for emissions certification purposes*;
- c. Removing the definition for *Fuel venting emissions*;
- d. Adding in alphabetical order a definition for *Non-volatile particulate matter*; and
- e. Revising the definition for *Reference day conditions*.

The revisions, republication, and addition read as follows:

#### §34.1 Definitions.

\*\*\*\*\*

*Characteristic level* has the meaning given in Appendix 6 of ICAO Annex 16 as of July 2008 (incorporated by reference, see §34.4). The characteristic level is a calculated emission level for each pollutant based on a statistical assessment of measured emissions from multiple tests.

\*\*\*\*\*

*Derivative engine for emissions certification purposes* means an engine that is similar in design to an engine that has demonstrated compliance with the applicable exhaust emission standards of this part, as determined by the FAA, and has a U.S. type certificate issued in accordance with part 33 of this chapter.

\*\*\*\*\*

*Non-volatile particulate matter (nvPM)* means emitted particles that remain at the exhaust nozzle exit plane of a gas turbine engine, and that did not volatilize after being heated to a temperature of at least 350 °C.

\*\*\*\*\*

*Reference day condition* means the reference ambient conditions to which the measured smoke, nvPM, and gaseous emissions must be corrected. The reference day conditions are as follows:

- (1) Temperature = 15 °C,
- (2) Specific humidity = 0.00634 kg H<sub>2</sub>O/kg of dry air, and
- (3) Pressure = 101.325 kPa

Revise §34.2 to read as follows:

#### §34.2 Abbreviations.

The abbreviations used in this part have the following meanings in both upper and lower case:

CO <sub>2</sub>	Carbon dioxide
CO	Carbon monoxide
EPA	United States Environmental Protection Agency
FAA	Federal Aviation Administration, United States Department of Transportation
g	Gram(s)
HC	Hydrocarbon(s)
HP	Horsepower
hr	Hour(s)
H <sub>2</sub> O	Water
kg	Kilogram(s)
kJ	Kilojoule(s)
kN	Kilonewton(s)
kW	Kilowatt(s)
lbf	Pound force
LTO	Landing and takeoff
m	Meter(s)
mg	Milligram(s)
µg	Microgram(s)
min	Minute(s)
MJ	Megajoule(s)
NO <sub>x</sub>	Oxides of nitrogen
nvPM	Non-volatile particulate matter
nvPM <sub>mass</sub>	Non-volatile particulate matter mass
nvPM <sub>MC</sub>	Non-volatile particulate matter mass concentration
nvPM <sub>num</sub>	Non-volatile particulate matter number
Pa	Pascal(s)
rO	Rated output
rPR	Rated pressure ratio
sec	Second(s)
SP	Shaft power
SN	Smoke number
T	Temperature in degrees Kelvin
TIM	Time in mode
°C	Degrees Celsius
%	Percent

Revise and republish §34.3 to read as follows:

#### §34.3 General requirements.

(a) This part provides for the approval or acceptance by the Administrator or the Administrator of the EPA of testing and sampling methods, analytical techniques, and related equipment not identical to those specified in this part. Before either approves or accepts any such alternate, equivalent, or otherwise nonidentical procedures or equipment, the Administrator or the Administrator of the EPA shall consult with the other in determining whether or not the action requires rulemaking under sections 231 and 232 of the Clean Air Act, as amended, consistent with the responsibilities of the Administrator of the EPA and the Secretary of Transportation under sections 231 and 232 of the Clean Air Act.

(b) Under section 232 of the Act, the Secretary of Transportation issues regulations to ensure compliance with 40 CFR part 1031. This authority has been delegated to the Administrator of the FAA in accordance with 49 CFR 1.47.

(c) This part applies to civil airplanes that are powered by aircraft gas turbine engines of the classes specified herein and that have U.S. standard airworthiness certificates.

(d) Pursuant to the definition of “aircraft” in 40 CFR 1031.205, this regulation applies to civil airplanes that are powered by aircraft gas turbine engines of the classes specified herein and that have foreign airworthiness certificates that are equivalent to U.S. standard airworthiness certificates. This regulation applies only to those foreign civil airplanes that, if registered in the United States, would be required by applicable regulations to have a U.S. standard airworthiness certificate in order to conduct the operations intended for the airplane. Pursuant to 40 CFR 1031.5, this regulation does not apply where it would be inconsistent with an obligation assumed by the United States to a foreign country in a treaty, convention, or agreement.

(e) Reference in this regulation to 40 CFR part 1031 refers to title 40 of the Code of Federal Regulations, chapter I—Environmental Protection Agency, part 1031, Control of Air Pollution from Aircraft and Aircraft Engines (40 CFR part 1031).

(f) This part contains regulations that implement compliance with certain standards contained in 40 CFR part 1031. If EPA takes any action, including the issuance of an exemption or issuance of a revised or alternate procedure, test method, or other regulation, the effect of which is to relax or delay the effective date of any provision of 40 CFR part 1031 that is made applicable to an aircraft under this part, the Administrator of FAA will grant a general administrative waiver of the more stringent requirements until this part is amended to reflect the requirements relaxed by EPA.

(g) Unless otherwise stated, all terminology and abbreviations in this part that are defined in 40 CFR part 1031 have the meaning specified in that part, and all terms in 40 CFR part 1031 that are not defined in that part but that are used in this part have the meaning given them in the Clean Air Act, Public Law 91-604, as amended.

(h) All interpretations of 40 CFR part 1031 that are promulgated by the EPA also apply to this part.

(i) If the EPA, under 40 CFR part 1031, approves or accepts any testing and sampling procedures or methods, analytical techniques, or related equipment not identical to those specified in that part, this part requires an applicant to show that such alternate, equivalent, or otherwise non-identical procedures have been complied with, and that such alternate equipment was used to show compliance, unless the applicant elects to comply with those procedures, methods, techniques, and equipment specified in 40 CFR part 1031.

(j) If the EPA, under 40 CFR 1031, prescribes special test procedures for any aircraft or aircraft engine that is not susceptible to satisfactory testing using the procedures in 40 CFR part 1031, the applicant must demonstrate to the FAA Administrator that they are in compliance with those special test procedures.

(k) Wherever 40 CFR part 1031 requires agreement, acceptance, or approval by the Administrator of the EPA, this part requires a showing that such agreement or approval has been obtained.

(l) Pursuant to 42 U.S.C. 7573, no state or political subdivision thereof may adopt or attempt to enforce any standard respecting emissions of any air pollutant from any aircraft or engine thereof unless that standard is identical to a standard made applicable to the aircraft by the terms of this part.

(m) If EPA, by regulation or exemption, relaxes a provision of 40 CFR part 1031 that is implemented in this part, no state or political subdivision thereof may adopt or attempt to enforce the terms of this part that are superseded by the relaxed requirement.

(n) If any provision of this part is rendered inapplicable to a foreign aircraft as provided in 40 CFR 1031.5 (international agreements), and paragraph (d) of this section, that provision may not be adopted or enforced against that foreign aircraft by a state or political subdivision thereof.

(o) For exhaust emissions requirements of this part that apply beginning February 1, 1974, January 1, 1976, January 1, 1978, January 1, 1984, and August 9, 1985, continued compliance with those requirements is shown for engines for which the type design has been shown to meet those requirements, if the engine is maintained in accordance with applicable maintenance requirements of 14 CFR chapter I. All methods of demonstrating compliance and all model designations previously found acceptable to the Administrator shall be deemed to continue to be an acceptable demonstration of compliance with the specific standards for which they were approved.

(p) Each applicant must allow the Administrator to make, or witness, any test necessary to determine compliance with the applicable provisions of this part.

Amend Subpart A by adding §34.4 to read as follows:

#### **§34.4 Incorporation by Reference.**

Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51). All approved material is available for inspection at the FAA and at the National Archives and Records Administration (NARA). Contact the FAA Office of Rulemaking (ARM), 800 Independence Avenue SW, Washington, DC 20590 (telephone 202-267-9677) For information on the availability of this material at NARA, visit [www.archives.gov/federal-register/cfr/ibr-locations](http://www.archives.gov/federal-register/cfr/ibr-locations) or email [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov).

(a) The material may be obtained from the following source: International Civil Aviation Organization (ICAO): Document Sales Unit, 999 University Street, Montreal, Quebec H3C 5H7, Canada, phone + 1 514-954-8022, or [www.icao.int](http://www.icao.int).

(1) Annex 16 to the Convention on International Civil Aviation: Environmental Protection, Volume II—Aircraft Engine Emissions, Third Edition, July 2008 (ICAO Annex 16); in §§34.1 and 34.60.

(2) Annex 16 to the Convention on International Civil Aviation: Environmental Protection, Volume II—Aircraft Engine Emissions, Fourth Edition, July 2017 (ICAO Annex 16, Volume II), in §§34.71 and 34.73.

(b) [Reserved]

Amend §34.6 by revising paragraph (b) to read as follows:

#### **§34.6 Aircraft safety.**

\* \* \* \* \*

(b) Consistent with 40 CFR part 1031, if the FAA Administrator determines that any emission control regulation in this part cannot be safely applied to an aircraft, that provision may not be adopted or enforced against that aircraft by any state or political subdivision thereof.

\* \* \* \* \*

Amend §34.7 by revising paragraph (d) to read as follows:

**§34.7 Exemptions.**

\*\*\*\*\*

(d) **Applicants seeking exemption from other emissions standards of this part and 40 CFR 1031.15.** Applicants must request exemption from both the FAA and the EPA, even where the underlying regulatory requirements are the same. The FAA and EPA will jointly consider such exemption requests, and will assure consistency in the respective agency determinations.

\*\*\*\*\*

Amend §34.11 by revising paragraph (a) and the introductory text of paragraph (c) to read as follows:

**§34.11 Standard for fuel venting emissions.**

(a) No liquid fuel venting emissions shall be discharged into the atmosphere from any new or in-use aircraft gas turbine engine subject to the subpart. This paragraph is directed at the elimination of intentional discharge to the atmosphere of fuel drained from fuel nozzle manifolds after engines are shut down and does not apply to normal fuel seepage from shaft seals, joints, and fittings.

\*\*\*\*\*

(c) As applied to an airframe or an engine, any manufacturer or operator may show compliance with the liquid fuel venting and emissions requirements of this section that were effective beginning February 1, 1974 or January 1, 1975, by any means that prevents the intentional discharge of fuel from fuel nozzle manifolds after the engines are shut down. Acceptable means of compliance include one of the following:

\*\*\*\*\*

Amend §34.21 by revising paragraph (e) to read as follows:

**§34.21 Standards for exhaust emissions.**

\*\*\*\*\*

(e) Smoke exhaust emissions from each gas turbine engine shall not exceed:

(1)(A) For Class TF of rated output less than 26.7 kN (6,000 lbf) manufactured on or after August 9, 1985, and before July 18, 2012:  
 $SN = 83.6(rO)^{-0.274}$  (rO is in kN) not to exceed a maximum of SN = 50.

(B) For Classes TF, T3, and T8 of rated output less than 26.7 kN (6,000 lbf) manufactured on or after July 18, 2012, and before January 1, 2023:  
 $SN = 83.6(rO)^{-0.274}$  or 50.0, whichever is smaller.

(C) For Classes TF, T3, and T8 of rated output of 26.7 kN (6,000 lbf) or less manufactured on or after January 1, 2023:  
 $SN = 83.6(rO)^{-0.274}$  or 50.0, whichever is smaller.

(2) For Classes T3, T8, TSS, and TF of rated output greater than or equal to 26.7 kN (6,000 lbf) manufactured on or after January 1, 1984, and before January 1, 2023:

$SN = 83.6(rO)^{-0.274}$  (rO is in kN) not to exceed a maximum of SN = 50.

(3) For Class TP of rated output equal to or greater than 1,000 kW manufactured on or after January 1, 1984:

$SN = 187(rO)^{-0.168}$  (rO is in kW).

(4) For Class TSS manufactured on or after January 1, 2023:

$SN = 83.6(rO)^{-0.274}$  (rO is in kN) not to exceed a maximum of SN = 50.

\*\*\*\*\*

Amend §34.23 by removing and reserving paragraph (a)(1).

**§34.23 Exhaust Emission Standards for Engines Manufactured On and After July 18, 2012.**

\*\*\*\*\*

(a) \*\*\*

(1) [Reserved]

\*\*\*\*\*

► **Change Date:** April 24, 2024; May 7, 2024

► **Effective Date:** May 24, 2024

► **Source:** Amdt. 34-7, 89 FR 31085; Amdt. 34-7A, 89 FR 37972

Amend Subpart C by adding §34.25 to read as follows:

**§34.25 Non-volatile particulate emissions standards (nvPM).**

The standards of this section apply to an aircraft engine of Class TF, T3, or T8 with a rated output greater than 26.7 kN that is manufactured after January 1, 2023. Where a maximum  $nvPM_{MC}$  standard is expressed as a formula, calculate and round the standard to the nearest  $1.0 \mu g/m^3$ . Where an  $nvPM_{mass}$  standard is expressed as a formula, calculate and round the standard to three significant figures or to the nearest 0.1 mg/kN. Where an  $nvPM_{num}$  standard is expressed as a formula, calculate and round the standard to three significant figures. Engines comply with an applicable standard if the test results show that the engine type certificate family's characteristic level does not exceed the numerical level of the nvPM standard when tested as described in subpart H of this part.

(a) Except as provided in paragraph (b) or (c) of this section;

(1) The characteristic level for the maximum  $nvPM_{MC}$  expressed in units of  $\mu g/m^3$  must not exceed the following:

$$nvPM_{MC} = 10^{(3+2.9rO^{-0.274})}$$

and

(2) The characteristic level for nvPM mass expressed in [mg/kN] and for nvPM number expressed in [particles/kN] must not exceed the following:

TABLE 1 TO PARAGRAPH (a)(2)

Class	Rated output (rO) (kN)	$nvPM_{mass}$ (mg/kN)	$nvPM_{num}$ (particles/kN)
TF, T3, T8	$26.7 < rO \leq 200$	$4646.9 - 21.497 (rO)$	$2.669 \times 10^{16} - 1.126 \times 10^{14} (rO)$ .
	$rO > 200$	347.5	$4.170 \times 10^{15}$ .

(b) For a change in type design by the type design holder, when the application for an amended type certificate is filed after January 1, 2023:

(1) If the engine qualifies as a derivative engine in accordance with §34.48 of this part, no testing is required for the engine to use the same nvPM certificated parameters (nvPM<sub>mass</sub>, nvPM<sub>num</sub>, and maximum nvPM<sub>MC</sub>) as the engine it is derived from; or

(2) If the engine does not qualify as a derivative engine in accordance with §34.48 of this part, the applicant must demonstrate compliance with each requirement in paragraph (a) of this section.

(c) For issuance of an original type certificate when an application for type certification is filed after January 1, 2023, the applicant must demonstrate that the engine does not exceed:

(1) For maximum nvPM<sub>MC</sub>: as prescribed in paragraph (a)(1) of this section; and

(2) For the characteristic level for nvPM<sub>mass</sub> expressed in units of [mg/kN], and for nvPM<sub>num</sub> expressed in units of [particles/kN], the following:

TABLE 2 TO PARAGRAPH (c)(2)

Class	Rated output (rO) (kN)	nvPM <sub>mass</sub> (mg/kN)	nvPM <sub>num</sub> (particles/kN)
TF, T3, T8	26.7 < rO ≤ 150	1251.1 – 6.914 (rO)	1.490 × 10 <sup>16</sup> – 8.080 × 10 <sup>13</sup> (rO).
	rO > 150	214.0	2.780 × 10 <sup>15</sup> .

(d) For engines type certificated after January 1, 2023 and prior to May 24, 2024, compliance with this part must be demonstrated no later than August 22, 2024.

