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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration.

14 CFR Part 25

[Docket Nos. FAA-2002-13859, FAA-2002-11272, FAA-2002-11271, FAA-2002-13438, FAA-2002-12244; Amendment No. 25-115]

RIN: 2120-AI35

Miscellaneous Flight Requirements; Powerplant Installation Requirements; Public Address System; Trim Systems and Protective Breathing Equipment; and, Powerplant Controls

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA amends the regulations governing airworthiness standards for transport category airplanes in six areas: miscellaneous flight requirements; powerplant installations; the public address system; trim systems; protective breathing equipment (PBE); and design requirements for powerplant valves controlled from the flight deck. Adoption of these amendments eliminates the regulatory differences between the airworthiness standards of the U.S. and the Joint Aviation Requirements (JAR) of Europe. Currently, airplane manufacturers must satisfy both the U.S. and European airworthiness requirements to certificate transport category airplanes in the U.S. and Europe. Because U.S. manufacturers of transport category airplanes already meet the more stringent requirements of the JAR, adoption of these amendments will not affect current industry design practices.

DATE: This amendment becomes effective [*Insert date 30 days after date of publication in the Federal Register.*]

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SUPPLEMENTARY INFORMATION:

Availability of Rulemaking Documents

You can get an electronic copy using the Internet by:

(1) Searching the Department of Transportation's electronic Docket Management System (DMS) web page (http://dms.dot.gov/search);

(2) Visiting the Office of Rulemaking's web page at http://.faa.gov/avr/arm/index.cfm; or

(3) Accessing the Government Printing Office's web page at http://www.access.gpo.gov/su_docs/aces/aces140.html.

You can also request a copy from the Federal Aviation Administration, Office of Rulemaking, ARM-1, 800 Independence Avenue S.W., Washington, DC 20591 [(202) 267-9680]. Be sure to identify the amendment number or docket number of this rulemaking.

Small Business Regulatory Enforcement Fairness Act

The Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 requires FAA to comply with small entity requests for information or advice about compliance with statutes and regulations within our jurisdiction. If you are a small entity

and have a question regarding this document you may contact your local FAA official or the person listed under FOR FURTHER INFORMATION CONTACT. You can find out more about SBREFA on the Internet at http://www.faa.gov/avr/arm/sbrefa.htm, or by e-mailing us at 9-AWA-SBREFA@faa.gov.

Background

This final rule responds to recommendations of the Aviation Rulemaking Advisory Committee (ARAC) submitted under the FAA's Fast Track Harmonization Program. It amends thirteen sections of the regulations governing airworthiness standards for transport category airplanes concerning: miscellaneous flight requirements; powerplant installations; the public address system; trim systems; protective breathing equipment (PBE); and design requirements for powerplant valves controlled from the flight deck. The FAA proposed these changes in five notices of proposed rulemaking (NPRM). The notices and the affected sections are listed in the table below.

Change No.	14 CFR Section No.	Section Title	Notice No.	Federal Register Publication/ Publication Date
1	§ 25.111(c)(4)	Takeoff path.	02-01	67 FR 1846 01/14/2002
2	§ 25.147 (c)(2)	Directional and lateral control (lateral control; general).		
3	§ 25.161(c)(2)	Trim (longitudinal).		
4	§ 25.161(e)	Trim (airplanes with four or more engines).		
5	§ 25.175(d)	Static longitudinal stability (landing).		
6	§ 25.945(b)(5)	Thrust or power augmentation system (fluid tanks).	02-02	67 FR 4856 01/31/2002
7	§ 25.973(d)	Fuel tank filler connection.		

8	§ 25.1181(b)	Designated fire zones; regions included.		
9	§ 25.1305(a)(7) and (d)(2)	Powerplant instruments (for all airplanes); (for turbojet engine powered airplanes).		
10	§ 25.1423	Public address system.	02-18	67 FR 70510 11/22/2002
11	§ 25.677	Trim systems.	02-15	67 FR 61836 10/02/2002
12	§ 25.1439	Protective breathing equipment.		
13	§ 25.1141	Powerplant controls; general.	02-08	67 FR 30820 05/08/2002

In these notices you will find a history of the problems and discussions of the safety considerations supporting this rule. You also will find a discussion of the current requirements and why they do not adequately address the problem. The NPRMs refer to the ARAC recommendations upon which we relied in developing the proposed rules. The NPRMs also discuss each alternative that we considered and the reasons for rejecting the ones we did not adopt.

The background material in the NPRMs contains the basis and rationale for this rule and, except where we have specifically expanded on the background elsewhere in this preamble, supports this final rule as if it were contained here. We refer inquiries regarding the intent of the requirements to the background in the NPRMs as though it was in the final rule itself. It is therefore not necessary to repeat the background in this document.

History

Title 14 of the Code of Federal Regulations (CFR) part 25 contains the airworthiness standards for type certification of transport category airplanes. These

standards apply to airplanes manufactured within the U.S. for use by U.S. registered operators, and airplanes manufactured in other countries and imported to the U.S. under a bilateral agreement. Manufacturers of transport category airplanes must show that each airplane they produce of a different type design complies with the applicable part 25 standards.

Joint Aviation Requirements (JAR)-25 contains the European airworthiness standards for type certification of transport category airplanes. The Joint Aviation Authorities (JAA) of Europe developed these standards, which are based on part 25, to provide a common set of airworthiness standards within the European aviation community. Thirty-seven European countries accept airplanes type certificated to the JAR-25 standards, including airplanes manufactured in the U.S. that are type certificated to JAR-25 standards for export to Europe.

Although part 25 and JAR-25 are similar, they are not identical in every respect. When airplanes are type certificated to both sets of standards, the differences between part 25 and JAR-25 can result in substantial added costs to manufacturers and operators. These added costs, however, often do not bring about an increase in safety.

Recognizing that a common set of standards would not only benefit the aviation industry economically, but also preserve the necessary high level of safety, the FAA and the JAA began an effort in 1988 to "harmonize" their respective aviation standards.

After beginning the first steps toward harmonization, the FAA and JAA soon realized that traditional methods of rulemaking and accommodating different administrative procedures was insufficient to make noticeable progress toward fulfilling the harmonization goal. The FAA identified the ARAC as an ideal vehicle for helping to

resolve harmonization issues, and in 1992 the FAA tasked ARAC to undertake the entire harmonization effort.

Despite the work that ARAC has undertaken to address harmonization, there remain a large number of regulatory differences between part 25 and JAR-25. The current harmonization process is costly and time-consuming for industry, the FAA, and the JAA. Industry has expressed a strong desire to complete the harmonization program as quickly as possible to alleviate the drain on their resources and finally to establish one acceptable set of standards.

Recently, representatives of the FAA and JAA proposed an accelerated process to reach harmonization, the "Fast Track Harmonization Program." The FAA initiated the Fast Track Harmonization Program on November 26, 1999. This rulemaking has been identified as a "fast track" project.

Further details on ARAC, and its role in harmonization rulemaking activity, and the Fast Track Harmonization Program can be found in the tasking statement (64 FR 66522, November 26, 1999) and the first NPRM published under this program, Fire Protection Requirements for Powerplant Installations on Transport Category Airplanes (65 FR 36978, June 12, 2000).

Related Activity

The new European Aviation Safety Authority (EASA) was established and formally came into being on September 28, 2003. The JAA worked with the European Commission (EC) to develop a plan to ensure a smooth transition from JAA to the EASA. As part of the transition, the EASA will absorb all functions and activities of the JAA, including its efforts to harmonize JAA regulations with those of the U.S. This rule

is a result of the FAA and JAA harmonization rulemaking activities. It adopts the more stringent requirements of the JAR standards. These JAR standards have already been incorporated into the EASA "Certification Specifications for Large Aeroplanes" CS-25, in similar if not identical language. The EASA CS-25 became effective on October 17, 2003.

Discussion of the Comments

Miscellaneous Flight Requirements, RIN 2120-AH39

On January 14, 2002, the FAA published a notice of proposed rulemaking (Notice No. 02-01, 67 FR 1846) entitled "Miscellaneous Flight Requirements." The NPRM proposed to amend five sections of 14 CFR part 25 regarding transport category airplanes miscellaneous flight requirements. The amendments harmonize these standards with the comparable JAR-25 standards. The affected sections are:

§ 25.111(c)(4), "Takeoff path"

§ 25.147(c)(2), "Directional and lateral control"

§ 25.161(c)(2), "Trim (longitudinal)"

§ 25.161(e), "Trim (four or more engines)"

§ 25.175(d), "Static longitudinal stability"

The FAA received one comment in response to the proposed rule. The commenter fully supports the proposal.

On November 26, 2002, the FAA published a final rule (67 FR 70812) entitled, "1-g Stall Speed as the Basis for Compliance With Part 25 of the Federal Aviation Regulations." This final rule amended the airworthiness standards for transport category airplanes to redefine the reference stall speed as a speed not less than the 1-g stall speed,

instead of the minimum speed obtained in a stalling maneuver. The rule became effective December 26, 2002.

Included in the amendment were changes to operating speeds in § 25.161(c)(2), and § 25.175(d)(4), to reflect the redefinition of the reference stall speed, specifically:

§ 25.161(c)(2), the expression, "1.4 V_{S1}" revised to read "1.3 V_{SR1}."

§ 25.175(d)(4), the expression, "1.4 V_{S0}" revised to read "1.3 V_{SR0}."

The FAA adopts the changes as proposed in the NPRM, Notice No. 02-01, revised to reflect the reference stall speed adopted by the 1-g stall speed final rule.

Revisions to Various Powerplant Installation Requirements for Transport Category Airplanes, RIN 2120-AH37

On January 31, 2002, the FAA published a Notice of Proposed Rulemaking (Notice No. 02-02, 67 FR 4856) entitled, "Revisions to Various Powerplant Installation Requirements for Transport Category Airplanes." The FAA proposed to amend four sections of 14 CFR part 25 regarding airworthiness standards for powerplant installations on transport category airplanes. The amendments will harmonize these standards with the comparable JAR-25 standards. The affected sections are:

§ 25.945(b)(5) Thrust or power augmentation system

§ 25.973(d) Fuel tank filler connection

§ 25.1181(b) Designated fire zones; regions included

§ 25.1305(a)(7) and (d)(2) Powerplant instruments

General Comments

Three commenters responded including a U.S. airplane manufacturer, a foreign airworthiness authority, and a U.S. industry association representing many groups in the

aviation industry. The U.S. airplane manufacturer agreed with the proposed rule without further comment. The other two commenters disagreed with portions of the proposal and provided the following comments and recommendations for change.

Section-by-Section Discussion

§ 25.1181(b), Designated fire zones; regions included.

Comment: One commenter, a foreign airworthiness authority, opposes the inclusion of § 25.863 to the existing cross-reference list contained in § 25.1181(b). The commenter believes the agency is trying to bolster regulatory deficiencies in § 25.1185 "Flammable fluids" by making the general "Flammable fluid fire protection" requirements of § 25.863 applicable to "Designated Fire Zones." The commenter suggests amending § 25.1185 rather than cross-referencing § 25.863 in § 25.1181(b). The commenter states that "a gradual implementation of fire protection measures should be commensurate with hazards." The commenter believes the proposed cross-reference would lessen the distinction between the flammable fluid fire protection provisions required for "Designated Fire Zones" and those required for other flammable fluid leakage zones. The commenter believes that because of this loss of distinction, one could argue that meeting the general objective requirements of § 25.863 provides an equivalent level of safety to meeting the more specific prescriptive requirements of §§ 25.1185 through 25.1203. The commenter provides the following as an example:

> "§ 25.863(c) If action is required to prevent or counteract a fluid fire [. . .] quick acting means must be provided to alert the crew."
>
> "§ 25.1203(a) There must be approved, quick acting fire or overheat detectors [. . .] in numbers and locations ensuring prompt detection of fire in those zones."

FAA Reply: The FAA uses the following definitions in our response:

Designated Fire Zone (DFZ). The areas listed in § 25.1181:

- the engine power section;
- except for reciprocating engines, any complete powerplant compartment in which no isolation is provided between the engine power section and the engine accessory section;
- the engine accessory section;
- the APU compartment;
- any fuel burning heater (or combustion equipment described in § 25.859);
- the compressor and accessory sections of turbine engines; and
- the combustor, turbine and tailpipe sections of turbine engine installations that contain lines or components carrying flammable fluids.

Fire Zone. A flammable fluid leakage zone that contains a nominal ignition source and is not a DFZ.

Flammable Fluid Leakage Zone. Any area where flammable liquids or vapors are not intended to be present, but where they might exist due to leakage from flammable fluid-carrying components (e.g. leakage from tanks, lines, etc.).

The purpose of the proposal is not to change the applicability of § 25.863 but rather to make it clear that § 25.863, by its wording and nature, is applicable to any area subject to flammable fluid leakage, including DFZs. The requirements of § 25.863 are applicable to DFZs in addition to, not instead of, the requirements of §§ 25.1185 through 25.1203. Consequently, applying the requirements of § 25.863 to DFZs, especially the requirement for a "means to minimize the likelihood of ignition," increases

the level of safety. It is neither appropriate nor necessary to repeat this existing, generally applicable requirement in § 25.1185 as proposed by the commenter.

The FAA agrees with the commenter's statement, "a gradual implementation of fire protection measures should be commensurate with hazards." The "minimization" nature of § 25.863 accomplishes this goal. For example, § 25.863 clearly requires more fire protection measures in a fire zone, measures similar to those of a DFZ, than in a flammable fluid leakage zone. The ARAC recently submitted recommended advisory material to the FAA that provides more detailed guidance regarding what "flammable fluid fire protection" is acceptable when demonstrating compliance with §§ 25.863 and 25.1187. The FAA is reviewing this proposed advisory material and may publish a Notice of Availability in the Federal Register when the AC is issued.

Changes: No changes were made as a result of this comment.

§ 25.1305(d)(2), Powerplant instruments.

Comment: A U.S. industry association raises concerns about the human factors aspects of the proposed revision to § 25.1305(d)(2), "Powerplant instruments."

The proposed revision, requiring a means to indicate to the flightcrew when the thrust reversing device is not in the selected position, is in addition to the current requirement to indicate when the device is in the reverse thrust position. The commenter does not object to the aspect of the proposed change requiring an indication when the stowed position is selected and the device is not stowed. This accounts for the situation where the device is not completely in the forward thrust position, but has not reached the reverse thrust position either.

This commenter does not find the proposed change requiring an indication that the thrust reverse device is not deployed, although the deployed position is selected, would result in the anticipated safety improvement (enhanced crew awareness). In fact, the commenter contends that such indication may result in a safety reduction because flightcrews are already familiar with existing means used to notify the flightcrew of the condition of the thrust reversing device.

The commenter further notes that many current airplanes include airplane flight manual (AFM) and training procedures specifying that the crew check the reverse thrust position indication to verify reverser deployment. These procedures are also backed-up with a mechanical means that prevents application of reverse thrust above idle until the reverser is deployed. By specifying the need for an additional requirement, the proposed rule change would not allow the use of this method currently used in many airplanes and familiar to flightcrews. This commenter finds there are some safety concerns related to the human factors interaction between the flightcrew and the provision for two different thrust reverser indications. A cockpit indication that the reverser has deployed when commanded and another that it has not deployed as commanded may lead to flightcrew confusion and the potential for inappropriate crew action or response. This is particularly the case when considering previous crew experience and training on similar airplanes that do not incorporate the new indication.

Therefore, this commenter recommends one of the following actions:
Conduct human factor studies to evaluate the safety benefits of the proposed change.
Revise the proposed change to require an indication only when the forward thrust position is selected and the device is not in the appropriate position.

FAA Reply: The JAR 25.1305(d)(2) was identical with 14 CFR 25.1305(d)(2) until Change 5 of the JAR, dated January 1, 1979. At Change 5, the JAR added the 25.1305(d)(2)(i) requirement to indicate when the thrust reversing device is not in the selected position. During the decades of experience with the JAR requirement, none of the problems mentioned by the commenter have been noted.

The JAA further confirms that this requirement was added to provide more direct, continuous, and effective situational awareness than that provided by combining the required "deployed" indication and associated AFM procedures. Consequently, relying on the crew to use the lack of a reverser "deployed" indication to establish that the reverser has not deployed as commanded does not meet the intent of the harmonized JAR 25.1305(d)(2)(i) and 14 CFR 25.1305(d)(2)(i) requirement adopted by this rule.

Conversely, the FAA and JAA have agreed the inherent "tactile feedback" provided by traditional reverser/throttle interlock features can be shown to meet the intent of this rule. That is, when the pilot is unable to command reverse thrust above idle, he is inherently and continuously aware when the reverser is not in the selected position.

Changes: No changes were made as a result of this comment.

FAA Disposition of Comments: The FAA adopts the changes as proposed in the NPRM, Notice No. 02-02.

Public Address System, RIN 2120-AH30

On November 22, 2002, the FAA published a Notice of Proposed Rulemaking (Notice No. 02-18, 67 FR 70510) entitled, "Public Address System." The FAA proposed to amend an airworthiness standard for the public address system on transport category airplanes to harmonize the standards with the comparable JAR-25 standards. This

amendment requires that the public address system be capable of operation within 3-seconds from the time a microphone is removed from its stowage.

General Comments

The FAA received four comments. All the commenters generally support the proposed changes. These comments include five suggested changes, as discussed below.

Comment 1: The commenter, a U.S. airplane manufacturer, believes that this section, under Miscellaneous Equipment, should address only design compliance requirements. It should not address flight attendant operations. Also, they state the requirement for location and accessibility of the handset is sufficiently covered in § 25.1423(g). They suggest the following change to the language of the rule to clarify the intent of the rule as a design standard:

> § 25.1423(b) Be capable of operation within 3-seconds from the time a microphone is removed from its stowage.

FAA Reply: The FAA agrees with the commenter.

Changes: Section 25.1423(b) is changed to reflect the comment discussed above.

Comment 2: One commenter supports the proposal, but disagrees with the use of "flight crewmember" in the summary of the proposed rule. They believe this excludes the flight attendant, whom the proposed rule change would affect.

FAA Reply: The FAA partially agrees with this comment. The use of "flight crewmember" in the summary of the proposed rule might cause readers to interpret that the rule excludes flight attendants.

Changes: The language in the proposed rule, " . . . after a flight crewmember removes the microphone from its stowage," is changed to read, " . . . from the time a

microphone is removed from its stowage," to reflect the comment as discussed above.

Comment 3: One commenter suggests that § 25.1423(g) should read, "at each exit with an adjacent flight attendant seat."

FAA Reply: The FAA does not concur. The commenter's proposed wording would expand the scope of the requirement to non-floor level exits, as well as any exit in excess of the number required when a flight attendant seat was installed next to it. This could actually discourage installation of flight attendant seats since doing so would require Public Address system access. In addition, the intent of this change is to harmonize requirements between the FAA and the JAA, and this proposal would result in a lack of harmonization.

Changes: No changes were made as a result of this comment.

Comment 4: One commenter suggests amending 14 CFR part 121 to reflect similar changes.

FAA Reply: The suggested changes to 14 CFR part 121 are outside the scope of this proposed rule and the fast track harmonization rulemaking activity.

Changes: No changes were made as a result of this comment.

FAA Disposition of Comments: Except as noted previously, the FAA adopts the changes as proposed in the NPRM, Notice No. 02-18.

Trim Systems and Protective Breathing Equipment, RIN 2120-AH40

On October 2, 2002, the FAA published a Notice of Proposed Rulemaking (Notice No. 02-15, 67 FR 61836) entitled, "Trim Systems and Protective Breathing Equipment." The FAA proposed to amend airworthiness standards for transport category airplanes concerning trim systems and protective breathing equipment (PBE). For trim

systems, the proposal would establish the minimum design standard. For PBE, the proposal would define design and installation requirements for portable and stationary protective breathing equipment. These amendments would harmonize the airworthiness standards for trim systems and PBE with those of JAR-25.

General Comments

The FAA received five comments in response to the proposal. One commenter supports the proposed rule without further comment. The other commenters generally support the proposed changes. These comments include four suggested changes, as discussed below.

Section-by-Section Discussion

§ 25.677(b) Trim systems.

Comment 1: A U.S. airplane manufacturer suggested removal or clarification of the phrase, "adjacent to trim control." They state the phrase is obsolete for stabilizer trim because most airplanes no longer have mechanical trim wheels and cables.

FAA Reply: We do not agree with the commenter's suggestion. Use of the phrase, "adjacent to trim control," in this regulation, requires the trim indication to be located near the actuation switch where the indication can be readily viewed by the pilot to prevent confusion and unintended operation. The phrase, "adjacent to trim control," used in the broadest sense, means the trim indication must be placed somewhere near the trim actuation switch. The location should allow both trim settings and movement indications to be found easily and viewed by the pilot, in coordination with use of the switch, to prevent confusion and unintended operation.

Changes: No changes were made as a result of this comment.

Comment 2: The commenter suggests we revise the language of the rule to clarify whether the rule is applicable only to stabilizer trim, or to rudder and lateral trim as well. They state the text concerning "safe takeoff range" has traditionally been applied to only stabilizer trim, and not to aileron or rudder trim. However, this is not specified in the proposed rule.

FAA Reply: The FAA does not agree with the commenter's request to clarify the applicability of the rule. The FAA finds that a change is not necessary to clarify the rule. The proposed rule, as written, provides acceptable trim system requirements without providing unnecessary restrictions on future designs. Also, this represents a harmonized position with the JAA rule. The rule addresses all flight control trim systems, not just stabilizer trim. There are two "ranges" specified by the harmonized rule; one being the range of adjustment for all trim systems (i.e., full range of travel), and the other being the range at which takeoffs have been demonstrated to be safe for the range of center of gravity positions approved for takeoff (i.e., takeoff "green band"). All trims systems must provide a clear, visible means to indicate the position of the trim device with respect to the range of adjustment. A safe takeoff range must be marked on the trim system indicator where it has been demonstrated that takeoff is safe for all center of gravity positions approved for takeoff.

Changes: No changes were made as a result of this comment.

<u>§ 25.1439(a) Protective breathing equipment</u>

Comment 3: The commenter suggests adding the language, "other than the flight deck" to paragraph (a) so it reads:

"In addition, portable protective breathing equipment must be installed for the use

of appropriate crewmembers for fighting fires in compartments accessible in flight other than the flight deck. This includes isolated . . ."

The commenter believes the additional text clearly specifies the last sentence of proposed § 25.1439(a), which requires protective breathing equipment (PBE) for the maximum number of occupants, does NOT apply to the flight deck. The FAA has previously interpreted this part of the rule as not applying to the flight deck. However, if taken literally, the proposed requirement could apply to the flight deck, thus requiring up to four PBE's on the flight deck; this clearly is not the intent of the rule.

FAA Reply: The FAA agrees with the requested change. The first sentence of § 25.1439(a) applies to the flight deck and the last sentence applies to other compartments and not the flight deck.

Changes: Section 25.1439(a) is changed to reflect the comment discussed above.

<u>§ 25.1439(b)(5) Protective breathing equipment</u>

Comment 4: A foreign airplane manufacturer suggests the following revision to the language of § 25.1439(b)(5):

"...If a continuous flow open circuit protective breathing system is used, a flow rate of . . . Continuous flow open circuit systems must not increase the ambient oxygen content of the local atmosphere above that of demand systems. If a closed circuit protective breathing system is used, compliance to the performance requirements stated in Technical Standard Order (TSO) C116 for 15 minutes is considered to satisfy the required 15-minute duration at the prescribed altitude and minute volume. BTPD refers to body temperature conditions (that is, 37° C., at ambient pressure, dry)."

This commenter contends that, historically, a larger supply of oxygen was

considered necessary when an open circuit continuous flow oxygen mask was used, relative to a demand oxygen mask, because the continuous flow mask has no means to adjust for a momentary inhalation rate that exceeded the continuous flow rate. Accordingly, the continuous flow rate was set higher, so the flow would be sufficient in the event of a momentary excursion.

By contrast, in a closed circuit rebreather system, in principle, the rate at which oxygen must be supplied is not equal to the breathing rate. If the closed circuit device has sufficient reservoir capacity to accommodate the demand for added breathing volume during a momentary excursion, the actual oxygen flow rate required is only the quantity necessary to replace the oxygen that was consumed by metabolic activity or lost through leakage.

In the case of TSO C116 compliant PBE, the user's breathing rate may correspond to 30 liters per minute for 15 minutes or 450 liters BTPD, but the actual oxygen flow required might be only one to two liters per minute normal temperature pressure dry (NTPD). In a closed circuit rebreather, a 600 liter oxygen supply for 15 minutes duration would be equal to a metabolic demand of 40 liters per minute, which is well outside the range of human metabolic capacity, and thus excessive. To the best of the commenter's knowledge, none of the currently certificated TSO C116 compliant portable closed circuit PBE units would be capable of delivering 600 liters of oxygen, but all would readily accommodate a breathing rate of 30 liters per minute BTPD at 8,000 feet pressure altitude.

This commenter believes the proposed language could be interpreted as requiring a closed circuit portable PBE to have an oxygen supply much larger than is necessary.

FAA Reply: The FAA partially concurs with the commenter. The intent of the existing § 25.1439(b)(5) has not changed with the proposed rule. The intent is that the PBE supply protective oxygen of 15 minutes duration per crewmember at a pressure altitude of 8,000 feet with a respiratory minute volume of 30 liters per minute BTPD.

We agree that the portion of the rule that specifies 600 liters of oxygen at 70°F, and 760 mm. Hg., is only applicable to continuous flow open circuit protective breathing systems.

We do not agree that it is appropriate to reference the TSO C116 in the regulation. The TSO may change in the future and may not remain compatible with the part 25 regulations. Also, we do not agree that it is necessary to restrict the requirement to not increase the ambient oxygen content of the local atmosphere to only continuous flow open circuit systems. If a continuous flow system does not allow oxygen into the local atmosphere it would comply with the regulation.

Changes: To reflect the comment of this commenter, as discussed above, section 25.1439(b)(5) is changed to read:

" . . . If a continuous flow open circuit protective breathing system is used, a flow rate of 60 liters per minute . . ."

FAA Disposition of Comments: Except as noted previously, the FAA adopts the changes as proposed in the NPRM, Notice No. 02-15.

Powerplant Controls on Transport Category Airplanes, General, RIN 2120-AH65

On May 8, 2002, the FAA published a Notice of Proposed Rulemaking (Notice No. 02-08, 67 FR 30820) entitled, "Powerplant Controls on Transport Category Airplanes, General." The FAA proposed to amend airworthiness standards for transport

category airplanes concerning design requirements for powerplant valves controlled from the flight deck. The proposed rule would clarify the requirements for a means to select the intended position of the valve, to indicate the selected position, and to indicate if the valve has not attained the selected position. These amendments would harmonize the airworthiness standards for trim systems and PBE with those of JAR-25.

One commenter, a U.S. airplane manufacturer, responded to the proposed rule. The commenter includes two suggested changes, discussed below.

§ 25.1141(f) Powerplant controls; general.

Comment 1: The commenter states that proposed § 25.1141(f), as written, would require the "valve controls to provide the means" to the flightcrew. They suggest it should be revised to allow for an "independent means" to provide indication to the flightcrew. Also, they contend the wording, "..... provide the flightcrew the means to indicate, . . ." is misleading. They suggest it should be revised to require "a means to indicate to the flightcrew: . . ."

FAA Reply: The FAA agrees with the intent of the comment.

Changes: Section 25.1141(f) is being changed to read as follows:

(f) For powerplant valve controls located in the flight deck there must be a means for the flightcrew to select each intended position or function of the valve; and to indicate to the flightcrew: the selected position or function of the valve; and, when the valve has not responded as intended to the selected position or function.

§ 25.1141(f)(1) Powerplant controls: general.

Comment 2: The commenter suggests the deletion of § 25.1141(f)(1). They state that if paragraph (f) is revised according to their previous comment, proposed

paragraph (f)(1) would be redundant to other parts of § 25.1141. They also suggest that, although it is acceptable to have redundant information in a regulation, the existing first paragraph of § 25.1141 more completely defines the requirement than does proposed paragraph (f)(1).

FAA Reply: The existing first paragraph of § 25.1141 requires "each powerplant control" be located, arranged, designed and marked in accordance with certain referenced general standards for "cockpit controls." Neither this paragraph, nor the other standards it references would directly require powerplant valve controls located in the flight deck to provide the flightcrew with means to select each intended position or function of the valve as does the proposed revised section (f)(1). Consequently, the proposed rule is neither redundant nor does the existing first paragraph more completely define the requirement.

Changes: No changes were made as a result of this comment.

FAA Disposition of Comment: Except as noted previously, the FAA adopts the changes as proposed in the NPRM, Notice No. 02-08.

What Regulatory Analyses and Assessments Has the FAA Conducted?

Economic Assessment, Regulatory Flexibility Determination, Trade Impact Assessment, and Unfunded Mandates Assessment

Proposed changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs each Federal agency to propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 requires agencies to analyze the economic impact of regulatory changes on small entities. Third, the Trade Agreements

Act (19 U.S.C. sections 2531-2533) prohibits agencies from setting standards that create unnecessary obstacles to the foreign commerce of the United States. In developing U.S. standards, this Trade Agreements Act also requires agencies to consider international standards and, where appropriate, use them as the basis of U.S. standards. Fourth, the Unfunded Mandates Reform Act of 1995 (Public Law 104-4) requires agencies to prepare a written assessment of the costs, benefits and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local or tribal governments, in the aggregate, or by the private sector, of $100 million or more annually (adjusted for inflation).

In conducting these analyses, FAA has determined that this final rule:

1. has benefits that do justify its costs, is not a "significant regulatory action" as defined in section 3(f) of Executive Order 12866, and is not "significant" as defined in DOT's Regulatory Policies and Procedures;
2. will not have a significant economic impact on a substantial number of small entities;
3. will not reduce barriers to international trade; and
4. does not impose an unfunded mandate on state, local, or tribal governments, or the private sector. These analyses, available in the docket, are summarized below.

The (DOT) Order 2100.5, "Regulatory Policies and Procedures," prescribes policies and procedures for simplification, analysis, and review of regulations. If it is determined that the expected impact is so minimal that the rule does not warrant a full evaluation, a statement to that effect and the basis for it is included in the regulation. We

provide the basis for this minimal impact determination below. We received no comments that conflicted with the economic assessment of minimal impact published in the notices of proposed rulemaking for this action. Given the reasons presented below, and the fact that no comments were received to the contrary, we have determined that the expected impact of this rule is so minimal that the final rule does not warrant a full evaluation.

Currently, airplane manufacturers must satisfy both the 14 CFR and the European JAR requirements to certificate transport category airplanes in both the United States and Europe. Meeting two sets of certification requirements raises the cost of developing a new transport category airplane, often with no increase in safety. In the interest of fostering international trade, lowering the cost of aircraft development, and making the certification process more efficient, the FAA, JAA, and aircraft manufacturers have been working to create a single set of certification requirements accepted in both the United States and Europe. These efforts are referred to as harmonization. This final rule results from the FAA's acceptance of ARAC harmonization working group recommendations. Members of the ARAC working groups agreed that the requirements of this rule will not impose additional costs to U.S. manufacturers of part 25 airplanes.

Specifically, this rule requires:

1. revising §§ 25.111, 25.147, 25.161, and 25.175 to incorporate the more stringent requirements currently in those same sections of JAR-25;
2. revising §§ 25.945, 25.973, 25.1181, and 25.1305 to meet the more stringent requirements of the parallel JAR;
3. revising § 25.1423 to require that the public address system must be capable

of operation within 3-seconds from the time a microphone is removed from its stowage;

4. revising § 25.677 and 25.1439 to establish the minimum design standard for trim systems, to define design and installation requirements for portable and stationary protective breathing equipment, to eliminate the regulatory differences between the airworthiness standards of the U.S. and the Joint Aviation Requirements (JAR) of Europe; and,
5. revising § 25.1141 to clarify the requirements for a means to select the intended position of the valve, and to indicate if the valve has not attained the selected position, for powerplant valves controlled from the flight deck.

Because this rule will not reduce or increase the requirements beyond those already met by U.S. manufacturers to satisfy European airworthiness standards, we have determined there will be no cost associated with this rule to part 25 manufacturers. We have not tried to quantify the benefits of this amendment beyond identifying the expected harmonization benefit. This amendment eliminates an identified significant regulatory difference (SRD) between part 25 and JAR-25 wording. Eliminating the SRD will provide for a more consistent interpretation of the rules and thus is an element of the potentially large cost savings of harmonization.

Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) directs the FAA to fit regulatory requirements to the scale of the business, organizations, and governmental jurisdictions subject to the regulation. We are required to determine whether a proposed or final action will have a "significant economic impact on a substantial number of small entities"

as they are defined in the Act.

If we find that the action will have a significant impact, we must do a "regulatory flexibility analysis." If, however, we find that the action will not have a significant economic impact on a substantial number of small entities, we are not required to do the analysis. In this case, the Act requires that we include a statement that provides the factual basis for our determination.

We have determined that this amendment will not have a significant economic impact on a substantial number of small entities for two reasons:

First, the net effect of the rule is regulatory cost relief. The amendment requires that new transport category airplane manufacturers meet just the "more stringent" European certification requirement, rather than both the United States and European standards. Airplane manufacturers already meet this standard, as well as the existing part 25 requirement.

Second, all United States manufacturers of transport category airplanes exceed the Small Business Administration small entity criteria of 1,500 employees for airplane manufacturers. Those U.S. manufacturers include: The Boeing Company, Cessna Aircraft Company, Gulfstream Aerospace, Learjet (owned by Bombardier Aerospace), Lockheed Martin Corporation, McDonnell Douglas (a wholly owned subsidiary of The Boeing Company), Raytheon Aircraft, and Sabreliner Corporation.

The FAA received no comments that differed with the assessment given in this section. Since this final rule is minimally cost-relieving and there are no small entity manufacturers of part 25 airplanes, the FAA Administrator certifies that this rule will not have a significant economic impact on a substantial number of small entities.

Trade Impact Assessment

The Trade Agreement Act of 1979 prohibits Federal agencies from establishing any standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. Legitimate domestic objectives, such as safety, are not considered unnecessary obstacles. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards.

The FAA has assessed the potential effect of this rulemaking and has determined that it is consistent with the statute's requirements by using European international standards as the basis for U.S. standards and supports the Administration's policy on free trade.

Unfunded Mandates Assessment

The Unfunded Mandates Reform Act of 1995 (the Act), is intended, among other things, to curb the practice of imposing unfunded Federal mandates on State, local, and tribal governments. Title II of the Act requires each Federal agency to prepare a written statement assessing the effects of any Federal mandate in a proposed or final agency rule that may result in an expenditure of $100 million or more (adjusted annually for inflation) in any one year by State, local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a "significant regulatory action."

This final rule does not contain such a mandate. The requirements of Title II of the Act, therefore, do not apply.

What Other Assessments Has the FAA Conducted?

Paperwork Reduction Act

Under the provisions of the Paperwork Reduction Act of 1995, there are no

current or new requirements for information collection associated with this final rule.

International Compatibility

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to comply with International Civil Aviation Organization (ICAO) Standards and Recommended Practices to the maximum extent practicable. The FAA has determined there are no ICAO Standards and Recommended Practices that correspond to these regulations.

Executive Order 13132, Federalism

The FAA has analyzed this final rule under the principles and criteria of Executive Order 13132, Federalism. We determined that this action will not have a substantial direct effect on the States, or the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government, and therefore does not have federalism implications.

Regulations Affecting Intrastate Aviation in Alaska

Section 1205 of the FAA Reauthorization Act of 1996 (110 Stat. 3213) requires the Administrator, when modifying regulations in Title 14 of the CFR in a manner affecting intrastate aviation in Alaska, to consider the extent to which Alaska is not served by transportation modes other than aviation, and to establish such regulatory distinctions as he or she considers appropriate. Because this final rule applies to the certification of future designs of transport category airplanes and their subsequent operation, it could affect intrastate aviation in Alaska. Because no comments were received regarding this regulation affecting intrastate aviation in Alaska, we will apply the rule in the same way that it is being applied nationally.

Plain English

Executive Order 12866 (58 FR 51735, Oct. 4, 1993) requires each agency to write regulations that are simple and easy to understand. We invite your comments on how to make these regulations easier to understand, including answers to questions such as the following:

- Are the requirements clearly stated?
- Do the regulations contain unnecessary technical language or jargon that interferes with their clarity?
- Would the regulations be easier to understand if they were divided into more (but shorter) sections?
- Is the description in the preamble helpful in understanding the regulations?

Please send your comments to the address specified in the FOR FURTHER INFORMATION CONTACT section.

Environmental Analysis

FAA Order 1050.1E identifies FAA actions that are categorically excluded from preparation of an environmental assessment or environmental impact statement under the National Environmental Policy Act in the absence of extraordinary circumstances. The FAA has determined this rulemaking action qualifies for the categorical exclusion identified in paragraph 312f and involves no extraordinary circumstances.

Regulations that Significantly Affect Energy Supply, Distribution, or Use

The FAA has analyzed this rulemaking under Executive Order 13211, Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use (May 18, 2001). We have determined that it is not a "significant energy action" under the

executive order because it is not a "significant regulatory action" under Executive Order 12866, and it is not likely to have a significant adverse effect on the supply, distribution, or use of energy.

List of Subjects in 14 CFR Part 25:

Aircraft, Aviation safety, Reporting and recordkeeping requirements, Safety, Transportation

The Amendment

In consideration of the foregoing, the Federal Aviation Administration amends part 25 of Title 14, Code of Federal Regulations as follows:

PART 25 - AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY AIRPLANES

1. The authority citation for Part 25 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701, 44702 and 44704

2. Amend § 25.111 by revising paragraph (c)(4) to read as follows:

§ 25.111 Takeoff path.

* * * * *

(c) * * *

(4) Except for gear retraction and automatic propeller feathering, the airplane configuration may not be changed, and no change in power or thrust that requires action by the pilot may be made, until the airplane is 400 feet above the takeoff surface.

* * * * *

3. Amend § 25.147 by redesignating paragraphs (d) and (e) as paragraphs (e) and (f), and by adding a new paragraph (d) to read as follows:

§ 25.147 Directional and lateral control.

* * * * *

(d) Lateral control; roll capability. With the critical engine inoperative, roll response must allow normal maneuvers. Lateral control must be sufficient, at the speeds likely to be used with one engine inoperative, to provide a roll rate necessary for safety without excessive control forces or travel.

* * * * *

4. Amend § 25.161 by revising paragraph (c)(2), and by revising paragraph (e) as follows:

§ 25.161 Trim.

* * * * *

(c) * * *

(2) Either a glide with power off at a speed not more than 1.3 V_{SR1}, or an approach within the normal range of approach speeds appropriate to the weight and configuration with power settings corresponding to a 3 degree glidepath, whichever is the most severe, with the landing gear extended, the wing flaps (i) retracted and (ii) extended, and with the most unfavorable combination of center of gravity position and weight approved for landing; and

* * * * *

(e) Airplanes with four or more engines. Each airplane with four or more engines must also maintain trim in rectilinear flight with the most unfavorable center of gravity and at the climb speed, configuration, and power required by § 25.123(a) for the purpose of establishing the en route flight paths with two engines inoperative.

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5. