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periods at which it should be cleaned, inspected, adjusted, tested, and lubricated, and the degree of inspection the applicable wear tolerances, and work recommended at these periods. However, the applicant may refer to an accessory, instrument, or equipment manufacturer as the source of this information if the applicant shows that the item has an exceptionally high degree of complexity requiring specialized maintenance techniques, test equipment, or expertise. The recommended overhaul periods and necessary cross references to the Airworthiness Limitations section of the manual must also be included. In addition, the applicant must include an inspection program that includes the frequency and extent of the inspections necessary to provide for the continued airworthiness of the engine.

(7) Troubleshooting information describing probable malfunctions, how to recognize those malfunctions, and the remedial action for those malfunctions.

(8) Information describing the order and method of removing the engine and its parts and replacing parts, with any necessary precautions to be taken. Instructions for proper ground handling, crating, and shipping must also be included.

(9) A list of the tools and equipment necessary for maintenance and directions as to their method of use.

(b) *Engine Overhaul Manual or Section.* (1) Disassembly information including the order and method of disassembly for overhaul.

(2) Cleaning and inspection instructions that cover the materials and apparatus to be used and methods and precautions to be taken during overhaul. Methods of overhaul inspection must also be included.

(3) Details of all fits and clearances relevant to overhaul.

(4) Details of repair methods for worn or otherwise substandard parts and components along with the information necessary to determine when replacement is necessary.

(5) The order and method of assembly at overhaul.

(6) Instructions for testing after overhaul.

(7) Instructions for storage preparation, including any storage limits.

(8) A list of tools needed for overhaul.

A33.4 AIRWORTHINESS LIMITATIONS SECTION

The Instructions for Continued Airworthiness must contain a section titled Airworthiness Limitations that is segregated and clearly distinguishable from the rest of the document. This section must set forth each mandatory replacement time, inspection interval, and related procedure required for type certification. If the Instructions for Continued Airworthiness consist of multiple documents, the section required by this paragraph must be included in the principal manual. This section must contain a legible statement in a prominent location that reads: ''The Airworthiness Limitations section is FAA approved and specifies maintenance required under §§43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.''

[Amdt. 33–9, 45 FR 60181, Sept. 11, 1980, as amended by Amdt. 33–13, 54 FR 34330, Aug. 18, 1989]

PART 34—FUEL VENTING AND EXHAUST EMISSION REQUIREMENTS FOR TURBINE ENGINE POWERED AIRPLANES

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AUTHORITY: 42 U.S.C. 4321 *et seq.*, 7572; 49 U.S.C. 106(g), 40113, 44701–44702, 44704, 44714.

SOURCE: Docket No. 25613, 55 FR 32861, Aug. 10, 1990, unless otherwise noted.

Subpart A—General Provisions

§ 34.1 Definitions.

As used in this part, all terms not defined herein shall have the meaning given them in the Clean Air Act, as amended (42 U.S.C. 7401 et. seq.):

Act means the Clean Air Act, as amended (42 U.S.C. 7401 et. seq.).

Administrator means the Administrator of the Federal Aviation Administration or any person to whom he has delegated his authority in the matter concerned.

Administrator of the EPA means the Administrator of the Environmental Protection Agency and any other officer or employee of the Environmental Protection Agency to whom the authority involved may be delegated.

Aircraft as used in this part means any airplane as defined in 14 CFR part 1 for which a U.S. standard airworthiness certificate or equivalent foreign airworthiness certificate is issued.

Aircraft engine means a propulsion engine which is installed in, or which is manufactured for installation in, an aircraft.

Aircraft gas turbine engine means a turboprop, turbofan, or turbojet aircraft engine.

Class TP means all aircraft turboprop engines.

Class TF means all turbofan or turbojet aircraft engines except engines of Class T3, T8, and TSS.

Class T3 means all aircraft gas turbine engines of the JT3D model family.

Class T8 means all aircraft gas turbine engines of the JT8D model family.

Class TSS means all aircraft gas turbine engines employed for propulsion of aircraft designed to operate at supersonic flight speeds.

Commercial aircraft engine means any aircraft engine used or intended for use by an ''air carrier'' (including those engaged in ''intrastate air transportation'') or a ''commercial operator'' (including those engaged in ''intrastate air transportation'') as these terms are defined in the Federal Aviation Act and the Federal Aviation Regulations.

Commercial aircraft gas turbine engine means a turboprop, turbofan, or turbojet commercial aircraft engine.

Date of manufacture of an engine is the date the inspection acceptance records reflect that the engine is complete and meets the FAA approved type design.

Emission measurement system means all of the equipment necessary to transport the emission sample and measure the level of emissions. This includes the sample system and the instrumentation system.

Engine model means all commercial aircraft turbine engines which are of the same general series, displacement, and design characteristics and are approved under the same type certificate.

Exhaust emissions means substances emitted into the atmosphere from the exhaust discharge nozzle of an aircraft or aircraft engine.

Fuel venting emissions means raw fuel, exclusive of hydrocarbons in the exhaust emissions, discharged from aircraft gas turbine engines during all normal ground and flight operations.

In-use aircraft gas turbine engine means an aircraft gas turbine engine which is in service.

New aircraft turbine engine means an aircraft gas turbine engine which has never been in service.

Power setting means the power or thrust output of an engine in terms of kilonewtons thrust for turbojet and turbofan engines or shaft power in terms of kilowatts for turboprop engines.

Rated output (r0) means the maximum power/thrust available for takeoff at standard day conditions as approved for the engine by the Federal Aviation

Administration, including reheat contribution where applicable, but excluding any contribution due to water injection and excluding any emergency power/thrust rating.

Rated pressure ratio (rPR) means the ratio between the combustor inlet pressure and the engine inlet pressure achieved by an engine operation at rated output.

Reference day conditions means the reference ambient conditions to which the gaseous emissions (HC and smoke) are to be corrected. The reference day conditions are as follows: Temperature=15°C, specific humidity=0.00629 kg H_2 O/kg of dry air, and pressure=101325 Pa.

Sample system means the system which provides for the transportation of the gaseous emission sample from the sample probe to the inlet of the instrumentation system.

Shaft power means only the measured shaft power output of a turboprop engine.

Smoke means the matter in exhaust emissions which obscures the transmission of light.

Smoke number (SN) means the dimensionless term quantifying smoke emissions.

Standard day conditions means standard ambient conditions as described in the United States Standard Atmosphere 1976, (i.e., temperature=15° C, specific humidity=0.00 kg H_20/kg dry air, and pressure=101325 Pa.)

Taxi/idle (in) means those aircraft operations involving taxi and idle between the time of landing roll-out and final shutdown of all propulsion engines.

Taxi/idle (out) means those aircraft operations involving taxi and idle between the time of initial starting of the propulsion engine(s) used for the taxi and the turn onto the duty runway.

[Doc. No. 25613, 55 FR 32861, Aug. 10, 1990; 55 FR 37287, Sept. 10, 1990]

§ 34.2 Abbreviations.

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

EPA United States Environmental Protection Agency
FAA Federal Aviation Administration, United States Department of Transportation
HC Hydrocarbon(s)
HP Horsepower
hr Hour(s)
H_20 water
kg Kilogram(s)
kJ Kilojoule(s)
LTO Landing and takeoff
min Minute(s)
Pa Pascal(s)
rO Rated output
rPR Rated pressure ratio
sec Second(s)
SP Shaft power
SN Smoke number
T Temperature, degrees Kelvin
TIM Time in mode
W Watt(s)
°C Degrees Celsius
% Percent

§ 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 87. This authority has been delegated to the Administrator of the FAA (49 CFR 1.47).

(c) *U.S. airplanes.* This Federal Aviation Regulation (FAR) 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) *Foreign airplanes.* Pursuant to the definition of ''aircraft'' in 40 CFR 87.1(c), this FAR 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 FAR applies only to those foreign civil airplanes that, if registered in the United States, would be required by applicable Federal Aviation Regulations to have a U.S. standard airworthiness certificate in order to conduct the operations intended for the airplane. Pursuant to 40 CFR 87.3(c), this FAR 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 87 refers to title 40 of the Code of Federal Regulations, chapter I—Environmental Protection Agency, part 87, Control of Air Pollution from Aircraft and Aircraft Engines (40 CFR part 87).

(f) This part contains regulations to ensure compliance with certain standards contained in 40 CFR part 87. 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 87 that is made applicable to an aircraft under this FAR, the Administrator of FAA will grant a general administrative waiver of its more stringent requirements until this FAR is amended to reflect the more relaxed requirements prescribed by EPA.

(g) Unless otherwise stated, all terminology and abbreviations in this FAR that are defined in 40 CFR part 87 have the meaning specified in that part, and all terms in 40 CFR part 87 that are not defined in that part but that are used in this FAR have the meaning given them in the Clean Air Act, as amended by Public Law 91–604.

(h) All interpretations of 40 CFR part 87 that are rendered by the EPA also apply to this FAR.

(i) If the EPA, under 40 CFR 87.3(a), approves or accepts any testing and sampling procedures or methods, analytical techniques, or related equipment not identical to those specified in that part, this FAR requires an applicant to show that such alternate, equivalent, or otherwise nonidentical 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 87.

(j) If the EPA, under 40 CFR 87.5, prescribes special test procedures for any aircraft or aircraft engine that is not susceptible to satisfactory testing by the procedures in 40 CFR part 87, the applicant must show the Administrator that those special test procedures have been complied with.

(k) Wherever 40 CFR part 87 requires agreement, acceptance, or approval by the Administrator of the EPA, this FAR 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 FAR.

(m) If EPA, by regulation or exemption, relaxes a provision of 40 CFR part 87 that is implemented in this FAR, no state or political subdivision thereof may adopt or attempt to enforce the terms of this FAR that are superseded by the relaxed requirement.

(n) If any provision of this FAR is rendered inapplicable to a foreign aircraft as provided in 40 CFR 87.3(c) (international agreements), and § 34.3(d) of this FAR, 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 FAR 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 for 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 FAR.

[Doc. No. 25613, 55 FR 32861, Aug. 10, 1990; 55 FR 37287, Sept. 10, 1990]

§ 34.4 [Reserved]

§ 34.5 Special test procedures.

The Administrator or the Administrator of the EPA may, upon written application by a manufacturer or operator of aircraft or aircraft engines, approve test procedures for any aircraft or aircraft engine that is not susceptible to satisfactory testing by the procedures set forth herein. Prior to taking action on any such application, the Administrator or the Administrator of the EPA shall consult with the other.

§ 34.6 Aircraft safety.

(a) The provisions of this part will be revised if at any time the Administrator determines that an emission standard cannot be met within the specified time without creating a safety hazard.

(b) Consistent with 40 CFR 87.6, 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.

§ 34.7 Exemptions.

Notwithstanding part 11 of the Federal Aviation Regulations (14 CFR part 11), all petitions for rulemaking involving either the substance of an emission standard or test procedure prescribed by the EPA that is incorporated in this FAR, or the compliance date for such standard or procedure, must be submitted to the EPA. Information copies of such petitions are invited by the FAA. Petitions for rulemaking or exemption involving provisions of this FAR that do not affect the substance or the compliance date of an emission standard or test procedure that is prescribed by the EPA, and petitions for exemptions under the provisions for which the EPA has specifically granted exemption authority to the Secretary of Transportation are subject to part 11 of the Federal Aviation Regulations (14 CFR part 11). Petitions for rulemaking or exemptions involving these FARs must be submitted to the FAA.

(a) *Exemptions based on flights for short durations at infrequent intervals.* The emission standards of this part do not apply to engines which power aircraft operated in the United States for short durations at infrequent intervals. Such operations are limited to:

(1) Flights of an aircraft for the purpose of export to a foreign country, including any flights essential to demonstrate the integrity of an aircraft prior to a flight to a point outside the United States.

(2) Flights to a base where repairs, alterations or maintenance are to be performed, or to a point of storage, or for the purpose of returning an aircraft to service.

(3) Official visits by representatives of foreign governments.

(4) Other flights the Administrator determines, after consultation with the Administrator of the EPA, to be for short durations at infrequent intervals. A request for such a determination shall be made before the flight takes place.

(b) *Exemptions for very low production engine models.* The emissions standards of this part do not apply to engines of very low production after the date of applicability. For the purpose of this part, ''very low production'' is limited to a maximum total production for United States civil aviation applications of no more than 200 units covered by the same type certificate after January 1, 1984. Engines manufactured under this provision must be reported to the FAA by serial number on or before the date of manufacture and exemptions granted under this provision are not transferable to any other engine.

(c) *Exemptions for new engines in other categories.* The emissions standards of this part do not apply to engines for

which the Administrator determines, with the concurrence of the Administrator of the EPA, that application of any standard under §34.21 is not justified, based upon consideration of—

(1) Adverse economic impact on the manufacturer;

(2) Adverse economic impact on the aircraft and airline industries at large;

(3) Equity in administering the standards among all economically competing parties;

(4) Public health and welfare effects; and

(5) Other factors which the Administrator, after consultation with the Administrator of the EPA, may deem relevant to the case in question.

(d) *Time-limited exemptions for in-use engines.* The emissions standards of this part do not apply to aircraft or aircraft engines for time periods which the Administrator determines, with the concurrence of the Administrator of the EPA, that any applicable standard under §34.11(a), or §34.31(a), should not be applied based upon consideration of—

(1) Documentation demonstrating that all good faith efforts to achieve compliance with such standard have been made;

(2) Documentation demonstrating that the inability to comply with such standard is due to circumstances beyond the control of the owner or operator of the aircraft; and

(3) A plan in which the owner or operator of the aircraft shows that he will achieve compliance in the shortest time which is feasible.

(e) Applications for exemption from this part shall be submitted in duplicate to the Administrator in accordance with the procedures established by the Administrator in part 11.

(f) The Administrator shall publish in the FEDERAL REGISTER the name of the organization to whom exemptions are granted and the period of such exemptions.

(g) No state or political subdivision thereof may attempt to enforce a standard respecting emissions from an aircraft or engine if such aircraft or engine has been exempted from such standard under this part.

Subpart B—Engine Fuel Venting Emissions (New and In-Use Aircraft Gas Turbine Engines)

§34.10 Applicability.

(a) The provisions of this subpart are applicable to all new aircraft gas turbine engines of classes T3, T8, TSS, and TF equal to or greater than 36 kilonewtons (8090 pounds) rated output, manufactured on or after January 1, 1974, and to all in-use aircraft gas turbine engines of classes T3, T8, TSS, and TF equal to or greater than 36 kilonewtons (8090 pounds) rated output manufactured after February 1, 1974.

(b) The provisions of this subpart are also applicable to all new aircraft gas turbine engines of class TF less than 36 kilonewtons (8090 pounds) rated output and class TP manufactured on or after January 1, 1975, and to all in-use aircraft gas turbine engines of class TF less than 36 kilonewtons (8090 pounds) rated output and class TP manufactured after January 1, 1975.

§34.11 Standard for fuel venting emissions.

(a) No 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.

(b) Conformity with the standard set forth in paragraph (a) of this section shall be determined by inspection of the method designed to eliminate these emissions.

(c) As applied to an airframe or an engine, any manufacturer or operator may show compliance with the 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:

(1) Incorporation of an FAA-approved system that recirculates the fuel back into the fuel system.

(2) Capping or securing the pressurization and drain valve.

(3) Manually draining the fuel from a holding tank into a container.

Subpart C—Exhaust Emissions (New Aircraft Gas Turbine Engines)

§ 34.20 Applicability.

The provisions of this subpart are applicable to all aircraft gas turbine engines of the classes specified beginning on the dates specified in § 34.21.

§ 34.21 Standards for exhaust emissions.

(a) Exhaust emissions of smoke from each new aircraft gas turbine engine of class T8 manufactured on or after February 1, 1974, shall not exceed a smoke number (SN) of 30.

(b) Exhaust emissions of smoke from each new aircraft gas turbine engine of class TF and of rated output of 129 kilonewtons (29,000 pounds) thrust or greater, manufactured on or after January 1, 1976, shall not exceed

$SN=83.6\ (rO)^{-0.274}$ (rO is in kilonewtons).

(c) Exhaust emission of smoke from each new aircraft gas turbine engine of class T3 manufactured on or after January 1, 1978, shall not exceed a smoke number (SN) of 25.

(d) Gaseous exhaust emissions from each new commercial aircraft gas turbine engine that is manufactured on or after January 1, 1984, shall not exceed:

(1) Classes, TF, T3, T8 engines with rated output equal to or greater than 26.7 kilonewtons (6000 pounds)

Hydrocarbons: 19.6 grams/kilonewton rO.

(2) Class TSS

Hydrocarbons: $140(0.92)^{rPR}$ grams/kilonewton rO.

(e) Smoke exhaust emissions from each gas turbine engine of the classes specified below shall not exceed:

(1) Class TF of rated output less than 26.7 kilonewtons (6000 pounds) manufactured on or after August 9, 1985

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

(2) Classes T3, T8, TSS, and TF of rated output equal to or greater than 26.7 kilonewtons (6000 pounds) manufactured on or after January 1, 1984

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

(3) Class TP of rated output equal to or greater than 1,000 kilowatts (1340 HP) manufactured on or after January 1, 1984

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

(f) The standards set forth in paragraphs (a), (b), (c), (d), and (e) of this section refer to a composite gaseous emission sample representing the operating cycles set forth in the applicable sections of subpart G of this part, and exhaust smoke emissions emitted during operations of the engine as specified in the applicable sections of subpart H of this part, measured and calculated in accordance with the procedures set forth in those subparts.

[Doc. No. 25613, 55 FR 32861, Aug. 10, 1990; 55 FR 37287, Sept. 10, 1990]

Subpart D—Exhaust Emissions (In-use Aircraft Gas Turbine Engines)

§ 34.30 Applicability.

The provisions of this subpart are applicable to all in-use aircraft gas turbine engines certificated for operation within the United States of the classes specified, beginning on the dates specified in § 34.31.

§ 34.31 Standards for exhaust emissions.

(a) Exhaust emissions of smoke from each in-use aircraft gas turbine engine of Class T8, beginning February 1, 1974, shall not exceed a smoke number (SN) of 30.

(b) Exhaust emissions of smoke from each in-use aircraft gas turbine engine of Class TF and of rated output of 129 kilonewtons (29,000 pounds) thrust or greater, beginning January l, 1976, shall not exceed

$SN=83.6(rO)^{-0.274}$ (rO is in kilonewtons).

(c) The standards set forth in paragraphs (a) and (b) of this section refer to exhaust smoke emissions emitted during operations of the engine as specified in the applicable section of subpart H of this part, and measured and

calculated in accordance with the procedure set forth in this subpart.

Subparts E–F [Reserved]

Subpart G—Test Procedures for Engine Exhaust Gaseous Emissions (Aircraft and Aircraft Gas Turbine Engines)

§34.60 Introduction.

(a) Except as provided under §34.5, the procedures described in this subpart shall constitute the test program used to determine the conformity of new aircraft gas turbine engines with the applicable standards set forth in this part.

(b) The test consists of operating the engine at prescribed power settings on an engine dynamometer (for engines producing primarily shaft power) or thrust measuring test stand (for engines producing primarily thrust). The exhaust gases generated during engine operation must be sampled continuously for specific component analysis through the analytical train.

(c) The exhaust emission test is designed to measure hydrocarbons, carbon monoxide and carbon dioxide concentrations, and to determine mass emissions through calculations during a simulated aircraft landing-takeoff (LTO) cycle. The LTO cycle is based on time in mode data during high activity periods at major airports. The test for non-TSS class propulsion engines consists of at least the following four modes of engine operations: taxi/idle, takeoff, climbout, and approach. The TSS class propulsion engine test requires an additional mode for descent. The mass emission for the modes are combined to yield the reported values.

(d) When an engine is tested for exhaust emissions on an engine dynamometer or test stand, the complete engine (with all accessories which might reasonably be expected to influence emissions to the atmosphere installed and functioning), shall be used if not otherwise prohibited by §34.62(a)(2). Use of service air bleed and shaft power extraction to power auxiliary, gearbox-mounted components required to drive aircraft systems is not permitted.

(e) Other gaseous emissions measurement systems may be used if shown to yield equivalent results and if approved in advance by the Administrator or the Administrator of the EPA.

§34.61 Turbine fuel specifications.

For exhaust emission testing, fuel meeting the specifications listed below shall be used. Additives used for the purpose of smoke suppression (such as organometallic compounds) shall not be present.

SPECIFICATION FOR FUEL TO BE USED IN AIRCRAFT TURBINE ENGINE EMISSION TESTING

Property	Allowable range of values
Specific Gravity at 15°C	0.78–0.82.
Distillation Temperature, °C	
10% Boiling Point	160–201.
Final Boiling Point	240–285.
Net Heat of Combustion, kj/Kg	42,860–43,500.
Aromatics, Volume %	15–20.
Naphthalenes, Volume %	1.0–3.0.
Smoke Point, mm	20–28.
Hydrogen, Mass %	13.4–14.0.
Sulphur, Mass %	less than 0.3%.
Kinematic Viscosity at—20° C, mm^2/sec.	4.0–6.5.

[Doc. No. 25613, 55 FR 32861, Aug. 10, 1990; 55 FR 37287, Sept. 10, 1990]

§34.62 Test procedure (propulsion engines).

(a)(1) The engine shall be tested in each of the following engine operating modes which simulate aircraft operation to determine its mass emission rates. The actual power setting, when corrected to standard day conditions, should correspond to the following percentages of rated output. Analytical correction for variations from reference day conditions and minor variations in actual power setting should be specified and/or approved by the Administrator:

Mode	Class		
	TP	TF, T3, T8	TSS
Taxi/idle	(*)	(*)	(*)
Takeoff	100	100	100
Climbout	90	85	65
Descent	NA	NA	15
Approach	30	30	34

*See paragraph (a) of this section.

(2) The taxi/idle operating modes shall be carried out at a power setting

of 7 percent rated thrust unless the Administrator determines that the unique characteristics of an engine model undergoing certification testing at 7 percent would result in substantially different HC emissions than if the engine model were tested at the manufacturers' recommended idle power setting. In such cases the Administrator shall specify an alternative test condition.

(3) The times in mode (TIM) shall be as specified below:

Mode	Class		
	TP	TF, T3, T8	TSS
Taxi/idle	26.0 Min.	26.0 Min.	26.0 Min.
Takeoff	0.5	0.7	1.2
Climbout	2.5	2.2	2.0
Descent	N/A	N/A	1.2
Approach	4.5	4.0	2.3

(b) Emissions testing shall be conducted on warmed-up engines which have achieved a steady operating temperature.

[Doc. No. 25613, 55 FR 32861, Aug. 10, 1990; 55 FR 37287, Sept. 10, 1990]

§ 34.63 [Reserved]

§ 34.64 Sampling and analytical procedures for measuring gaseous exhaust emissions.

The system and procedures for sampling and measurement of gaseous emissions shall be done in accordance with Appendices 3 and 5 to ICAO Annex 16, Environmental Protection, Volume II—Aircraft Engine Emissions, First Edition, June 1981, effective February 18, 1982. This incorporation by reference was approved by the Director of the FEDERAL REGISTER in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. This document can be obtained from the International Civil Aviation, P.O. Box 400, Succursale: Place de L'Aviation Internationale, 1000 Sherbrooke Street West, Montreal, Quebec, Canada H3H 2R2. Copies may be inspected at the FAA Office of the Chief Counsel, Rules Docket, room 916, Federal Aviation Administration Headquarters Building, 800 Independence Avenue, SW., Washington, DC, or at the FAA New England Regional Office, 12 New England Executive Park, Burlington, Massachusetts, or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

[Doc. No. 25613, 55 FR 32861, Aug. 10, 1990; 55 FR 37287, Sept. 10, 1990, as amended by Amdt. 34–1, 60 FR 34077, June 29, 1995]

§§ 34.65—34.70 [Reserved]

§ 34.71 Compliance with gaseous emission standards.

Compliance with each gaseous emission standard by an aircraft engine shall be determined by comparing the pollutant level in grams/kilonewton/thrust/cycle or grams/kilowatt/cycle as calculated pursuant to § 34.64 with the applicable emission standard under this part. An acceptable alternative to testing every engine is described in Appendix 6 to ICAO Annex 16, Environmental Protection, Volume II—Aircraft Engine Emissions, First Edition, June 1981, effective February 18, 1982. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. This document can be obtained from the address listed in § 34.64. Other methods of demonstrating compliance may be approved by the Administrator with the concurrence of the Administrator of the EPA.

[Doc. No. 27686, 60 FR 34077, June 29, 1995]

Subpart H—Test Procedures for Engine Smoke Emissions (Aircraft Gas Turbine Engines)

§ 34.80 Introduction.

Except as provided under § 34.5, the procedures described in this subpart shall constitute the test program to be used to determine the conformity of new and in-use gas turbine engines with the applicable standards set forth in this part. The test is essentially the same as that described in §§ 34.60–34.62, except that the test is designed to determine the smoke emission level at various operating points representative of engine usage in aircraft. Other smoke measurement systems may be used if shown to yield equivalent results and if approved in advance by the Administrator or the Administrator of the EPA.

§ 34.81 Fuel specifications.

Fuel having specifications as provided in § 34.61 shall be used in smoke emission testing.

§ 34.82 Sampling and analytical procedures for measuring smoke exhaust emissions.

The system and procedures for sampling and measurement of smoke emissions shall be done in accordance with Appendix 2 to ICAO Annex 16, Environmental Protection, Volume II—Aircraft Engine Emissions, First Edition, June 1981, effective February 18, 1982. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and l CFR part 51. This document can be obtained from the International Civil Aviation, P.O. Box 400, Succursale: Place de L' Aviation Internationale, 1000 Sherbrooke Street West, Montreal, Quebec, Canada H3H 2R2. Copies may be inspected at the FAA Office of the Chief Counsel, Rules Docket, room 916, Federal Aviation Administration Headquarters Building, 800 Independence Avenue, SW., Washington, DC, or at the FAA New England Regional Office, 12 New England Executive Park, Burlington, Massachusetts, or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

[Doc. No. 25613, 55 FR 32861, Aug. 10, 1990; 55 FR 37287, Sept. 10, 1990; Amdt. 34–1, 60 FR 34077, June 29, 1995]

§§ 34.83—34.88 [Reserved]

§ 34.89 Compliance with smoke emission standards.

Compliance with each smoke emission standard shall be determined by comparing the plot of the smoke number as a function of power setting with the applicable emission standard under this part. The smoke number at every power setting must be such that there is a high degree of confidence that the standard will not be exceeded by any engine of the model being tested. An acceptable alternative to testing every engine is described in Appendix 6 to ICAO Annex 16, Environmental Protection, Volume II—Aircraft Engine Emissions, First Edition, June 1981, effective February 18, 1982. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. This document can be obtained from the address listed in § 34.64. Other methods of demonstrating compliance may be approved by the Administrator with the concurrence of the Administrator of the EPA.

[Doc. No. 25613, 55 FR 32861, Aug. 10, 1990, as amended by Amdt. 34–1, 60 FR 34077, June 29, 1995]

PART 35—AIRWORTHINESS STANDARDS: PROPELLERS

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APPENDIX A TO PART 35—INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

AUTHORITY: 49 U.S.C. 106(g), 40113, 44701–44702, 44704.

SOURCE: Docket No. 2095, 29 FR 7458, June 10, 1964, unless otherwise noted.