- **Change Date:** April 24, 2024
- **Effective Date:** May 24, 2024
- **Source:** Amdt. 34–7, 89 FR 31085

Amend §34.48 by revising paragraph (a) introductory text and paragraph (b) to read as follows:

**§34.48 Derivative engines for emissions certification purposes.**

(a) **General.** A type certificate holder may request from the FAA a determination that an engine configuration is considered a derivative engine for emissions certification purposes (all gaseous emissions and either nvPM or smoke number as applicable). To be considered a derivative engine for emissions certification purposes under this part, the configuration must have been derived from the original engine that was certificated to the requirements of part 33 of this chapter and one of the following:

\*\*\*\*\*

**(b) Emission similarity**

(1) The type certificate holder must demonstrate that the proposed derivative engine model's emissions meet the applicable standards and differ from the original model's emission rates within the following ranges and values:

- (i) ±3.0 g/kN for NO<sub>x</sub>.
- (ii) ±1.0 g/kN for HC.
- (iii) ±5.0 g/kN for CO.
- (iv) ±2.0 SN for smoke (where applicable).
- (v) The following values apply for maximum nvPM<sub>MC</sub>, nvPM<sub>mass</sub>, and nvPM<sub>num</sub> (where applicable):
  - (A) maximum nvPM<sub>MC</sub>:
    - (1) ±200 µg/m<sup>3</sup> if the characteristic level of maximum nvPM<sub>MC</sub> is below 1,000 µg/m<sup>3</sup>; or
    - (2) ±20% of the characteristic level if the characteristic level for maximum nvPM<sub>MC</sub> is at or above 1,000 µg/m<sup>3</sup>.
  - (B) nvPM<sub>mass</sub>:
    - (1) 80 mg/kN if the characteristic level for nvPM<sub>mass</sub> emissions is below 400 mg/kN; or
    - (2) ±20% of the characteristic level if the characteristic level for nvPM<sub>mass</sub> emissions is greater than or equal to 400 mg/kN.
  - (C) nvPM<sub>num</sub>:

(1) 4 × 10<sup>14</sup> particles/kN if the characteristic level for nvPM<sub>num</sub> emissions is below 2x10<sup>15</sup> particles/kN; or

(2) ±20% of the characteristic level if the characteristic level for nvPM<sub>num</sub> emissions is greater than or equal to 2 × 10<sup>15</sup> particles/kN.

(2) If the characteristic level of the original certificated engine model (or any other sub-models within the emission type certificate family tested for certification) before modification is at or above 95% of the applicable standard for any pollutant, an applicant must measure the proposed derivative engine model's emissions for all pollutants to demonstrate that the derivative engine's resulting characteristic levels will not exceed the applicable emission standards. If the characteristic levels of the originally certificated engine model (and all other sub-models within the emission type certificate family tested for certification) are below 95% of the applicable standard for each pollutant, the applicant may use engineering analysis consistent with good engineering judgment to demonstrate that the derivative engine will not exceed the applicable emission standards. The engineering analysis must address all modifications from the original engine, including those approved for previous derivative engines.

(3) In unusual circumstances and consistent with good engineering judgement, the FAA may adjust the ranges specified in paragraph (b)(1) of this section to evaluate a proposed derivative engine.

\*\*\*\*\*

Amend §34.60 by revising paragraph (h) to read as follows:

**§34.60 Introduction.**

\*\*\*\*\*

(h) The system and procedure for sampling and measurement of gaseous emissions shall be as specified by in Appendices 2, 3, 4, 5 and 6 to the International Civil Aviation Organization (ICAO) Annex 16, Environmental Protection, Volume II, Aircraft Engine Emissions, Third Edition, July 2008 (incorporated by reference, see §34.4).

Add subpart H to read as follows:

**Subpart H—Test Procedures and Compliance Demonstration for Non-Volatile Particulate Matter Emissions**

Sec.

34.71 Non-Volatile Particulate Matter (nvPM) Test Procedures.

34.73 Demonstration of compliance for nvPM emissions.

**Subpart H—  
Test Procedures and Compliance  
Demonstration for Non-Volatile Particulate  
Matter Emissions**

**§34.71 Non-volatile particulate matter (nvPM) test procedures.**

For each Class TF, T3, or T8 engine manufactured after January 1, 2023, that has a rated output greater than 26.7 kN, the test procedures for measuring each required nvPM parameter are as follows:

(a) Measure the emissions of all nvPM parameters required in this part, as applicable.

(b) Collect data from at least three engine tests, with each test conducted at the reference LTO time/thrust combinations shown in paragraph (h) of this section.

(c) For the engines referenced in paragraph (b) of this section, all emissions certification tests may be conducted on one or more engines of the same type design.

(d) Use a test fuel that meets the specifications described in Appendix 4 of ICAO Annex 16, Volume II (incorporated by reference, see §34.4). The test fuel must not have any additive whose purpose is to suppress nvPM emissions.

(e) (1) When conducting test measurements in accordance with paragraphs (a) through (c) of this section, use the equipment and procedures specified in Appendix 1, Appendix 4, Appendix 6, and Appendix 7 of ICAO Annex 16, Volume II (incorporated by reference, see §34.4), when demonstrating whether an engine meets the applicable nvPM limit specified in §34.25 of this part.

(2) An applicant that seeks to use a procedure or equipment that differs from any specified in this part must request FAA approval in writing with supporting justification before the alternative procedure or equipment may be used to demonstrate compliance. The FAA will consult with the EPA on any such request. The FAA may approve the requested alternative for measuring nvPM, including testing and sampling methods, analytical techniques, and equipment specifications. Each request must meet one of the following conditions:

(i) The engine cannot be tested using a specified procedure; or  
(ii) The alternative procedure is shown to be equivalent to, or more accurate or precise than, the specified procedure.

(f) Any engine accessory included in a type design that may reasonably be expected to influence either nvPM emissions or measurements must be installed on the engine before testing. The test engine must not extract shaft power or bleed service air to provide power to auxiliary gearbox-mounted components necessary to drive aircraft systems;

(g) For each percentage of rated output thrust level prescribed in paragraph (h) of this section, a test engine must reach and maintain a steady operating condition before any nvPM emission measurement is made;

(h) The following landing and takeoff (LTO) cycles apply for nvPM emissions testing and for calculating weighted LTO values:

TABLE 1 TO PARAGRAPH (h)

Mode	Class TF, T3, T8	
	TIM (min)	% of rO
Taxi/idle	26.0	7
Takeoff	0.7	100
Climbout	2.2	85
Descent	NA	NA
Approach	4.0	30

(i) An engine complies with an applicable limit if the test results show that the engine type certificate family's characteristic level does not exceed any limit for maximum  $nvPM_{MC}$ ,  $nvPM_{num}$ , and  $nvPM_{mass}$  described in §34.25.

(j) All measurements collected during engine tests required in paragraph (b) of this section must be used in the calculation of nvPM. Before any calculations are made, the FAA must approve the exclusion of any measurements that the applicant seeks to exclude, including any justification for such exclusions.

(k) The system and procedure for sampling and measurement of gaseous emissions shall be as specified by Appendices 1, 4, 6, and 7 of ICAO Annex 16, Volume II (incorporated by reference, see §34.4).

**34.73 Demonstration of compliance for nvPM emissions.**

(a) Each compliance demonstration by an applicant requires:

(1) Establishing a mean value from tests conducted on one or more engines;

(2) Calculating a "characteristic level" by applying a set of statistical factors that take into account the number of engines tested in accordance with §34.71(b) of this part; and

(3) Rounding each characteristic level to the same number of decimal places as the corresponding emission limit.

(b) In demonstrating compliance with this subpart, an applicant must use the nvPM measurements collected in accordance with §34.71 as follows:

(1) An engine complies with an applicable standard when the engine type certificate family's characteristic level does not exceed any nvPM limit described in §34.25 of this part; and

(2) A compliance demonstration consists of:

(i) Determining the maximum  $nvPM_{MC}$ , and the mean value for  $nvPM_{mass}$  and  $nvPM_{num}$  from the data collected in accordance with paragraph §34.71(f) of this part;

(ii) Correcting each data point to standard temperature and pressure conditions;

(iii) Applying the appropriate statistical factor shown in Table 6-1 of Appendix 6 of ICAO Annex 16, Volume II (incorporated by reference, see §34.4) to account for the number of engines tested; and

(iv) Rounding each characteristic level to the same number of decimal places as the corresponding nvPM limit in §34.25 of this part.

(c) (1) In determining maximum  $nvPM_{MC}$ , an applicant must use one of the following evaluation methods for all engines measured in accordance with §34.71(c) of this part and using the thrust settings given in §34.71(h) of this part. An applicant may choose to measure additional thrust settings; while there is no restriction on the number of thrust settings measured, the same thrust settings must be used on each engine tested. A dataset consists of  $nvPM_{MC}$  measurements made at each thrust setting across

the thrust range chosen by the applicant for each engine. Plot all  $nvPM_{MC}$  measurements versus thrust setting.

(i) Method 1—

(A) Average the individual data points measured at each thrust setting to develop one dataset of  $nvPM$  mass concentration for each engine tested, creating an average dataset for each engine; and

(B) Use the averages generated in paragraph (c)(1) of this section to develop a single curve fit to determine the overall maximum  $nvPM_{MC}$  value;

(ii) Method 2—

(A) Measure individual data points of  $nvPM_{MC}$  versus thrust. Using all datasets generated for each engine physically tested, develop a single, separate curve fit;

(B) Determine the maximum  $nvPM_{MC}$  from each engine curve fit resulting from paragraph (c)(1) of this section; and

(C) If more than one engine is physically tested, average the  $nvPM_{MC}$  values from paragraph (c)(2) of this section to determine the overall maximum  $nvPM_{MC}$  value for the model tested; or

(iii) Method 3—

(A) Develop a curve fit of  $nvPM_{MC}$  versus thrust for each test conducted on each engine physically tested;

(B) From each curve fit developed in paragraph (c)(1) of this section, use the resultant curve fit equation to solve for each maximum;

(C) Average the maximum values for each engine physically tested; and

(D) Average the maximum values determined in paragraph (c)(1)(iii)(C) of this section to determine the overall average maximum  $nvPM_{MC}$  value.

(2) Using the data measured in §34.71(b) of this part, determine the  $nvPM$  characteristic levels for  $nvPM_{num}$  and  $nvPM_{mass}$  as follows:

(i) Average all  $nvPM_{num}$  and  $nvPM_{mass}$  measurements in units of number of particles per kN or mg per kN, as applicable, from each emissions test at each percentage of rated output thrust setting;

(ii) Multiply the averaged measurement from paragraph (a)(2)(i) of this section by the appropriate time in mode (TIM) as shown in §34.71(h);

(iii) Sum the products from paragraph (a)(2)(ii) of this section to determine the LTO values for  $nvPM_{num}$  and  $nvPM_{mass}$ ; and

(iv) Divide the result of paragraph (a)(2)(iii) of this section by the characteristic level factor, shown in Table A6-1 of Appendix 6 of ICAO Annex 16, Volume II (incorporated by reference, see §34.4), for the number of engines physically tested to determine the  $nvPM_{mass}$  and  $nvPM_{num}$  characteristic values.

(d) The data used to determine the regressed curves must meet a 90% confidence interval,  $CI_{90}$ , limit of  $\pm 1.5\%$  of each  $nvPM$  limit specified in §34.25 of this part. If a certification test fails to meet the  $CI_{90}$  limit, the engine type may still comply with the requirements. Failure may be caused by excessive data scatter, too few data points, or erroneous data used to regress an accurate curve. Without deleting or removing any prior measurement data, additional data acquired from further tests may improve the  $CI_{90}$  by adding to the sample population.

(e) The following information must be reported to the FAA substantiating compliance with  $nvPM$  limits of §34.25 of this part:

(1) The values of  $nvPM$  emissions measured and computed in accordance with the procedures and calculated as required by this subpart in §34.71 of this part and paragraphs (a) through (d) of this section;

(2) For each engine tested:

(i) Engine model, series, and serial number;

(ii) Rated thrust (kN);

(iii) Overall pressure ratio;

(iv) The methods of data acquisition; and

(v) The method of data analysis chosen by the applicant under paragraphs (a) through (d) of this section.

(3) Demonstration that the fuel used for each test is in compliance with the fuel specification listed in Appendix 4 of ICAO Annex 16, Volume II (incorporated by reference, see §34.4). For the fuel used for  $nvPM$  emissions certification, include the following fuel characteristics:

(i) Hydrogen/carbon ratio;

(ii) Net heat of combustion (MJ/kg);

(iii) Hydrogen content (mass per cent);

(iv) Total aromatics content (volume per cent);

(v) Naphthalene content (volume per cent); and

(vi) Sulfur content (ppm by mass).

(4) For each engine tested for certification purposes, the following values measured and computed in accordance with the procedures of §34.71 of this part:

(i) Fuel flow (kg/s) at each thrust setting of the LTO cycle;

(ii)  $nvPM$   $EI_{mass}$  (mg/kg of fuel) at each thrust setting of the LTO cycle;

(iii)  $nvPM$  mass emission rate [ $nvPM$   $EI_{mass}$   $\times$  fuel flow] in mg/s;

(iv)  $nvPM$   $EI_{num}$  (particles/kg of fuel) at each thrust setting of the LTO cycle;

(v)  $nvPM$  number emission rate [ $nvPM$   $EI_{num}$   $\times$  fuel flow] in particles/s;

(vi) Total gross emissions of  $nvPM$  mass measured over the LTO cycle in mg;

(vii) Total gross emissions of  $nvPM$  number measured over the LTO cycle in particles;

(viii) LTO  $nvPM_{mass}/thrust$  in mg/kN;

(ix) LTO  $nvPM_{num}/thrust$  in particles/kN; and

(x) Maximum  $nvPM_{MC}$  in  $\mu\text{g}/\text{m}^3$ ; and

(5) For each engine tested for certification purposes, the characteristic levels for the maximum  $nvPM_{MC}$ , the LTO  $nvPM_{mass}/thrust$ , and the LTO  $nvPM_{num}/thrust$ .

**PART 38**  
**AIRPLANE FUEL EFFICIENCY CERTIFICATION**

- **Change Date:** February 16, 2024
- **Effective Date:** April 16, 2024
- **Source:** Amdt. 38–1, 89 FR 12654

Add Part 38 to read as follows:

**PART 38**  
**AIRPLANE FUEL EFFICIENCY CERTIFICATION**

**Subpart A—General**

- Sec.
- 38.1 Applicability.
  - 38.3 Definitions.
  - 38.4 Compatibility with airworthiness requirements.
  - 38.5 Exemptions.
  - 38.7 Incorporation by reference.
  - 38.9 Relationship to other regulations.

**Subpart B—Determining Fuel Efficiency  
for Subsonic Airplanes**

- 38.11 Fuel efficiency metric.
- 38.13 Specific air range.
- 38.15 Reference geometric factor.
- 38.17 Fuel efficiency limits.
- 38.19 Change criteria.
- 38.21 Approval before compliance testing.
- 38.23 Manual information and limitations.

Appendix A to Part 38—Determination of Airplane Fuel  
Efficiency Metric Value

**Authority:** 42 U.S.C. 4321 et seq., 7572; 49 U.S.C. 106(g), 40113, 44701–44702, 44704; 49 CFR 1.83(c)

**Subpart A—General**

**§38.1 Applicability.**

(a) Except as provided in paragraph (c) of this section, an airplane that is subject to the requirements of 40 CFR part 1030 may not exceed the fuel efficiency limits of this part when original type certification under this title is sought. This part applies to the following airplanes:

- (1) A subsonic jet airplane that has—
  - (i) Either—
    - (A) A type-certificated maximum passenger seating capacity of 20 seats or more;
    - (B) A maximum takeoff mass (MTOM) greater than 5,700 kg; and
    - (C) An application for original type certification that is submitted on or after January 11, 2021;
  - (ii) Or—
    - (A) A type-certificated maximum passenger seating capacity of 19 seats or fewer;
    - (B) A MTOM greater than 60,000 kg; and
    - (C) An application for original type certification that is submitted on or after January 11, 2021.
- (2) A subsonic jet airplane that has—
  - (i) A type-certificated maximum passenger seating capacity of 19 seats or fewer;

- (ii) A MTOM greater than 5,700 kg, but not greater than 60,000 kg; and

- (iii) An application for original type certification that is submitted on or after January 1, 2023.

(3) A propeller-driven airplane that has—

- (i) A MTOM greater than 8,618 kg; and
- (ii) An application for original type certification that is submitted on or after January 11, 2021.

- (4) A subsonic jet airplane—

- (i) That is a modified version of an airplane whose type design was not certificated under this part;

- (ii) That has a MTOM greater than 5,700 kg;

- (iii) For which an application by the type certificate holder for a type design change is submitted on or after January 1, 2023; and

- (iv) For which the first certificate of airworthiness is issued with the modified type design.

- (5) A propeller-driven airplane—

- (i) That is a modified version of an airplane whose type design was not certificated under this part;

- (ii) That has a MTOM greater than 8,618 kg;

- (iii) For which an application by the type certificate holder for a type design change is submitted on or after January 1, 2023; and

- (iv) For which the first certificate of airworthiness is issued with the modified type design.

- (6) A subsonic jet airplane that has—

- (i) A MTOM greater than 5,700 kg; and

- (ii) Its first certificate of airworthiness issued on or after January 1, 2028.

- (7) A propeller-driven airplane that has—

- (i) A MTOM greater than 8,618 kg; and

- (ii) Its first certificate of airworthiness issued on or after January 1, 2028.

(b) The requirements of this part apply to an airplane for which an application for a change in type design is submitted that includes a modification that meets the change criteria of §38.19. A modified airplane may not exceed the applicable fuel efficiency limit of this part when certification under this chapter is sought. A modified airplane is subject to the same fuel efficiency limit of §38.17 as the airplane was certificated to prior to modification.

(c) The requirements of this part do not apply to:

- (1) Subsonic jet airplanes having a MTOM at or below 5,700 kg.
- (2) Propeller-driven airplanes having a MTOM at or below 8,618 kg.

- (3) Amphibious airplanes.

- (4) Airplanes initially designed, or modified and used, for specialized operations. These airplane designs may include characteristics or configurations necessary to conduct specialized operations that the FAA and the United States Environmental Protection Agency (EPA) have determined may cause a significant increase in the fuel efficiency metric value.

- (5) Airplanes designed with a reference geometric factor of zero.

- (6) Airplanes designed for, or modified and used for, firefighting.

- (7) Airplanes powered by reciprocating engines.

**§38.3 Definitions.**

For the purpose of showing compliance with this part, the following terms have the specified meanings:

*Amphibious airplane* means an airplane that is capable of takeoff and landing on both land and water. Such an airplane uses its hull or floats attached to the landing gear for takeoff and landing on water, and either extendable or fixed landing gear for takeoff and landing on land.

ICAO Annex 16, Volume III means Volume III of Annex 16 to the Convention on International Civil Aviation.

*Maximum takeoff mass (MTOM)* is the maximum certified takeoff mass, expressed in kilograms, for an airplane type design.

*Performance model* is an analytical tool (or a method) validated using corrected flight test data that can be used to determine the specific air range values for calculating the fuel efficiency metric value.

*Reference geometric factor (RGF)* is a non-dimensional number derived from a two-dimensional projection of the fuselage.

*Specific air range (SAR)* is the distance an airplane travels per unit of fuel consumed. Specific air range is expressed in kilometers per kilogram of fuel.

*Subsonic* means an airplane that has not been certificated under this title to exceed Mach 1 in normal operation.

*Type certificated maximum passenger seating capacity* means the maximum number of passenger seats that may be installed on an airplane as listed on its type certificate data sheet, regardless of the actual number of seats installed on an individual airplane.

#### §38.4 Compatibility with airworthiness requirements.

Unless otherwise approved by the FAA, an airplane used to demonstrate compliance with this part must meet all of the airworthiness requirements of this chapter required to establish the type certification basis of the airplane, for any condition under which compliance with this part is being demonstrated. Any procedure used to demonstrate compliance, and any flight crew information developed for demonstrating compliance with this part, must be consistent with the airworthiness requirements of this chapter that constitute the type certification basis of the airplane.

#### §38.5 Exemptions.

A petition for exemption from any requirement of this part must be submitted to the Administrator in accordance with and meet the requirements of part 11 of this chapter. The FAA will consult with the EPA on each exemption petition before taking action.

#### §38.7 Incorporation by reference.

The ICAO Doc 7488/3, *Manual of the ICAO Standard Atmosphere (extended to 80 kilometres (262 500 feet))* (1993), referenced in sections A38.2.1.3.1, A38.5.2.2.1.9, and A38.5.2.2.1.10 of appendix A to this part, is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. All approved material is available for inspection at the FAA and at the National Archives and Records Administration (NARA). Contact FAA at: Office of Rulemaking (ARM-1), 800 Independence Avenue SW, Washington, DC 20590 (telephone 202-267-9677). For information on the availability of this material at NARA, visit [www.archives.gov/federal-register/cfr/ibr-locations.html](http://www.archives.gov/federal-register/cfr/ibr-locations.html) or email [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov). The ICAO Doc 7488/3 is available for purchase from the ICAO Store at 999 Robert-Bourassa Boulevard Montréal (Quebec) Canada H3C 5H7, (<https://store.icao.int/>).

#### §38.9 Relationship to other regulations.

In accordance with certain provisions of the Clean Air Act Amendments of 1970 (CAA) (42 U.S.C. 7571 *et seq.*), the United States Environmental Protection Agency (EPA) is authorized to set standards for aircraft engine emissions in the United States, while the FAA is authorized to ensure compliance with those standards under a delegation from the Secretary of Transportation (49 CFR 1.83). The fuel efficiency limits in §38.17 are intended to be the same as that promulgated by the EPA in 40 CFR part 1030. Accordingly, if the EPA changes any regulation in 40 CFR part 1030 that corresponds with a regulation in this part, a certification ap-

plicant may request a waiver of those provisions as they appear in this part in order to comply with part 1030. In addition, unless otherwise specified in this part, all terminology and abbreviations in this part that are defined in 40 CFR part 1030 have the meaning specified in part 1030.

## Subpart B—Determining Fuel Efficiency for Subsonic Airplanes

### §38.11 Fuel efficiency metric.

For each airplane subject to this part, or to determine whether a modification makes an airplane subject to this part under the change criteria of §38.19, a fuel efficiency metric value must be calculated, using the following equation, rounded to three decimal places:

$$\text{Fuel Efficiency metric value} = \frac{\left(\frac{1}{\text{SAR}}\right)_{\text{avg}}}{\text{RGF}^{0.24}}$$

Where:

The SAR is determined in accordance with §38.13, and the RGF is determined in accordance with §38.15. The fuel efficiency metric value is expressed in units of kilograms of fuel consumed per kilometer.

### §38.13 Specific air range.

(a) For each airplane subject to this part, the SAR of an airplane must be determined by either:

- (1) Direct flight test measurements; or
- (2) Using a performance model that is:
  - (i) Validated by actual SAR flight test data; and
  - (ii) Approved by the FAA before any SAR calculations are submitted.

(b) For the airplane model, establish a 1/SAR value at each of the following reference airplane masses:

- (1) High gross mass: 92 percent MTOM.
- (2) Low gross mass:  $(0.45 * \text{MTOM}) + (0.63 * (\text{MTOM}^{0.924}))$ .
- (3) Mid gross mass: simple arithmetic average of high gross mass and low gross mass.

(c) To obtain  $(1/\text{SAR})_{\text{avg}}$  as required to determine the fuel efficiency metric value described in §38.11, calculate the average of the three 1/SAR values described in paragraph (b) of this section. Do not include auxiliary power units in any 1/SAR calculation.

(d) All determinations made under this section must be made in accordance with the procedures applicable to SAR as described in Appendix A to this part.

### §38.15 Reference geometric factor.

For each airplane subject to this part, determine the airplane's non-dimensional RGF for the fuselage size of each airplane model, calculated as follows:

(a) For an airplane with a single deck, determine the area of a surface (expressed in  $\text{m}^2$ ) bounded by the maximum width of the fuselage outer mold line projected to a flat plane parallel with the main deck floor and the forward and aft pressure bulkheads except for the crew flight deck zone.

(b) For an airplane with more than one deck, determine the sum of the areas (expressed in  $\text{m}^2$ ) as follows:

(1) The maximum width of the fuselage outer mold line, projected to a flat plane parallel with the main deck floor by the forward and aft pressure bulkheads except for any crew flight deck zone.

(2) The maximum width of the fuselage outer mold line at or above each other deck floor, projected to a flat plane parallel with



the additional deck floor by the forward and aft pressure bulkheads except for any crew flight deck zone.

(c) Determine the non-dimensional RGF by dividing the area defined in paragraph (a) or (b) of this section by 1 m<sup>2</sup>.

(d) All measurements and calculations used to determine the RGF of an airplane must be made in accordance with the procedures for determining RGF in section A38.3 of Appendix A to this part.

For airplanes described in...	With a MTOM...	The maximum permitted fuel efficiency metric value is...
(1) Section 38.1(a)(1) and (2)	5,700 < MTOM ≤ 60,000 kg	$10 (-2.73780 + (0.681310 * \log_{10}(MTOM)) + (-0.0277861 * (\log_{10}(MTOM))^2))$
(2) Section 38.1(a)(3)	8,618 < MTOM ≤ 60,000 kg	$10 (-2.73780 + (0.681310 * \log_{10}(MTOM)) + (-0.0277861 * (\log_{10}(MTOM))^2))$
(3) Section 38.1(a)(1) and (3)	60,000 < MTOM ≤ 70,395 kg	0.764
(4) Section 38.1(a)(1) and (3)	MTOM > 70,395 kg	$10 (-1.412742 + (-0.020517 * \log_{10}(MTOM)) + (0.0593831 * (\log_{10}(MTOM))^2))$
(5) Section 38.1(a)(4) and (6)	5,700 < MTOM ≤ 60,000 kg	$10 (-2.57535 + (0.609766 * \log_{10}(MTOM)) + (-0.0191302 * (\log_{10}(MTOM))^2))$
(6) Section 38.1(a)(5) and (7)	8,618 < MTOM ≤ 60,000 kg	$10 (-2.57535 + (0.609766 * \log_{10}(MTOM)) + (-0.0191302 * (\log_{10}(MTOM))^2))$
(7) Section 38.1(a)(4) through (7)	60,000 < MTOM ≤ 70,107 kg	0.797
(8) Section 38.1(a)(4) through (7)	MTOM > 70,107 kg	$10 (-1.39353 + (-0.020517 * \log_{10}(MTOM)) + (0.0593831 * (\log_{10}(MTOM))^2))$

### §38.19 Change criteria.

(a) For an airplane that has been shown to comply with §38.17, any subsequent version of that airplane must demonstrate compliance with §38.17 if the subsequent version incorporates a modification that either increases:

- (1) The maximum takeoff mass; or
- (2) The fuel efficiency metric value by a percentage that is more than the following calculated thresholds.
  - (i) For airplanes with a MTOM greater than or equal to 5,700 kg, the threshold decreases linearly from 1.35 percent for an airplane with a MTOM of 5,700 kg to 0.75 percent for an airplane with a MTOM of 60,000 kg.
  - (ii) For airplanes with a MTOM greater than or equal to 60,000 kg, the threshold decreases linearly from 0.75 percent for an airplane with a MTOM of 60,000 kg to 0.70 percent for airplanes with a MTOM of 600,000 kg.
  - (iii) For airplanes with a MTOM greater than or equal to 600,000 kg, the threshold is 0.70 percent.

(b) For an airplane that has been shown to comply with §38.17, and for any subsequent version of that airplane that incorporates modifications that do not increase the MTOM or the fuel efficiency metric value in excess of the levels shown in paragraph (a) of this section, the fuel efficiency metric value of the modified airplane may be reported to be the same as the value prior to modification.

(c) For an airplane that meets the criteria of §38.1(a)(4) or (5), on or after January 1, 2023, and before January 1, 2028, the airplane must demonstrate compliance with §38.17 if it incorporates any modification that increases the fuel efficiency metric value of the airplane prior to modification by more than 1.5 percent.

### §38.21 Approval before compliance testing.

All procedures, weights, configurations, and other information or data that are used to establish a fuel efficiency level required by this part or in any appendix to this part (including any equivalent procedures) must be approved by the FAA prior to use in certification tests intended to demonstrate compliance with this part.

### §38.23 Manual information and limitations.

(a) **Information in manuals.** The following information must be included in any FAA-approved section of a FAA-approved Airplane Flight Manual or combination of approved manual material:

- (1) Fuel efficiency level established as required by this part; and

### §38.17 Fuel efficiency limits.

(a) The fuel efficiency limits in this section are expressed as maximum permitted fuel efficiency metric values, as calculated under §38.11.

(b) The fuel efficiency metric value of an airplane subject to this part may not exceed the following, rounded to three decimal places:

(2) Maximum takeoff mass at which fuel efficiency level was established.

(b) **Limitation.** If the fuel efficiency of an airplane is established at a weight (mass) that is less than the maximum certificated takeoff weight (mass) used to establish the airworthiness of the airplane under this chapter, the lower weight (mass) becomes an operating limitation of the airplane and that limitation must be included in the limitations section of any FAA-approved manual.

## APPENDIX A TO PART 38

### DETERMINATION OF AIRPLANE FUEL EFFICIENCY METRIC VALUE

- A38.1 Introduction
- A38.2 Reference specifications for SAR flight tests
- A38.3 Determination of reference geometric factor (RGF)
- A38.4 Certification test specifications
- A38.5 Measurement of specific air range
- A38.6 Submission of certification data to the FAA

#### A38.1 Introduction

A38.1.1 This appendix describes the processes and procedures for determining the fuel efficiency metric value for an airplane subject to this part.

#### A38.1.2 Methods for Determining Specific Air Range (SAR)

A38.1.2.1 SAR may be determined by either—

A38.1.2.1.1 Direct flight test measurement at the SAR test points, including any corrections of test data to reference specifications; or

A38.1.2.1.2 Use of a performance model.

A38.1.2.2 For any determination made under section A38.1.2.1.1 of this appendix, the SAR flight test data must have been acquired in accordance with the procedures defined in this appendix and approved by the FAA.

A38.1.2.3 For any determination made under section A38.1.2.1.2 of this appendix, the performance model must:

A38.1.2.3.1 Be verified that the model produces the values that are the same as FAA-approved SAR flight test data;

A38.1.2.3.2 Include a detailed description of any test and analysis method and any algorithm used so as to allow evaluation by the FAA; and

A38.1.2.3.3 Be approved by the FAA before use.

**A38.2 Reference Specifications for SAR Flight Tests**

A38.2.1 The following reference specifications must be established when determining SAR values for an airplane. No reference specification may exceed any airworthiness limit approved for the airplane under this chapter. See section A38.5 of this appendix for further information.

A38.2.1.1 Reference specifications at the airplane level:

A38.2.1.1.1 Airplane at the reference masses listed in §38.13(b);

A38.2.1.1.2 A combination of altitude and airspeed selected by the applicant;

A38.2.1.1.3 Airplane in steady, unaccelerated, straight and level flight;

A38.2.1.1.4 Airplane in longitudinal and lateral trim;

A38.2.1.1.5 Airplane gravitational acceleration when travelling in the direction of true North in still air at the reference altitude and a geodetic latitude of 45.5 degrees, based on  $g_0$  ( $g_0$  is 9.80665 m/s<sup>2</sup>, which is the standard acceleration due to gravity at sea level and a geodetic latitude of 45.5 degrees);

A38.2.1.1.6 A reference airplane center of gravity (CG) position selected by the applicant to be representative of the mid-CG point relevant to design cruise performance at each of the three reference airplane masses; and

A38.2.1.1.7 A wing structural loading condition defined by the applicant that is representative of operations conducted in accordance with the airplane’s maximum payload capability.

A38.2.1.2 Reference specifications at the engine level:

A38.2.1.2.1 Electrical and mechanical power extraction and bleed flow relevant to design cruise performance, as selected by the applicant;

*Note 1 to A38.2.1.2.1*—Power extraction and bleed flow attributable to the use of optional equipment such as passenger entertainment systems need not be included.

A38.2.1.2.2 Engine stability bleeds operating according to the manufacturer’s normal schedule for the engine; and

A38.2.1.2.3 Engines with at least 15 cycles or 50 engine flight hours.

A38.2.1.3 Other reference specifications:

A38.2.1.3.1 ICAO standard day atmosphere (Doc 7488/3, 3rd edition 1993, titled “Manual of the ICAO Standard Atmosphere (extended to 80 kilometres (262 500 feet))”) (incorporated by reference, see §38.7); and

A38.2.1.3.2 Fuel lower heating value equal to 43.217 MJ/kg (18, – 580 BTU/lb).

A38.2.2 If any test conditions are not the same as the reference specifications of this appendix, the test conditions must be corrected to the reference specifications as described in section A38.5 of this appendix.

**A38.3 Determination of Reference Geometric Factor (RGF)**

A38.3.1 This section provides additional information for determining the RGF, as required by §38.15.

A38.3.2 The area that defines RGF includes all pressurized space on a single or multiple decks including aisles, assist spaces, passageways, stairwells and areas that can accommodate cargo or auxiliary fuel containers. It does not include permanent integrated fuel tanks within the cabin, or any unpressurized fairings, crew rest or work areas, or cargo areas that are not on the main or upper deck (e.g., ‘loft’ or under floor areas). RGF does not include the flight deck crew zone.

A38.3.3 The aft boundary to be used for calculating RGF is the aft pressure bulkhead. The forward boundary is the forward pressure bulkhead, not including the flight deck crew zone.

A38.3.4 Areas that are accessible to both crew and passengers are not considered part of the flight deck crew zone. For an airplane that has a flight deck door, the aft boundary of the flight deck crew zone is the plane of the flight deck door. For an airplane that has no flight deck door or has optional interior configurations that include different locations of the flight deck door, the aft boundary is determined by the configuration that provides the smallest available flight deck crew zone. For airplanes certificated for single-pilot operation, the flight deck crew zone is measured as half the width of the flight deck.

A38.3.5 Figures A38-1 and A38-2 of this appendix provide a notional view of the RGF boundary conditions.

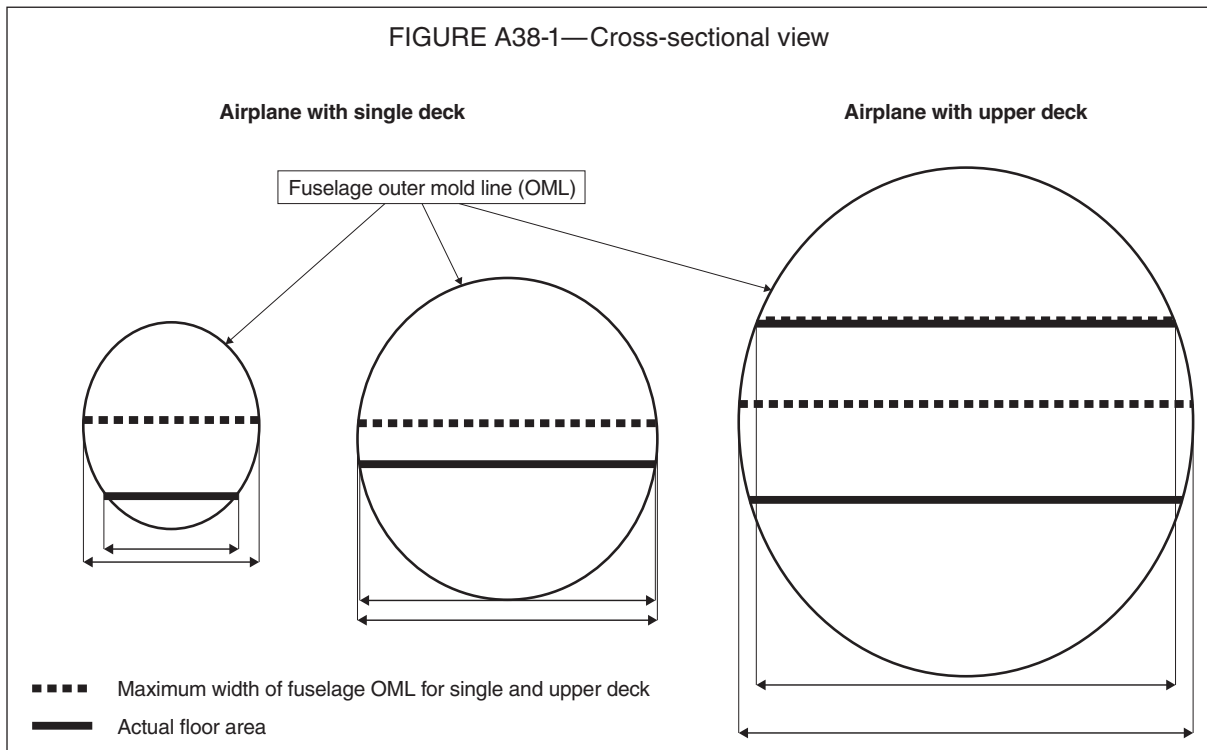
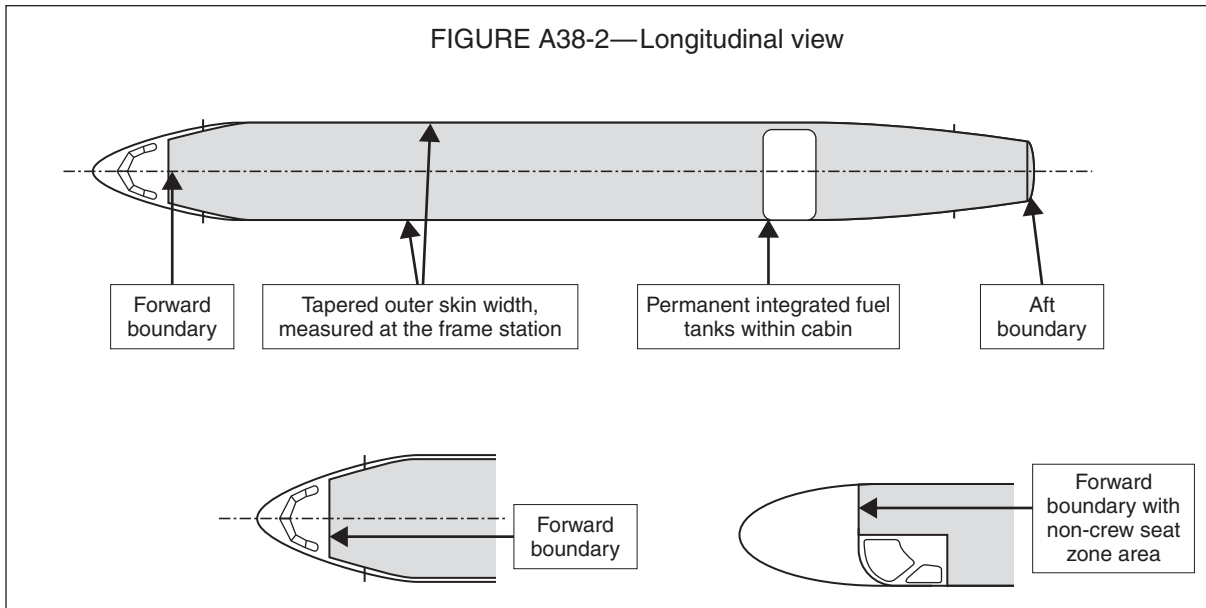


FIGURE A38-2—Longitudinal view



### A38.4 Certification Test Specifications

**A38.4.1 Certification Test Specifications.** This section prescribes the specifications under which an applicant must conduct SAR certification tests.

#### A38.4.2 Flight Test Procedures

**A38.4.2.1 Before a Test Flight.** The test flight procedures must include the following elements and must be approved by the FAA before any test flight is conducted:

**A38.4.2.1.1 Airplane conformity.** The test airplane must conform to the critical configuration of the type design for which certification is sought.

**A38.4.2.1.2 Airplane weight.** The test airplane must be weighed. Any change in mass after the weighing and prior to the test flight must be accounted for.

**A38.4.2.1.3 Fuel.** The fuel used for each flight test must meet the specification defined in either ASTM D1655-15 (titled “Standard Specification for Aviation Turbine Fuels”), UK MoD Defense Standard 91-91, Issue 7, Amendment 3 (titled “Turbine Fuel, Kerosene Type, Jet A-1, NATO Code F-35; Join Services Designation; AVTUR”), or as approved by FAA.

**A38.4.2.1.4 Fuel lower heating value.** The lower heating value of the fuel used on a test flight must be determined from a sample of fuel used for the test flight. The lower heating value of the fuel sample must be used to correct measured data to reference specifications. The determination of lower heating value and the correction to reference specifications are subject to approval by the FAA.

**A38.4.2.1.4.1** The fuel lower heating value may be determined in accordance with ASTM D4809-13 “Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter (Precision Method)”, or as approved by the FAA.

**A38.4.2.1.4.2** The fuel sample may be representative of the fuel used for each flight test and should not have errors or variations due to fuel being uplifted from multiple sources, fuel tank selection, or fuel layering in a tank.

**A38.4.2.1.5 Fuel specific gravity and viscosity.** When volumetric fuel flow meters are used, the specific gravity and viscosity of the fuel used on a test flight must be determined from a sample of fuel used for the test flight.

**A38.4.2.1.5.1** The fuel specific gravity may be determined in accordance with ASTM D4052-11 “Standard Test Method for Density, Relative Density, and API Gravity of Liquids”, or as approved by FAA.

**A38.4.2.1.5.2** The fuel kinematic viscosity may be determined in accordance with ASTM D445-15 (titled “Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)”), or as approved by FAA.

**A38.4.2.2 Flight Test Procedures and Test Condition Stability.** An applicant must conduct each flight test in accordance with the flight test procedures and the stability conditions as follows:

**A38.4.2.2.1 Flight Test Procedure.** The following procedures must be maintained during each flight used to gather data for determining SAR values:

**A38.4.2.2.1.1** To the extent that is practicable, the airplane is flown at constant pressure altitude and constant heading along isobars;

**A38.4.2.2.1.2** The engine thrust/power setting is stable for unaccelerated level flight;

**A38.4.2.2.1.3** The airplane is flown as close as practicable to the reference specifications to minimize the magnitude of any correction;

**A38.4.2.2.1.4** Changes in trim or engine power/thrust settings, engine stability and handling bleeds, or electrical and mechanical power extraction (including bleed flow) are avoided or minimized as practicable; and

**A38.4.2.2.1.5** There is no unnecessary movement of on-board personnel.

**A38.4.2.2.2 Test Condition Stability.** To obtain a valid SAR measurement, the following conditions must be maintained during each test flight, including the indicated tolerances for at least 1 minute while SAR data is acquired:

**A38.4.2.2.2.1** Mach number within  $\pm 0.005$ ;

**A38.4.2.2.2.2** Ambient temperature within  $\pm 1$  °C;

**A38.4.2.2.2.3** Heading within  $\pm 3$  degrees;

**A38.4.2.2.2.4** Track within  $\pm 3$  degrees;

**A38.4.2.2.2.5** Drift angle less than 3 degrees;

**A38.4.2.2.2.6** Ground speed within  $\pm 3.7$  km/h ( $\pm 2$  kt);

**A38.4.2.2.2.7** Difference in ground speed at the beginning of the SAR measurement from the ground speed at the end of the SAR measurement within  $\pm 2.8$  km/h/min ( $\pm 1.5$  kt/min); and

**A38.4.2.2.2.8** Pressure altitude within  $\pm 23$  m ( $\pm 75$  ft).

**A38.4.2.2.3** Alternatives to the stable test condition criteria of section A38.4.2.2.2 of this appendix may be used provided that stability is sufficiently demonstrated to the FAA.

A38.4.2.2.4 Data obtained at test points that do not meet the stability criteria of section A38.4.2.2.2 may be acceptable as an equivalent procedure, subject to FAA approval.

A38.4.2.2.5 SAR measurements at the test points must be separated by either:

A38.4.2.2.5.1 Two minutes; or

A38.4.2.2.5.2 An exceedance of one or more of the stability criteria limits described in A38.4.2.2.2.

A38.4.2.3 Verification of Airplane Mass at Test Conditions

A38.4.2.3.1 The procedure for determining the mass of the airplane at each test condition must be approved by the FAA.

A38.4.2.3.2 The mass of the airplane during a flight test is determined by subtracting the fuel used from the mass of the airplane at the start of the test flight. The accuracy of the determination of the fuel used must be verified by:

A38.4.2.3.2.1 Weighing the test airplane on calibrated scales before and after the SAR test flight;

A38.4.2.3.2.2 Weighing the test airplane before and after another test flight that included a cruise segment, provided that flight occurs within one week or 50 flight hours (at the option of the applicant) of the SAR test flight and using the same, unaltered fuel flow meters; or

A38.4.2.3.2.3 Other methods as approved by the FAA.

### A38.5 Measurement of Specific Air Range

A38.5.1 Measurement System

A38.5.1.1 The following parameters must be recorded at a minimum sampling rate of 1 Hertz (cycle per second):

A38.5.1.1.1 Airspeed;

A38.5.1.1.2 Ground speed;

A38.5.1.1.3 True airspeed;

A38.5.1.1.4 Fuel flow;

A38.5.1.1.5 Engine power setting;

A38.5.1.1.6 Pressure altitude;

A38.5.1.1.7 Temperature;

A38.5.1.1.8 Heading;

A38.5.1.1.9 Track; and

A38.5.1.1.10 Fuel used (for the determination of gross mass and CG position).

A38.5.1.2 The following parameters must be recorded:

A38.5.1.2.1 Latitude;

A38.5.1.2.2 Engine bleed positions and power off-takes; and

A38.5.1.2.3 Power extraction (electrical and mechanical load).

A38.5.1.3 The value of each parameter used for the determination of SAR (except for ground speed) is the simple arithmetic average of the measured values for that parameter obtained throughout the stable test condition described in section A38.4.2.2.2 of this appendix.

A38.5.1.4 For ground speed, the value is the rate of change of ground speed during the SAR test measurement. The rate of change of ground speed during the SAR measurement must be used to evaluate and correct any acceleration or deceleration that might occur during the SAR measurement.

A38.5.1.5 Each measurement device must have sufficient resolution to determine that the stability of a parameter defined in section A38.4.2.2.2 of this appendix is maintained during SAR measurement.

A38.5.1.6 The SAR measurement system consists of the combined instruments and devices, and any associated procedures, used to acquire the following parameters necessary to determine SAR:

A38.5.1.6.1 Fuel flow;

A38.5.1.6.2 Mach number;

A38.5.1.6.3 Altitude;

A38.5.1.6.4 Airplane mass;

A38.5.1.6.5 Ground speed;

A38.5.1.6.6 Outside air temperature;

A38.5.1.6.7 Fuel lower heating value; and

A38.5.1.6.8 CG.

A38.5.1.7 The SAR value is affected by the accuracy of each element that comprises the SAR measurement system. The cumulative error associated with the SAR measurement system is defined as the root sum of squares (RSS) of the individual accuracies.

A38.5.1.8 If the absolute value of the cumulative error of the overall SAR measurement system is greater than 1.5 percent, a penalty equal to the amount that the RSS value exceeds 1.5 percent must be applied to the SAR value that has been corrected to reference specifications (see section A38.5.2 of this appendix). If the absolute value of the cumulative error of the overall SAR measurement system is less than or equal to 1.5 percent, no penalty will be applied.

A38.5.2 Calculation of Specific Air Range from Measured Data

A38.5.2.1 Calculating SAR. SAR must be calculated using the following equation:

$$\text{SAR} = \text{TAS}/W_f$$

Where:

TAS is the true airspeed and  $W_f$  is total airplane fuel flow.

A38.5.2.2 Correcting Measured SAR Values to Reference Specifications

A38.5.2.2.1 The measured SAR values must be corrected to the reference specifications listed in A38.2 of this appendix. Unless otherwise approved by the FAA, corrections to reference specifications must be applied for each of the following measured parameters:

A38.5.2.2.1.1 *Acceleration/deceleration (energy)*. Drag determination is based on an assumption of steady, unaccelerated flight. Acceleration or deceleration occurring during a test condition affects the assessed drag level. The reference specification is in section A38.2.1.1.3 of this appendix.

A38.5.2.2.1.2 *Aeroelasticity*. Wing aeroelasticity may cause a variation in drag as a function of airplane wing mass distribution. Airplane wing mass distribution will be affected by the fuel load distribution in the wings and the presence of any external stores. The reference specification is in section A38.2.1.1.7 of this appendix.

A38.5.2.2.1.3 *Altitude*. The altitude at which the airplane is flown affects the fuel flow. The reference specification is in section A38.2.1.1.2 of this appendix.

A38.5.2.2.1.4 *Apparent gravity*. Acceleration, caused by the local effect of gravity, and inertia, affect the test weight of the airplane. The apparent gravity at the test conditions varies with latitude, altitude, ground speed, and direction of motion relative to the Earth's axis. The reference gravitational acceleration is the gravitational acceleration for the airplane travelling in the direction of true North in still air at the reference altitude, a geodetic latitude of 45.5 degrees, and based on  $g_0$  (see section A38.2.1.1.5 of this appendix).

A38.5.2.2.1.5 *CG position*. The position of the airplane CG affects the drag due to longitudinal trim. The reference specification is in section A38.2.1.1.6 of this appendix.

A38.5.2.2.1.6 *Electrical and mechanical power extraction and bleed flow*. Electrical and mechanical power extraction, and bleed flow affect the fuel flow. The reference specifications are in sections A38.2.1.2.1 and A38.2.1.2.2 of this appendix.

A38.5.2.2.1.7 *Engine deterioration level*. The requirement in section A38.2.1.2.3 of this appendix addresses the minimum deterioration of an engine that is used to determine SAR. Since engine

deterioration is rapid when an engine is new, when used for SAR determination:

A38.5.2.2.1.7.1 Subject to FAA approval, an engine having less deterioration than the reference deterioration level in section A38.2.1.2.3 of this appendix must correct the fuel flow to the reference deterioration using an approved method.

A38.5.2.2.1.7.2 An engine with greater deterioration than the reference deterioration level in section A38.2.1.2.3 of this appendix may be used, and no correction is permitted.

A38.5.2.2.1.8 *Fuel lower heating value.* The fuel lower heating value defines the energy content of the fuel. The lower heating value directly affects the fuel flow at a given test condition. The reference specification is in section A38.2.1.3.2 of this appendix.

A38.5.2.2.1.9 *Reynolds number.* The Reynolds number affects airplane drag. For a given test condition the Reynolds number is a function of the density and viscosity of air at the test altitude and temperature. The reference Reynolds number is derived from the density and viscosity of air from the ICAO standard atmosphere at the reference altitude (see sections A38.2.1.1.2 and A38.2.1.3.1 of this appendix, incorporated by reference see §38.7).

A38.5.2.2.1.10 *Temperature.* The ambient temperature affects the fuel flow. The reference temperature is the standard day temperature from the ICAO standard atmosphere at the reference altitude (see section A38.2.1.3.1 of this appendix, incorporated by reference see §38.7).

*Note 2 to A38.5.2.2.1.10*—Post-flight data analysis includes the correction of measured data for data acquisition hardware response characteristics (e.g., system latency, lag, offset, buffering, etc.).

A38.5.2.2.2 Correction methods are subject to the approval of the FAA.

A38.5.2.3 Using Specific Air Range to Determine the Fuel Efficiency Metric Value

A38.5.2.3.1 Calculate the SAR values for each of the three reference masses as described in §38.13, including any corrections to reference specifications, as required under this part. The final SAR value for each reference mass is the simple arithmetic average of all valid test points at the appropriate gross mass, or derived from a validated performance model. No data acquired from a valid test point may be omitted unless approved by the FAA.

A38.5.2.3.2 When an FAA-approved performance model is used, extrapolations to aircraft masses other than those tested may be approved when such extrapolations are consistent with accepted airworthiness practices. Since a performance model must be based on data covering an adequate range of lift coefficient, Mach number, and thrust specific fuel consumption, no extrapolation of those parameters is permitted.

A38.5.3 Validity of Results

A38.5.3.1 A 90 percent confidence interval must be calculated for each of the SAR values at the three reference masses.

A38.5.3.2 If the 90 percent confidence interval of the SAR value at any of the three reference airplane masses—

A38.5.3.2.1 Is less than or equal to  $\pm 1.5$  percent, the SAR value may be used.

A38.5.3.2.2 Exceeds  $\pm 1.5$  percent, a penalty equal to the amount that the 90 percent confidence interval exceeds  $\pm 1.5$  percent must be applied to the SAR value, as approved by the FAA.

A38.5.3.3 If clustered data is acquired separately for each of the three gross mass reference points, the minimum sample size acceptable for each of the three gross mass SAR values is six.

A38.5.3.4 If SAR data is collected over a range of masses, the minimum sample size is 12 and the 90 percent confidence interval is calculated for the mean regression line through the data.

## A38.6 Submission of Certification Data to the FAA

The following information must be provided to the FAA in the certification reports for each airplane type and model for which fuel efficiency certification under this part is sought.

A38.6.1 General Information

A38.6.1.1 Designation of the airplane type and model:

A38.6.1.2 Configuration of the airplane, including CG range, number and type designation of engines and, if fitted, propellers, and any modifications or non-standard equipment expected to affect the fuel efficiency characteristics;

A38.6.1.3 MTOM used for certification under this part;

A38.6.1.4 All dimensions needed for calculation of RGF; and

A38.6.1.5 Serial number of each airplane used to establish fuel efficiency certification in accordance with this part.

A38.6.2 Reference Specifications. The reference specifications used to determine any SAR value as described in section A38.2 of this appendix.

A38.6.3 Test Data. The following measured test data, including any corrections for instrumentation characteristics, must be provided for each of the test measurement points used to calculate the SAR values for each of the reference masses defined in §38.13(b):

A38.6.3.1 Airspeed, ground speed and true airspeed;

A38.6.3.2 Fuel flow;

A38.6.3.3 Pressure altitude;

A38.6.3.4 Static air temperature;

A38.6.3.5 Airplane gross mass and CG for each test point;

A38.6.3.6 Levels of electrical and mechanical power extraction and bleed flow;

A38.6.3.7 Engine performance;

A38.6.3.7.1 For jet airplanes, engine power setting; or

A38.6.3.7.2 For propeller-driven airplanes, shaft horsepower or engine torque, and propeller rotational speed;

A38.6.3.8 Fuel lower heating value;

A38.6.3.9 When volumetric fuel flow meters are used, fuel specific gravity and kinematic viscosity (see section A38.4.2.1.5. of this appendix);

A38.6.3.10 The cumulative error (RSS) of the overall measurement system (see section A38.5.1.7 of this appendix);

A38.6.3.11 Heading, track and latitude;

A38.6.3.12 Stability criteria (see section A38.4.2.2.2 of this appendix); and

A38.6.3.13 Description of the instruments and devices used to acquire the data needed for the determination of SAR, and the individual accuracies of the equipment relevant to their effect on SAR (see sections A38.5.1.6 and A38.5.1.7 of this appendix).

A38.6.4 Calculations and Corrections of SAR Test Data to Reference Specifications. The measured SAR test data, all corrections of the measured data to the reference specifications, and the SAR values calculated from the corrected data must be provided for each of the test measurement points.

A38.6.5 Calculated Values. The following values must be provided for each airplane used to establish fuel efficiency certification in accordance with this part:

A38.6.5.1 SAR (km/kg) for each reference airplane mass and the associated 90 percent confidence interval;

A38.6.5.2 Average of the 1/SAR values;

A38.6.5.3 RGF; and

A38.6.5.4 Fuel efficiency metric value.

**PART 43**  
**MAINTENANCE, PREVENTIVE MAINTENANCE,  
REBUILDING, AND ALTERATION**

- **Change Date:** October 17, 2023
- **Effective Date:** December 18, 2023
- **Source:** Amdt. 43–53, 88 FR 71476

Amend Appendix F to Part 43 by revising paragraphs (h) and (j) to read as follows:

**APPENDIX F TO PART 43**  
ATC TRANSPONDER TESTS AND INSPECTIONS

\*\*\*\*\*

(h) Mode S All-Call Interrogations: Interrogate the Mode S transponder with the Mode S-only all-call format UF = 11 and verify that the correct address and capability are reported in the replies (downlink format DF = 11).

\*\*\*\*\*

(j) Squitter: Verify that the Mode S transponder generates a correct acquisition squitter approximately once per second.

\*\*\*\*\*

**PART 65**  
**CERTIFICATION: AIRMEN OTHER THAN FLIGHT  
CREWMEMBERS**

- **Change Date:** April 1, 2024
- **Effective Date:** May 31, 2024
- **Source:** Amdt. 65–64, 89 FR 22520

Amend §65.23 by revising the introductory text and paragraph (a) to read as follows:

**§65.23 Incorporation by reference.**

Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR Part 51. This material is available for inspection at the Federal Aviation Administration (FAA) and at the National Archives and Records Administration (NARA). Contact FAA, Certification and Training Group, 202-267-1100, [ACSPTSinquiries@faa.gov](mailto:ACSPTSinquiries@faa.gov). For information on the availability of this material at NARA, email [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov), or go to [www.archives.gov/federal-register/cfr/ibr-locations](http://www.archives.gov/federal-register/cfr/ibr-locations). The material may be obtained from the source in the following paragraph of this section.

(a) Federal Aviation Administration, 800 Independence Avenue SW, Washington, DC 20591, 866-835-5322, [www.faa.gov/training\\_testing](http://www.faa.gov/training_testing).

(1) FAA-S-8081-10E, Aircraft Dispatcher Practical Test Standards, November 2023; IBR approved for §65.59.

(2) FAA-S-8081-25C, Parachute Rigger Practical Test Standards, November 2023; IBR approved for §§65.115, 65.119, and 65.123.

(3) FAA-S-ACS-1, Aviation Mechanic General, Airframe, and Powerplant Airman Certification Standards, November 1, 2021; IBR approved for §§65.75 and 65.79.

\*\*\*\*\*

Revise §65.59 to read as follows:

**§65.59 Skill requirements.**

An applicant for an aircraft dispatcher certificate must pass a practical test given by the Administrator, with respect to any one

type of large aircraft used in air carrier operations. To pass the practical test for an aircraft dispatcher certificate, the applicant must satisfactorily demonstrate the objectives in the areas of operation specified in the Aircraft Dispatcher Practical Test Standards (incorporated by reference, see §65.23).

Amend §65.115 by revising paragraphs (a) and (c) to read as follows:

**§65.115 Senior parachute rigger certificate: Experience, knowledge, and skill requirements.**

\*\*\*\*\*

(a) Present evidence satisfactory to the Administrator that the applicant has packed at least 20 parachutes of each type for which the applicant seeks a rating, in accordance with the manufacturer's instructions and under the supervision of a certificated parachute rigger holding a rating for that type or a person holding an appropriate military rating;

\*\*\*\*\*

(c) Pass an oral and practical test showing the applicant's ability to pack and maintain at least one type of parachute in common use, appropriate to the type rating the applicant seeks. To pass the oral and practical test for a senior parachute rigger certificate, the applicant must satisfactorily demonstrate the objectives in the areas of operation applicable to a senior parachute rigger specified in the Parachute Rigger Practical Test Standards (incorporated by reference, see §65.23), appropriate to the type rating sought.

- **Change Date:** April 1, 2024; April 22, 2024
- **Effective Date:** May 31, 2024
- **Source:** Amdt. 65–64, 89 FR 22520; Amdt. 65–64A, 89 FR 29252

Amend §65.119 by revising paragraphs (a) and (c) to read as follows:

**§65.119 Master parachute rigger certificate: Experience, knowledge, and skill requirements.**

\*\*\*\*\*

(a) Present evidence satisfactory to the Administrator that the applicant has had at least 3 years of experience as a parachute rigger and has satisfactorily packed at least 100 parachutes of each of two types in common use, in accordance with the manufacturer's instructions—

(1) While a certificated and appropriately rated senior parachute rigger; or

(2) While under the supervision of a certificated and appropriately rated parachute rigger or a person holding appropriate military ratings.

(3) An applicant may combine experience specified in paragraphs (a)(1) and (2) of this section to meet the requirements of this paragraph (a).

\*\*\*\*\*

(c) Pass an oral and practical test showing the applicant's ability to pack and maintain two types of parachutes in common use, appropriate to the type ratings the applicant seeks. To pass the oral and practical test for a master parachute rigger certificate, the applicant must satisfactorily demonstrate the objectives in the areas of operation applicable to a master parachute rigger specified in the Parachute Rigger Practical Test Standards (incorporated by reference, see §65.23), as appropriate to the type rating sought.

- **Change Date:** April 1, 2024
- **Effective Date:** May 31, 2024
- **Source:** Amdt. 65–64, 89 FR 22520

Revise §65.123 to read as follows:

**§65.123 Additional type ratings: Requirements.**

A certificated parachute rigger who applies for an additional type rating must—

(a) Present evidence satisfactory to the Administrator that the applicant has packed at least 20 parachutes of the type for which the applicant seeks a rating, in accordance with the manufacturer's instructions and under the supervision of a certificated parachute rigger holding a rating for that type or a person holding an appropriate military rating; and

(b) Pass a practical test, to the satisfaction of the Administrator, showing the applicant's ability to pack and maintain the type of parachute, appropriate to the type rating sought. To pass the practical test for an additional type rating, the applicant must satisfactorily demonstrate the objectives in the area of operation specified in the Parachute Rigger Practical Test Standards (incorporated by reference, see §65.23), applicable to the type rating sought.

**PART 91**

**GENERAL OPERATING AND FLIGHT RULES**

- **Change Date:** July 26, 2023
- **Effective Date:** July 26, 2023
- **Source:** Amdt. 91–370, 88 FR 48087

Amend §91.146 by revising paragraphs (b) introductory text and (b)(2), (3), (5), and (7) to read as follows:

**§91.146 Passenger-carrying flights for the benefit of a charitable, nonprofit, or community event.**

\*\*\*\*\*

(b) Passenger-carrying flights in airplanes, powered-lift, or rotorcraft for the benefit of a charitable, nonprofit, or community event identified in paragraph (c) of this section are not subject to the certification requirements of part 119 of this chapter or the drug and alcohol testing requirements in part 120 of this chapter, provided the following conditions are satisfied and the limitations in paragraphs (c) and (d) of this section are not exceeded:

\*\*\*\*\*

(2) The flight is conducted from a public airport that is adequate for the aircraft used, or from another location the FAA approves for the operation;

(3) The aircraft has a maximum of 30 seats, excluding each crewmember seat, and a maximum payload capacity of 7,500 pounds;

\*\*\*\*\*

(5) Each aircraft holds a standard airworthiness certificate, is airworthy, and is operated in compliance with the applicable requirements of subpart E of this part;

\*\*\*\*\*

(7) Reimbursement of the operator of the aircraft is limited to that portion of the passenger payment for the flight that does not exceed the pro rata cost of owning, operating, and maintaining the aircraft for that flight, which may include fuel, oil, airport expenditures, and rental fees;

\*\*\*\*\*

- **Change Date:** July 26, 2023; April 26, 2024
- **Effective Date:** July 26, 2023; May 28, 2024
- **Source:** Amdt. 91–370, 88 FR 48087; Amdt. 91–374, 89 FR 33108

Revise §91.147 to read as follows:

**§91.147 Passenger-carrying flights for compensation or hire.**

(a) **Definitions.** For the purposes of this section, *Operator* means any person conducting nonstop passenger-carrying flights in an airplane, powered-lift, or rotorcraft for compensation or hire in accordance with §§119.1(e)(2), 135.1(a)(5), or 121.1(d) of this chapter that begin and end at the same airport and are conducted within a 25-statute mile radius of that airport.

(b) **General requirements.** An Operator conducting passenger-carrying flights for compensation or hire must meet the following requirements unless all flights are conducted under §91.146. The Operator must:

(1) Comply with the safety provisions of part 136, subpart A of this chapter.

(2) Register and implement its drug and alcohol testing programs in accordance with part 120 of this chapter.

(3) Comply with the applicable requirements of part 5 of this chapter.

(4) Apply for and receive a Letter of Authorization from the responsible Flight Standards office.

(c) **Letter of Authorization.** Each application for a Letter of Authorization must include the following information:

(1) Name of Operator, agent, and any d/b/a (doing-business-as) under which that Operator does business.

(2) Principal business address and mailing address.

(3) Principal place of business (if different from business address).

(4) Name of person responsible for management of the business.

(5) Name of person responsible for aircraft maintenance.

(6) Type of aircraft, registration number(s), and make/model/series.

(7) Antidrug and Alcohol Misuse Prevention Program registration.

(d) **Compliance.** The Operator must comply with the provisions of the Letter of Authorization received.

- **Change Date:** October 17, 2023
- **Effective Date:** December 18, 2023
- **Source:** Amdt. 91–371, 88 FR 71476

Amend §91.215 by revising the introductory text of paragraph (b) to read as follows:

**§91.215 ATC transponder and altitude reporting equipment and use.**

\*\*\*\*\*

(b) **All airspace.** Unless otherwise authorized or directed by ATC, and except as provided in paragraph (e)(1) of this section, no person may operate an aircraft in the airspace described in paragraphs (b)(1) through (5) of this section, unless that aircraft is equipped with an operable coded radar beacon transponder having either Mode A 4096 code capability, replying to Mode A interrogations with the code specified by ATC, or a Mode S capability, replying to Mode A interrogations with the code specified by ATC and Mode S interrogations in accordance with the applicable provisions specified in TSO-C112, and that aircraft is equipped with automatic pressure altitude reporting equipment having a Mode C capability that automatically replies to Mode C interrogations by

transmitting pressure altitude information in 100-foot increments. The requirements of this paragraph (b) apply to—

- **Change Date:** October 17, 2023; April 29, 2024
- **Effective Date:** December 18, 2023; April 29, 2024
- **Source:** Amdt. 91–371, 88 FR 71476; Amdt. 91–371B, 89 FR 33224

Amend §91.225 by:

- a. Revising paragraphs (a)(1), (b), and (e) introductory text.
- b. Redesignating paragraphs (h) and (i), as (i) and (h), respectively.
- c. Revising newly redesignated paragraphs (h)(1)(i) and (i).
- d. Revising the introductory text of paragraphs (d) and (f).

The revisions read as follows:

**§91.225 Automatic Dependent Surveillance–Broadcast (ADS-B) Out equipment and use.**

(a) \* \* \*

(1) Meets the performance requirements in—

- (i) TSO-C166b and Section 2 of RTCA DO-260B (as referenced in TSO-C166b); or
- (ii) TSO-C166c and Section 2 of RTCA DO-260C as modified by DO-260C—Change 1 (as referenced in TSO-C166c); and

(b) After January 1, 2020, except as prohibited in paragraph (h) (2) of this section or unless otherwise authorized by ATC, no person may operate an aircraft below 18,000 feet MSL and in airspace described in paragraph (d) of this section unless the aircraft has equipment installed that—

(1) Meets the performance requirements in—

- (i) TSO-C166b and Section 2 of RTCA DO-260B (as referenced in TSO-C166b);
- (ii) TSO-C166c and Section 2 of RTCA DO-260C as modified by DO-260C—Change 1 (as referenced in TSO-C166c);
- (iii) TSO-C154c and Section 2 of RTCA DO-282B (as referenced in TSO-C154c); or
- (iv) TSO-C154d and Section 2 of RTCA DO-282C (as referenced in TSO-C154d);

(2) Meets the requirements of §91.227.

(d) After January 1, 2020, except as prohibited in paragraph (h) (2) of this section or unless otherwise authorized by ATC, no person may operate an aircraft in the following airspace unless the aircraft has equipment installed that meets the requirements in paragraph (b) of this section:

(e) The requirements of paragraph (b) of this section do not apply to any aircraft that was not originally certificated with an engine-driven electrical system, or that has not subsequently been certified with such a system installed, including balloons and gliders. These aircraft may conduct operations without ADS-B Out in the airspace specified in paragraph (d)(4) of this section. These aircraft may also conduct operations in the airspace specified in paragraph (d)(2) of this section if those operations are conducted—

(f) Except as prohibited in paragraph (h)(2) of this section, each person operating an aircraft equipped with ADS-B Out must operate this equipment in the transmit mode at all times unless—

(h) \* \* \*

(1) \* \* \*

(i) That aircraft has equipment installed that meets the performance requirements in TSO-C166b (including Section 2 of RTCA DO-260B, as referenced in TSO-C166b), TSO-C166c (including Section 2 of RTCA DO-260C as modified by DO-260C—Change 1, as referenced in TSO-C166c), TSO-C154c (including Section 2 of RTCA DO-282B, as referenced in TSO-C154c), or TSO-C154d (including Section 2 of RTCA DO-282C, as referenced in TSO-C154d); and

(i) The standards required in this section are incorporated by reference with the approval of the Director of the Office of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. This incorporation by reference (IBR) material is available for inspection at the FAA and the National Archives and Records Administration (NARA). Contact the FAA at: Office of Rulemaking (ARM-1), 800 Independence Avenue SW, Washington, DC 20590 (telephone 202-267-9677). For information on the availability of this material at NARA, visit <https://www.archives.gov/federal-register/cfr/ibr-locations.html> or email [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov). This material is also available from the following sources in this paragraph (i).

(1) U.S. Department of Transportation, Subsequent Distribution Office, DOT Warehouse M30, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785; telephone (301) 322-5377; website: [www.faa.gov/aircraft/air\\_cert/design\\_approvals/tso/](http://www.faa.gov/aircraft/air_cert/design_approvals/tso/) (select the link “Search Technical Standard Orders”).

(i) TSO-C166b, Extended Squitter Automatic Dependent Surveillance–Broadcast (ADS-B) and Traffic Information Service–Broadcast (TIS-B) Equipment Operating on the Radio Frequency of 1090 Megahertz (MHz), December 2, 2009.

(ii) TSO-C166c, Extended Squitter Automatic Dependent Surveillance–Broadcast (ADS-B) and Traffic Information Service–Broadcast (TIS-B) Equipment Operating on the Radio Frequency of 1090 Megahertz (MHz), March 10, 2023.

(iii) TSO-C154c, Universal Access Transceiver (UAT) Automatic Dependent Surveillance–Broadcast (ADS-B) Equipment Operating on the Frequency of 978 MHz, December 2, 2009.

(iv) TSO-C154d, Universal Access Transceiver (UAT) Automatic Dependent Surveillance–Broadcast (ADS-B) Equipment Operating on the Radio Frequency of 978 Megahertz (MHz), March 10, 2023.

(2) RTCA, Inc., 1150 18th St. NW, Suite 910, Washington, DC 20036; telephone (202) 833-9339; website: [www.rtca.org/products](http://www.rtca.org/products).

(i) RTCA DO-260B, Minimum Operational Performance Standards for 1090 MHz Extended Squitter Automatic Dependent Surveillance–Broadcast (ADS-B) and Traffic Information Services–Broadcast (TIS-B), Section 2, Equipment Performance Requirements and Test Procedures, December 2, 2009.

(ii) RTCA DO-260C, Minimum Operational Performance Standards for 1090 MHz Extended Squitter Automatic Dependent Surveillance–Broadcast (ADS-B) and Traffic Information Services–Broadcast (TIS-B), Section 2, Equipment Performance Requirements and Test Procedures, December 17, 2020.

(iii) RTCA DO-260C, Minimum Operational Performance Standards for 1090 MHz Extended Squitter Automatic Dependent Surveillance–Broadcast (ADS-B) and Traffic Information Services–Broadcast (TIS-B), Change 1, January 25, 2022.

(iv) RTCA DO-282B, Minimum Operational Performance Standards for Universal Access Transceiver (UAT) Automatic Dependent Surveillance–Broadcast (ADS-B), Section 2, Equipment Performance Requirements and Test Procedures, December 2, 2009.



(v) RTCA DO-282C, Minimum Operational Performance Standards (MOPS) for Universal Access Transceiver (UAT) Automatic Dependent Surveillance–Broadcast (ADS-B), Section 2, Equipment Performance Requirements and Test Procedures, June 23, 2022.

Amend §91.227 by:

- a. In paragraph (a), revising definitions for “Navigation Accuracy Category for Position (NAC<sub>P</sub>)”, “Navigation Accuracy Category for Velocity (NAC<sub>V</sub>)”, “Navigation Integrity Category (NIC)”, “Source Integrity Level (SIL)”, and “System Design Assurance (SDA)”; and
- b. Revising paragraphs (b)(1), (b)(2)(i) and (ii), (c)(1)(iv) and (v), (d) introductory text, (d)(5) through (8), (11), and (13), and (g).

The revisions read as follows:

**§91.227 Automatic Dependent Surveillance–Broadcast (ADS-B) Out equipment performance requirements.**

(a) \* \* \*

*Navigation Accuracy Category for Position (NAC<sub>P</sub>)* specifies the accuracy of a reported aircraft’s position.

*Navigation Accuracy Category for Velocity (NAC<sub>V</sub>)* specifies the accuracy of a reported aircraft’s velocity.

*Navigation Integrity Category (NIC)* specifies an integrity containment radius around an aircraft’s reported position.

\* \* \* \* \*

*Source Integrity Level (SIL)* indicates the probability of the reported horizontal position exceeding the containment radius defined by the NIC on a per sample or per hour basis.

*System Design Assurance (SDA)* indicates the probability of an aircraft malfunction causing false or misleading information to be transmitted.

\* \* \* \* \*

(b) \* \* \*

(1) Aircraft operating in Class A airspace must have equipment installed that meets the antenna and power output requirements of Class A1S, A1, A2, A3, B1S, or B1 equipment as defined in TSO-C166b and Section 2 of RTCA DO-260B (as referenced in TSO-C166b), or TSO-C166c and Section 2 of RTCA DO-260C as modified by DO-260C—Change 1 (as referenced in TSO-C166c).

(2) \* \* \*

(i) Class A1S, A1, A2, A3, B1S, or B1 as defined in TSO-C166b and Section 2 of RTCA DO-260B (as referenced in TSO-C166b) or TSO-C166c and Section 2 of RTCA DO-260C as modified by DO-260C—Change 1 (as referenced in TSO-C166c); or

(ii) Class A1S, A1H, A2, A3, B1S, or B1 equipment as defined in TSO-C154c and Section 2 of RTCA DO-282B (as referenced in TSO-C154c), or TSO-C154d and Section 2 of RTCA DO-282C (as referenced in TSO-C154d).

(c) \* \* \*

(1) \* \* \*

(iv) The aircraft’s SDA must be less than or equal to 10<sup>-5</sup> per flight hour; and

(v) The aircraft’s SIL must be less than or equal to 10<sup>-7</sup> per flight hour or per sample.

\* \* \* \* \*

**(d) Minimum Broadcast Message Element Set for ADS-B Out.** Each aircraft must broadcast the following information, as defined in TSO-C166b (including Section 2 of RTCA DO-260B, as referenced in TSO-C166b), TSO-C166c (including Section 2 of RTCA DO-260C as modified by DO-260C—Change 1, as referenced in TSO-C166c), TSO-C154c (including Section 2 of RTCA DO-282B, as referenced in TSO-C154c), or TSO-C154d (including

Section 2 of RTCA DO-282C, as referenced in TSO-C154d). The pilot must enter information for message elements listed in paragraphs (d)(7) through (10) of this section during the appropriate phase of flight.

\* \* \* \* \*

(5) An indication if a collision avoidance system is installed and operating in a mode that can generate resolution advisory alerts;

(6) If an operable collision avoidance system is installed, an indication if a resolution advisory is in effect;

(7) An indication of the Mode A transponder code specified by ATC;

(8) An indication of the aircraft identification that is submitted on the flight plan or used for communicating with ATC, except when the pilot has not filed a flight plan, has not requested ATC services, and is using a TSO-C154c or TSO-C154d self-assigned temporary 24-bit address;

\* \* \* \* \*

(11) An indication of the aircraft assigned ICAO 24-bit address, except when the pilot has not filed a flight plan, has not requested ATC services, and is using a TSO-C154c or TSO-C154d self-assigned temporary 24-bit address;

\* \* \* \* \*

(13) An indication of whether an ADS-B In capability is available;

\* \* \* \* \*

**(g) Incorporation by reference.** The standards required in this section are incorporated by reference with the approval of the Director of the Office of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. This incorporation by reference (IBR) material is available for inspection at the FAA and the National Archives and Records Administration (NARA). Contact the FAA at: Office of Rulemaking (ARM-1), 800 Independence Avenue SW, Washington, DC 20590 (telephone 202-267-9677). For information on the availability of this material at NARA, visit [www.archives.gov/federal-register/cfr/ibr-locations.html](http://www.archives.gov/federal-register/cfr/ibr-locations.html) or email [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov). This material is also available from the following sources indicated in this paragraph (g).

(1) U.S. Department of Transportation, Subsequent Distribution Office, DOT Warehouse M30, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785; telephone (301) 322-5377; website: [www.faa.gov/aircraft/air\\_cert/design\\_approvals/tso/](http://www.faa.gov/aircraft/air_cert/design_approvals/tso/) (select the link “Search Technical Standard Orders”).

(i) TSO-C166b, Extended Squitter Automatic Dependent Surveillance–Broadcast (ADS-B) and Traffic Information Service–Broadcast (TIS-B) Equipment Operating on the Radio Frequency of 1090 Megahertz (MHz), December 2, 2009.

(ii) TSO-C166c, Extended Squitter Automatic Dependent Surveillance–Broadcast (ADS-B) and Traffic Information Service–Broadcast (TIS-B) Equipment Operating on the Radio Frequency of 1090 Megahertz (MHz), March 10, 2023.

(iii) TSO-C154c, Universal Access Transceiver (UAT) Automatic Dependent Surveillance–Broadcast (ADS-B) Equipment Operating on the Frequency of 978 MHz, December 2, 2009.

(iv) TSO-C154d, Universal Access Transceiver (UAT) Automatic Dependent Surveillance–Broadcast (ADS-B) Equipment Operating on the Radio Frequency of 978 Megahertz (MHz), March 10, 2023.

(2) RTCA, Inc., 1150 18th St. NW, Suite 910, Washington, DC 20036; telephone (202) 833-9339; website: [www.rtca.org/products](http://www.rtca.org/products).

(i) RTCA DO-260B, Minimum Operational Performance Standards for 1090 MHz Extended Squitter Automatic Dependent Surveillance–Broadcast (ADS-B) and Traffic Information Services–Broadcast (TIS-B), Section 2, Equipment Performance Requirements and Test Procedures, December 2, 2009.

(ii) RTCA DO-260C, Minimum Operational Performance Standards for 1090 MHz Extended Squitter Automatic Dependent Surveillance–Broadcast (ADS-B) and Traffic Information Services–Broadcast (TIS-B), Section 2, Equipment Performance Requirements and Test Procedures, December 17, 2020.

(iii) RTCA DO-260C, Minimum Operational Performance Standards for 1090 MHz Extended Squitter Automatic Dependent Surveillance–Broadcast (ADS-B) and Traffic Information Services–Broadcast (TIS-B), Change 1, January 25, 2022.

(iv) RTCA DO-282B, Minimum Operational Performance Standards for Universal Access Transceiver (UAT) Automatic Dependent Surveillance–Broadcast (ADS-B), Section 2, Equipment Performance Requirements and Test Procedures, December 2, 2009.

(v) RTCA DO-282C, Minimum Operational Performance Standards (MOPS) for Universal Access Transceiver (UAT) Automatic Dependent Surveillance–Broadcast (ADS-B), Section 2, Equipment Performance Requirements and Test Procedures, June 23, 2022.

► **Change Date:** July 26, 2023  
► **Effective Date:** July 26, 2023  
► **Source:** Amdt. 91–370, 88 FR 48087

Amend §91.1015 by revising paragraph (a)(9) to read as follows:

**§91.1015 Management specifications.**

(a) \* \* \*  
(9) Any authorized deviation and exemption that applies to the person conducting operations under this subpart; and  
\* \* \* \* \*

► **Change Date:** June 18, 2024  
► **Effective Date:** July 18, 2024  
► **Source:** Amdt. 91–375, 89 FR 51424

Amend §91.1063 by revising paragraphs (b)(2)(i) and (ii) to read as follows:

**§91.1063 Testing and training: Applicability and terms used.**

\* \* \* \* \*  
(b) \* \* \*  
(2) \* \* \*  
(i) Each program manager must include in upgrade ground training for pilots, instruction in at least the subjects identified in §121.419(a) of this chapter, as applicable to their assigned duties; and, for pilots serving in crews of two or more pilots, instruction and facilitated discussion in the subjects identified in §121.419(c) of this chapter.  
(ii) Each program manager must include in upgrade flight training for pilots, flight training for the maneuvers and procedures required in §121.424(a), (c), (e), and (f) of this chapter; and, for pilots serving in crews of two or more pilots, the flight training required in §121.424(b) of this chapter.

► **Change Date:** October 26, 2023  
► **Effective Date:** October 27, 2023  
► **Source:** Amdt. 91–331H, 88 FR 73532

Remove and reserve §91.1607.

**§91.1607 [Reserved]**

► **Change Date:** December 27, 2023  
► **Effective Date:** December 27, 2023  
► **Source:** Amdt. 91–348D, 88 FR 89300

Amend §91.1609 by revising paragraph (e) to read as follows:

**§91.1609 Special Federal Aviation Regulation No. 114— Prohibition Against Certain Flights in the Damascus Flight Information Region (FIR) (OSTT).**

\* \* \* \* \*

(e) **Expiration.** This SFAR will remain in effect until December 30, 2028. The FAA may amend, rescind, or extend this SFAR, as necessary.

► **Change Date:** September 22, 2023  
► **Effective Date:** September 22, 2023  
► **Source:** Amdt. 91–340D, 88 FR 65320

Amend §91.1611 by revising paragraphs (b) and (c) to read as follows:

**§91.1611 Special Federal Aviation Regulation No. 115— Prohibition Against Certain Flights in Specified Areas of the Sanaa Flight Information Region (FIR) (OYSC).**

\* \* \* \* \*

(b) **Flight prohibition.** Except as provided in paragraphs (c) and (d) of this section, no person described in paragraph (a) of this section may conduct flight operations in the portion of the Sanaa Flight Information Region (FIR) (OYSC) that is west of a line drawn direct from KAPET (163322N 0530614E) to NODMA (152603N 0533359E), northwest of a line drawn direct from NODMA to IMPAG (140638N 0503924E) then from IMPAG to TIMAD (115500N 0463500E), north of a line drawn direct from TIMAD to PARIM (123200N 0432720E), and east of a line drawn direct from PARIM to RIBOK (154700N 0415230E). Use of jet route UN303 is not authorized.

(c) **Permitted operations.** This section does not prohibit persons described in paragraph (a) of this section from conducting flight operations in the Sanaa FIR (OYSC) under the following circumstances:

(1) *Permitted operations that do not require an approval or exemption from the FAA.* Flight operations may be conducted in the Sanaa FIR (OYSC) in that airspace east of a line drawn direct from KAPET (163322N 0530614E) to NODMA (152603N 0533359E), southeast of a line drawn direct from NODMA to IMPAG (140638N 0503924E) then from IMPAG to TIMAD (115500N 0463500E), south of a line drawn direct from TIMAD to PARIM (123200N 0432720E), and west of a line drawn direct from PARIM to RIBOK (154700N 0415230E). Use of jet routes UT702 and M999 are authorized. All flight operations conducted under this subparagraph must be conducted subject to the approval of, and in accordance with the conditions established by, the appropriate authorities of Yemen.

(2) *Operations permitted under an approval or exemption issued by the FAA.* Flight operations may be conducted in the Sanaa FIR (OYSC) in that airspace west of a line drawn direct from KAPET (163322N 0530614E) to NODMA (152603N 0533359E), northwest of a line drawn direct from NODMA to IMPAG (140638N 0503924E) then from IMPAG to TIMAD (115500N 0463500E), north of a line drawn direct from TIMAD to PARIM (123200N 0432720E), and east of a line drawn direct from PARIM to RIBOK (154700N 0415230E) if such flight operations are conducted under a contract, grant, or cooperative agreement with a department, agency, or instrumentality of the U.S. Government (or under a subcontract between the

prime contractor of the U.S. Government department, agency, or instrumentality and the person subject to paragraph (a)), with the approval of the FAA, or under an exemption issued by the FAA. The FAA will consider requests for approval or exemption in a timely manner, with the order of preference being: First, for those operations in support of U.S. Government-sponsored activities; second, for those operations in support of government-sponsored activities of a foreign country with the support of a U.S. government department, agency, or instrumentality; and third, for all other operations.

\*\*\*\*\*

Issued in Washington, DC, under the authority of 49 U.S.C. 106(f) and (g), 40101(d)(1), 40105(b)(1)(A), and 44701(a)(5), on September 15, 2023.

- **Change Date:** September 15, 2023
- **Effective Date:** September 15, 2023
- **Source:** Amdt. 91–352B, 88 FR 63525

Amend §91.1615 by revising paragraph (e) to read as follows:

**§91.1615 Special Federal Aviation Regulation No. 79—  
Prohibition Against Certain Flights in the Pyongyang  
Flight Information Region (FIR) (ZKKP).**

\*\*\*\*\*

**(e) Expiration.** This SFAR will remain in effect until September 18, 2028. The FAA may amend, rescind, or extend this SFAR, as necessary.

Issued in Washington, DC, under the authority of 49 U.S.C. 106(f) and (g), 40101(d)(1), 40105(b)(1)(A), and 44701(a)(5).

- **Change Date:** July 25, 2023
- **Effective Date:** July 25, 2023
- **Source:** Amdt. 91-369, 88 FR 47771

Add §91.1619 to read as follows:

**§91.1619 Special Federal Aviation Regulation No. 119—  
Prohibition Against Certain Flights in the Kabul Flight  
Information Region (FIR) (OAKX).**

**(a) Applicability.** This Special Federal Aviation Regulation (SFAR) applies to the following persons:

- (1) All U.S. air carriers and U.S. commercial operators;
- (2) All persons exercising the privileges of an airman certificate issued by the FAA, except when such persons are operating U.S.-registered aircraft for a foreign air carrier; and
- (3) All operators of U.S.-registered civil aircraft, except when the operator of such aircraft is a foreign air carrier.

**(b) Flight prohibition.** Except as provided in paragraphs (c) and (d) of this section, no person described in paragraph (a) of this section may conduct flight operations in the Kabul Flight Information Region (FIR) (OAKX).

**(c) Permitted operations.** This section does not prohibit persons described in paragraph (a) of this section from conducting flight operations in the Kabul Flight Information Region (FIR) (OAKX) under the following circumstances:

- (1) Overflights of the Kabul Flight Information Region (FIR) (OAKX) may be conducted at altitudes at and above Flight Level (FL) 320, subject to the approval of, and in accordance with the conditions established by, the appropriate authorities of Afghanistan.
- (2) Flight operations may be conducted in the Kabul Flight Information Region (FIR) (OAKX) at altitudes below FL320, provided that such flight operations occur under a contract, grant, or coop-

erative agreement with a department, agency, or instrumentality of the U.S. Government (or under a subcontract between the prime contractor of the U.S. Government department, agency, or instrumentality and the person described in paragraph (a) of this section) with the approval of the FAA or under an exemption issued by the FAA. The FAA will consider requests for approval or exemption in a timely manner, with the order of preference being: first, for those operations in support of U.S. Government-sponsored activities; second, for those operations in support of government-sponsored activities of a foreign country with the support of a U.S. Government department, agency, or instrumentality; and third, for all other operations.

**(d) Emergency situations.** In an emergency that requires immediate decision and action for the safety of the flight, the pilot in command of an aircraft may deviate from this section to the extent required by that emergency. Except for U.S. air carriers and commercial operators that are subject to the requirements of 14 CFR part 119, 121, 125, or 135, each person who deviates from this section must, within 10 days of the deviation, excluding Saturdays, Sundays, and Federal holidays, submit to the responsible Flight Standards Office a complete report of the operations of the aircraft involved in the deviation, including a description of the deviation and the reasons for it.

**(e) Expiration.** This SFAR will remain in effect until July 25, 2025. The FAA may amend, rescind, or extend this SFAR as necessary.

- **Change Date:** July 5, 2024
- **Effective Date:** July 5, 2024
- **Source:** Amdt. 91-369A, 89 FR 55507

Amend §91.1619 by revising paragraph (c) to read as follows:

**§91.1619 Special Federal Aviation Regulation No. 119—  
Prohibition Against Certain Flights in the Kabul Flight  
Information Region (FIR) (OAKX).**

\*\*\*\*\*

**(c) Permitted operations.** This section does not prohibit persons described in paragraph (a) of this section from conducting flight operations in the Kabul Flight Information Region (FIR) (OAKX) under the following circumstances:

(1) *Permitted operations that do not require an approval or exemption from the FAA.*

(i) Overflights of the Kabul Flight Information Region (FIR) (OAKX) may be conducted at altitudes at and above Flight Level (FL) 320, subject to the approval of, and in accordance with the conditions established by, the appropriate authorities of Afghanistan.

(ii) Transiting overflights of the Kabul Flight Information Region (FIR) (OAKX) may be conducted on jet routes P500–G500 at altitudes at and above FL300, subject to the approval of, and in accordance with the conditions established by, the appropriate authorities of Afghanistan.

(2) *Operations permitted under an approval or exemption issued by the FAA.* Flight operations may be conducted in the Kabul Flight Information Region (FIR) (OAKX) at altitudes below FL320, provided that such flight operations occur under a contract, grant, or cooperative agreement with a department, agency, or instrumentality of the U.S. Government (or under a subcontract between the prime contractor of the U.S. Government department, agency, or instrumentality and the person described in paragraph (a) of this section) with the approval of the FAA or under an exemption issued by the FAA. The FAA will consider requests for approval or exemption in a timely manner, with the order of preference being: first, for those operations in support of U.S. Government-sponsored

activities; second, for those operations in support of government-sponsored activities of a foreign country with the support of a U.S. Government department, agency, or instrumentality; and third, for all other operations.

\*\*\*\*\*

## PART 110 GENERAL REQUIREMENTS

■ **Change Date:** July 26, 2023

■ **Effective Date:** July 26, 2023

■ **Source:** Amdt. 110–3, 88 FR 48087

The authority citation for Part 110 is revised to read as follows:

**Authority:** 49 U.S.C. 106(f), 106(g), 40101, 40102, 40103, 40113, 44105, 44106, 44111, 44701–44717, 44722, 44901, 44903, 44904, 44906, 44912, 44914, 44936, 44938, 46103, 46105.

Amend §110.2 by revising the introductory text of the definition of “Commercial air tour” and by revising the definitions of “Commuter operation”, “Domestic operation”, “Flag operation”, “On-demand operation”, and “Supplemental operation” to read as follows:

### §110.2 Definitions.

\*\*\*\*\*

*Commercial air tour* means a flight conducted for compensation or hire in an airplane, powered-lift, or rotorcraft where a purpose of the flight is sightseeing. The FAA may consider the following factors in determining whether a flight is a commercial air tour:

\*\*\*\*\*

*Commuter operation* means any scheduled operation conducted by any person operating one of the following types of aircraft with a frequency of operations of at least five round trips per week on at least one route between two or more points according to the published flight schedules:

- (1) Rotorcraft; or
- (2) Airplanes or powered-lift that:
  - (i) Are not turbojet-powered;
  - (ii) Have a maximum passenger-seat configuration of 9 seats or less, excluding each crewmember seat; and
  - (iii) Have a maximum payload capacity of 7,500 pounds or less.

\*\*\*\*\*

*Domestic operation* means any scheduled operation conducted by any person operating any aircraft described in paragraph (1) of this definition at locations described in paragraph (2) of this definition:

- (1) Airplanes or powered-lift that:
  - (i) Are turbojet-powered;
  - (ii) Have a passenger-seat configuration of more than 9 passenger seats, excluding each crewmember seat; or
  - (iii) Have a payload capacity of more than 7,500 pounds.
- (2) Locations:
  - (i) Between any points within the 48 contiguous States of the United States or the District of Columbia; or
  - (ii) Operations solely within the 48 contiguous States of the United States or the District of Columbia; or
  - (iii) Operations entirely within any State, territory, or possession of the United States; or
  - (iv) When specifically authorized by the Administrator, operations between any point within the 48 contiguous States of the United States or the District of Columbia and any specifically au-

thorized point located outside the 48 contiguous States of the United States or the District of Columbia.

\*\*\*\*\*

*Flag operation* means any scheduled operation conducted by any person operating any aircraft described in paragraph (1) of this definition at locations described in paragraph (2) of this definition:

- (1) Airplanes or powered-lift that:
  - (i) Are turbojet-powered;
  - (ii) Have a passenger-seat configuration of more than 9 passenger seats, excluding each crewmember seat; or
  - (iii) Have a payload capacity of more than 7,500 pounds.
- (2) Locations:
  - (i) Between any point within the State of Alaska or the State of Hawaii or any territory or possession of the United States and any point outside the State of Alaska or the State of Hawaii or any territory or possession of the United States, respectively; or
  - (ii) Between any point within the 48 contiguous States of the United States or the District of Columbia and any point outside the 48 contiguous States of the United States and the District of Columbia; or
  - (iii) Between any point outside the U.S. and another point outside the U.S.

\*\*\*\*\*

*On-demand operation* means any operation for compensation or hire that is one of the following:

(1) Passenger-carrying operations conducted as a public charter under part 380 of this chapter or any operations in which the departure time, departure location, and arrival location are specifically negotiated with the customer or the customer’s representative that are any of the following types of operations:

- (i) Common carriage operations conducted with airplanes or powered-lift, including any that are turbojet-powered, having a passenger-seat configuration of 30 seats or fewer, excluding each crewmember seat, and a payload capacity of 7,500 pounds or less. The operations described in this paragraph do not include operations using a specific airplane or powered-lift that is also used in domestic or flag operations and that is so listed in the operations specifications as required by §119.49(a)(4) of this chapter for those operations are considered supplemental operations;
- (ii) Noncommon or private carriage operations conducted with airplanes or powered-lift having a passenger-seat configuration of less than 20 seats, excluding each crewmember seat, and a payload capacity of less than 6,000 pounds; or
- (iii) Any rotorcraft operation.

(2) Scheduled passenger-carrying operations conducted with one of the following types of aircraft, other than turbojet-powered aircraft, with a frequency of operations of less than five round trips per week on at least one route between two or more points according to the published flight schedules:

- (i) Airplanes or powered-lift having a maximum passenger-seat configuration of 9 seats or less, excluding each crewmember seat, and a maximum payload capacity of 7,500 pounds or less; or
- (ii) Rotorcraft.
- (3) All-cargo operations conducted with airplanes or powered-lift having a payload capacity of 7,500 pounds or less, or with rotorcraft.

\*\*\*\*\*

*Supplemental operation* means any common carriage operation for compensation or hire conducted with any aircraft described in paragraph (1) of this definition that is a type of operation described in paragraph (2) of this definition:

- (1) Airplanes or powered-lift that:

- (i) Have a passenger-seat configuration of more than 30 seats, excluding each crewmember seat.
- (ii) Have a payload capacity of more than 7,500 pounds.
- (iii) Are propeller-powered and:
  - (A) Have a passenger-seat configuration of more than 9 seats and less than 31 seats, excluding each crewmember seat; and
  - (B) Are used in domestic or flag operations but are so listed in the operations specifications as required by §119.49(a)(4) of this chapter for such operations.
- (iv) Are turbojet-powered and:
  - (A) Have a passenger seat configuration of 1 or more but less than 31 seats, excluding each crewmember seat; and
  - (B) Are used in domestic or flag operations and are so listed in the operations specifications as required by §119.49(a)(4) of this chapter for such operations.
- (2) Types of operation:
  - (i) Operations for which the departure time, departure location, and arrival location are specifically negotiated with the customer or the customer's representative.
  - (ii) All-cargo operations.
  - (iii) Passenger-carrying public charter operations conducted under part 380 of this chapter.

\*\*\*\*\*

## PART 119 CERTIFICATION: AIR CARRIERS AND COMMERCIAL OPERATORS

- **Change Date:** July 26, 2023
- **Effective Date:** July 26, 2023
- **Source:** Amdt. 119–20, 88 FR 48088

The authority citation for Part 119 is revised to read as follows:

**Authority:** 49 U.S.C. 106(f), 106(g), 40101, 40102, 40103, 40113, 44105, 44106, 44111, 44701–44717, 44722, 44901, 44903, 44904, 44906, 44912, 44914, 44936, 44938, 46103, 46105; sec. 215, Pub. L. 111–216, 124 Stat. 2348.

Amend §119.1 by:

- a. Revising paragraph (a)(2);
- b. Adding paragraph (a)(3); and
- c. Revising paragraphs (e) introductory text, (e)(2), (e)(4)(v), (e)(5), (e)(7) introductory text, and (e)(7)(i), (iii), and (vii).

The revisions and addition read as follows:

### §119.1 Applicability.

- (a) \*\*\*
  - (2) When common carriage is not involved, in operations of any U.S.-registered civil airplane or powered-lift with a seat configuration of 20 or more passengers, or a maximum payload capacity of 6,000 pounds or more; or
  - (3) When noncommon carriage is involved, except as provided in §91.501(b) of this chapter, or in private carriage for compensation or hire, in operations of any U.S.-registered civil airplane or powered-lift with a passenger-seat configuration of less than 20 seats and a payload capacity of less than 6,000 pounds.
- \*\*\*\*\*
- (e) Except for operations when common carriage is not involved conducted with any airplane or powered-lift having a passenger-seat configuration of 20 seats or more, excluding any required crewmember seat, or a payload capacity of 6,000 pounds or more, this part does not apply to—

\*\*\*\*\*

(2) Nonstop Commercial Air Tours that occur in an airplane, powered-lift, or rotorcraft having a standard airworthiness certificate and passenger-seat configuration of 30 seats or fewer and a maximum payload capacity of 7,500 pounds or less that begin and end at the same airport, and are conducted within a 25-statute mile radius of that airport, in compliance with the Letter of Authorization issued under §91.147 of this chapter. For nonstop Commercial Air Tours conducted in accordance with part 136, subpart B, of this chapter, National Parks Air Tour Management, the requirements of this part apply unless excepted in §136.37(g)(2). For Nonstop Commercial Air Tours conducted in the vicinity of the Grand Canyon National Park, Arizona, the requirements of SFAR 50-2, part 93, subpart U, of the chapter and this part, as applicable, apply.

\*\*\*\*\*

(4) \*\*\*

(v) Powered-lift or rotorcraft operations in construction or repair work (but part 119 of this chapter does apply to transportation to and from the site of operations); and

\*\*\*\*\*

(5) Sightseeing flights conducted in hot air balloons or gliders;

\*\*\*\*\*

(7) Powered-lift or rotorcraft flights conducted within a 25 statute mile radius of the airport of takeoff if—

(i) Not more than two passengers are carried in the aircraft in addition to the required flightcrew;

\*\*\*\*\*

(iii) The aircraft used is certificated in the standard category and complies with the 100-hour inspection requirements of part 91 of this chapter;

\*\*\*\*\*

(vii) Cargo is not carried in or on the aircraft;

\*\*\*\*\*

Amend §119.5 by revising paragraphs (b) and (c) to read as follows:

### §119.5 Certifications, authorizations, and prohibitions.

\*\*\*\*\*

(b) A person not authorized to conduct direct air carrier operations, but authorized by the Administrator to conduct operations as a U.S. commercial operator, will be issued an Operating Certificate.

(c) A person not authorized to conduct direct air carrier operations, but authorized by the Administrator to conduct operations when common carriage is not involved as an operator of any U.S.-registered civil airplane or powered-lift with a seat configuration of 20 or more passengers, or a maximum payload capacity of 6,000 pounds or more, will be issued an Operating Certificate.

\*\*\*\*\*

- **Change Date:** April 26, 2024
- **Effective Date:** May 28, 2024
- **Source:** Amdt. 119–21, 89 FR 33109

Revise §119.8 to read as follows:

### §119.8 Safety Management Systems.

Certificate holders authorized to conduct operations under part 121 or 135 of this chapter must have a safety management system that meets the requirements of part 5 of this chapter.

- **Change Date:** July 26, 2023
- **Effective Date:** July 26, 2023
- **Source:** Amdt. 119–20, 88 FR 48088

Amend §119.21 by revising paragraph (a) introductory text to read as follows:

**§119.21 Commercial operators engaged in intrastate common carriage and direct air carriers.**

(a) Each person who conducts airplane or powered-lift operations as a commercial operator engaged in intrastate common carriage of persons or property for compensation or hire in air commerce, or as a direct air carrier, shall comply with the certification and operations specifications requirements in subpart C of this part, and shall conduct its:

\*\*\*\*\*

Amend §119.23 by revising the section heading, paragraphs (a) introductory text, (a)(2), and (b) introductory text to read as follows:

**§119.23 Operators engaged in passenger-carrying operations, cargo operations, or both with airplanes or powered-lift when common carriage is not involved.**

(a) Each person who conducts operations when common carriage is not involved with any airplane or powered-lift having a passenger-seat configuration of 20 seats or more, excluding each crewmember seat, or a payload capacity of 6,000 pounds or more, must, unless deviation authority is issued—

\*\*\*\*\*

(2) Conduct its operations in accordance with the requirements of part 125 of this chapter; and

\*\*\*\*\*

(b) Each person who conducts noncommon carriage (except as provided in §91.501(b) of this chapter) or private carriage operations for compensation or hire with any airplane or powered-lift having a passenger-seat configuration of less than 20 seats, excluding each crewmember seat, and a payload capacity of less than 6,000 pounds, must—

\*\*\*\*\*

Amend §119.49 by revising paragraphs (a)(12), (b)(12), and (c)(11) to read as follows:

**§119.49 Contents of operations specifications.**

(a) \*\*\*

(12) Any authorized deviation or exemption from any requirement of this chapter that applies to the certificate holder.

\*\*\*\*\*

(b) \*\*\*

(12) Any authorized deviation or exemption from any requirement of this chapter that applies to the certificate holder.

\*\*\*\*\*

(c) \*\*\*

(11) Any authorized deviation or exemption from any requirement of this chapter that applies to the certificate holder.

\*\*\*\*\*

Amend §119.65 by revising paragraphs (a)(3) and (b)(2) to read as follows:

**§119.65 Management personnel required for operations conducted under part 121 of this chapter.**

(a) \*\*\*

(3) Chief Pilot for each category of aircraft the certificate holder uses, as listed in §61.5(b)(1) of this chapter.

\*\*\*\*\*

(b) \*\*\*

(2) The number and type of aircraft used; and

\*\*\*\*\*

Revise §119.67 to read as follows:

**§119.67 Management personnel: Qualifications for operations conducted under part 121 of this chapter.**

(a) **Director of Operations.** To serve as Director of Operations under §119.65(a), a person must hold an airline transport pilot certificate and—

(1) If the certificate holder uses large aircraft, at least 3 years of supervisory or managerial experience within the last 6 years in large aircraft, in a position that exercised operational control over any operations conducted under part 121 or 135 of this chapter.

(2) If the certificate holder uses large aircraft, at least 3 years of experience as pilot in command under part 121 or 135 of this chapter in large aircraft in at least one of the categories of aircraft the certificate holder uses, as listed in §61.5(b)(1) of this chapter. In the case of a person becoming Director of Operations for the first time, he or she must have accumulated this experience as pilot in command within the past 6 years.

(3) If the certificate holder uses only small aircraft in its operations, the experience required in paragraphs (a)(1) and (2) of this section may be obtained in either large or small aircraft.

(b) **Chief Pilot.** To serve as Chief Pilot under §119.65(a), a person must:

(1) Hold an airline transport pilot certificate with appropriate ratings in the category of aircraft that the certificate holder uses in its operations under part 121 of this chapter and over which the Chief Pilot exercises responsibility; and

(2) Have at least 3 years of experience as pilot in command in the same category of aircraft that the certificate holder uses, as listed in §61.5(b) of this chapter. The experience as pilot in command described in this paragraph (b)(2) must:

(i) Have occurred within the past 6 years, in the case of a person becoming a Chief Pilot for the first time.

(ii) Have occurred in large aircraft operated under part 121 or 135 of this chapter. If the certificate holder uses only small aircraft in its operation, this experience may be obtained in either large or small aircraft.

(iii) Be in the same category of aircraft over which the Chief Pilot exercises responsibility.

(c) **Director of Maintenance.** To serve as Director of Maintenance under §119.65(a), a person must:

(1) Hold a mechanic certificate with airframe and powerplant ratings;

(2) Have 1 year of experience in a position responsible for returning aircraft to service;

(3) Have at least 1 year of experience in a supervisory capacity under either paragraph (c)(4)(i) or (ii) of this section maintaining the same category and class of aircraft as the certificate holder uses; and

(4) Have 3 years of experience within the past 6 years in one or a combination of the following—

(i) Maintaining large aircraft with 10 or more passenger seats, including, at the time of appointment as Director of Maintenance, experience in maintaining the same category and class of aircraft as the certificate holder uses; or

(ii) Repairing aircraft in a certificated airframe repair station that is rated to maintain aircraft in the same category and class of aircraft as the certificate holder uses.

**(d) Chief Inspector.** To serve as Chief Inspector under §119.65(a), a person must:

(1) Hold a mechanic certificate with both airframe and powerplant ratings, and have held these ratings for at least 3 years;

(2) Have at least 3 years of maintenance experience on different types of large aircraft with 10 or more passenger seats with an air carrier or certificated repair station, 1 year of which must have been as maintenance inspector; and

(3) Have at least 1 year of experience in a supervisory capacity maintaining the same category and class of aircraft as the certificate holder uses.

**(e) Deviation.** A certificate holder may request a deviation to employ a person who does not meet the appropriate airman experience, managerial experience, or supervisory experience requirements of this section if the Manager of the Air Transportation Division or the Manager of the Aircraft Maintenance Division, as appropriate, finds that the person has comparable experience and can effectively perform the functions associated with the position in accordance with the requirements of this chapter and the procedures outlined in the certificate holder's manual. Deviations under this paragraph (e) may be issued after consideration of the size and scope of the operation and the qualifications of the intended personnel. The Administrator may, at any time, terminate any grant of deviation authority issued under this paragraph (e).

## PART 125

### CERTIFICATION AND OPERATIONS: AIRCRAFT HAVING A SEATING CAPACITY OF 20 OR MORE PASSENGERS OR A MAXIMUM PAYLOAD CAPACITY OF 6,000 POUNDS OR MORE; AND RULES GOVERNING PERSONS ON BOARD SUCH AIRCRAFT

► **Change Date:** July 26, 2023

► **Effective Date:** July 26, 2023

► **Source:** Amdt. 125–74, 88 FR 48090

The heading for Part 125 is revised to read as set forth above.

Amend §125.1 by revising paragraphs (a), (b) introductory text, (b)(4), (c), and (e) to read as follows:

#### §125.1 Applicability.

(a) Except as provided in paragraphs (b) through (d) of this section, this part prescribes rules governing the operations of U.S.-registered civil airplanes and powered-lift, when those aircraft have a seating configuration of 20 or more passengers or a maximum payload capacity of 6,000 pounds or more when common carriage is not involved.

(b) The rules of this part do not apply to the operations of aircraft specified in paragraph (a) of this section, when—

\*\*\*\*\*

(4) They are being operated under Part 91 of this chapter by an operator certificated to operate those aircraft under the rules

of part 121, 135, or 137 of this chapter, they are being operated under the applicable rules of part 121 or 135 of this chapter by an applicant for a certificate under part 119 of this chapter or they are being operated by a foreign air carrier or a foreign person engaged in common carriage solely outside the United States under part 91 of this chapter;

\*\*\*\*\*

(c) This part, except §125.247, does not apply to the operation of aircraft specified in paragraph (a) of this section when they are operated outside the United States by a person who is not a citizen of the United States.

\*\*\*\*\*

(e) This part also establishes requirements for operators to take actions to support the continued airworthiness of each aircraft.

Amend §125.23 by revising the introductory text to read as follows:

#### §125.23 Rules applicable to operations subject to this part.

Each person operating an aircraft in operations under this part shall—

\*\*\*\*\*

► **Change Date:** February 16, 2024

► **Effective Date:** April 16, 2024

► **Source:** Amdt. 125–75, 89 FR 12663

Amend §125.75 by revising paragraph (b) to read as follows:

#### §125.75 Airplane flight manual.

\*\*\*\*\*

(b) Each certificate holder shall carry the approved Airplane Flight Manual or the approved equivalent aboard each airplane it operates. A certificate holder may elect to carry a combination of the manuals required by this section and §125.71. If it so elects, the certificate holder may revise the operating procedures sections and modify the presentation of performance from the applicable Airplane Flight Manual if the revised operating procedures and modified performance data presentation are approved by the Administrator. Any approved equivalent must include the information required by §38.23 of this chapter identifying compliance with the fuel efficiency requirements of part 38 of this chapter.

## PART 135

### OPERATING REQUIREMENTS: COMMUTER AND ON DEMAND OPERATIONS AND RULES GOVERNING PERSONS ON BOARD SUCH AIRCRAFT

► **Change Date:** June 18, 2024

► **Effective Date:** July 18, 2024

► **Source:** Amdt. 135–145, 89 FR 51430

Amend §135.3 by revising paragraphs (d)(1) and (2) to read as follows:

#### §135.3 Rules applicable to operations subject to this part.

\*\*\*\*\*

(d) \*\*\*

(1) *Upgrade training.*

(i) Each certificate holder must include in upgrade ground training for pilots, instruction in at least the subjects identified in §121.419(a) of this chapter, as applicable to their assigned duties; and, for pilots serving in crews of two or more pilots, instruction

and facilitated discussion in the subjects identified in §121.419(c) of this chapter.

(ii) Each certificate holder must include in upgrade flight training for pilots, flight training for the maneuvers and procedures required in §121.424(a), (c), (e), and (f) of this chapter; and, for pilots serving in crews of two or more pilots, the flight training required in §121.424(b) of this chapter.

(2) *Initial and recurrent leadership and command and mentoring training.* Certificate holders are not required to include leadership and command training in §§121.409(b)(2)(ii)(F), 121.419(c)(1), 121.424(b) and 121.427(d)(1) of this chapter and mentoring training in §§121.419(c)(2) and 121.427(d)(1) of this chapter in initial and recurrent training for pilots in command who serve in operations that use only one pilot.

\*\*\*\*\*

Revise §135.113 to read as follows:

**§135.113 Passenger occupancy of pilot seat.**

No certificate holder may operate an aircraft type certificated after October 15, 1971, that has a passenger seating configuration, excluding any pilot seat, of more than eight seats if any person other than the pilot in command, a second in command, a company check pilot, or an authorized representative of the Administrator, the National Transportation Safety Board, or the United States Postal Service occupies a pilot seat.

Amend §135.297 by revising paragraph (c)(2) to read as follows:

**§135.297 Pilot in command: Instrument proficiency check requirements.**

\*\*\*\*\*

(c) \*\*\*

(2) The instrument proficiency check must be given by an authorized check pilot or by the Administrator.

\*\*\*\*\*

Amend §135.321 by revising paragraph (a)(2) to read as follows:

**§135.321 Applicability and terms used.**

(a) \*\*\*

(2) Each certificate holder for establishing and maintaining an approved training program for crewmembers, check pilots and instructors, and other operations personnel employed or used by that certificate holder; and

\*\*\*\*\*

Amend §135.323 by revising paragraphs (a)(1) and (4), and (c) to read as follows:

**§135.323 Training program: General.**

(a) \*\*\*

(1) Establish and implement a training program that satisfies the requirements of this subpart and that ensures that each crewmember, aircraft dispatcher, flight instructor, and check pilot is adequately trained to perform his or her assigned duties. Prior to implementation, the certificate holder must obtain initial and final FAA approval of the training program.

\*\*\*\*\*

(4) Provide enough flight instructors, check pilots, and FSTD instructors to conduct required flight training and flight checks and FSTD training courses allowed under this subpart.

\*\*\*\*\*

(c) Each instructor, supervisor, or check pilot who is responsible for a particular ground training subject, segment of flight training, course of training, flight check, or competence check under this part shall certify as to the proficiency and knowledge of the crewmember, flight instructor, or check pilot concerned upon completion of that training or check. That certification shall be made a part of the crewmember's record. When the certification required by this paragraph is made by an entry in a computerized record-keeping system, the certifying instructor, supervisor, or check pilot, must be identified with that entry. However, the signature of the certifying instructor, supervisor, or check pilot is not required for computerized entries.

\*\*\*\*\*

Amend §135.324 by revising paragraph (b)(4) to read as follows:

**§135.324 Training program: Special rules.**

\*\*\*\*\*

(b) \*\*\*

(4) Has sufficient instructor and check pilots qualified under the applicable requirements of §§135.337 through 135.340 to provide training, testing, and checking to persons subject to the requirements of this subpart.

Revise §135.337 to read as follows:

**§135.337 Qualifications: Check pilots.**

(a) For the purposes of this part:

(1) A check pilot (aircraft) is a person who is qualified to conduct flight checks in an aircraft for a particular type aircraft.

(2) A check-pilot (FSTD) is a person who is qualified to conduct flight checks only in an FSTD for a particular type aircraft.

(3) Check pilots are those persons who perform the functions described in §§135.321(a) and 135.323(a)(4) and (c).

(b) No certificate holder may use a person, nor may any person serve as a check pilot in a training program established under this subpart unless, with respect to the aircraft type involved, that person—

(1) Holds the pilot certificates and ratings required to serve as a pilot in command in operations under this part;

(2) Has satisfactorily completed the appropriate training phases for the aircraft, including recurrent training, that are required to serve as a pilot in command in operations under this part;

(3) Has satisfactorily completed the proficiency or competency checks that are required to serve as a pilot in command in operations under this part;

(4) Has satisfactorily completed the applicable training requirements of §135.339;

(5) Has been approved by the Administrator for the check pilot duties involved.

(c) Completion of the requirements in paragraphs (b)(2), (3), and (4) of this section, as applicable, shall be entered in the individual's training record maintained by the certificate holder.

(d) A check pilot (FSTD) must accomplish the following—

(1) Fly at least two flight segments as a required crewmember for the type, class, or category aircraft involved within the 12-month period preceding the performance of any check-pilot duty in an FSTD; or

(2) Satisfactorily complete an approved line-observation program within the period prescribed by that program and that must precede the performance of any check pilot duty in an FSTD.



(e) The flight segments or line-observation program required in paragraph (d) of this section are considered to be completed in the month required if completed in the calendar month before or the calendar month after the month in which they are due.

(f) A person who serves as a required flightcrew member while performing check pilot duties must also meet the requirements of this chapter for the duty position in which they are serving.

Revise §135.338 to read as follows:

**§135.338 Qualifications: Flight instructors.**

(a) For the purposes of this part:

(1) A flight instructor (aircraft) is a person who is qualified to instruct in an aircraft for a particular type, class, or category aircraft.

(2) A flight instructor (FSTD) is a person who is qualified to instruct only in an FSTD for a particular type, class, or category aircraft.

(3) Flight instructors are those instructors who perform the functions described in §§135.321(a) and 135.323(a)(4) and (c).

(b) No certificate holder may use a person, nor may any person serve as a flight instructor in a training program established under this subpart unless, with respect to the type, class, or category aircraft involved, that person—

(1) Holds the pilot certificates and ratings required to serve as a pilot in command in operations under this part;

(2) Has satisfactorily completed the appropriate training phases for the aircraft, including recurrent training, that are required to serve as a pilot in command in operations under this part;

(3) Has satisfactorily completed the proficiency or competency checks that are required to serve as a pilot in command in operations under this part;

(4) Has satisfactorily completed the applicable training requirements of §135.340.

(c) Completion of the requirements in paragraphs (b)(2), (3), and (4) of this section shall be entered in the individual's training record maintained by the certificate holder.

(d) A flight instructor (FSTD) must accomplish the following—

(1) Fly at least two flight segments as a required crewmember for the type, class, or category aircraft involved within the 12-month period preceding the performance of any flight instructor duty in an FSTD; or

(2) Satisfactorily complete an approved line-observation program within the period prescribed by that program preceding the performance of any flight instructor duty in an FSTD.

(e) The flight segments or line-observation program required in paragraph (d) of this section are considered completed in the month required if completed in the calendar month before, or in the calendar month after, the month in which they are due.

(f) A person who serves as a required flightcrew member while performing flight instructor duties must also meet the requirements of this chapter for the duty position in which they are serving.

Amend §135.339 by revising paragraphs (a) introductory text, (a)(1), (c) introductory text, (c)(1), (d), (e) introductory text and (g) introductory text to read as follows:

**§135.339 Initial and transition training and checking: Check pilots.**

(a) No certificate holder may use a person nor may any person serve as a check pilot unless—

(1) That person has satisfactorily completed initial or transition check pilot training; and

\*\*\*\*\*

(c) The initial ground training for check pilots must include the following:

(1) Check pilot duties, functions, and responsibilities.

\*\*\*\*\*

(d) The transition ground training for check pilots must include the approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures applicable to the aircraft to which the check pilot is in transition.

(e) The initial and transition flight training for check pilots (aircraft) must include the following—

\*\*\*\*\*

(g) The initial and transition flight training for check pilots (FSTD) must include the following:

\*\*\*\*\*

Amend §135.340 by revising paragraph (a)(2) and paragraph (g) introductory text to read as follows:

**§135.340 Initial and transition training and checking: Flight instructors.**

(a) \*\*\*

(2) Within the preceding 24 calendar months, that person satisfactorily conducts instruction under the observation of an FAA inspector, an operator check pilot, or an aircrew designated examiner employed by the operator. The observation check may be accomplished in part or in full in an aircraft, in a flight simulator, or in a flight training device.

\*\*\*\*\*

(g) The initial and transition flight training for a flight instructor (FSTD) must include the following:

\*\*\*\*\*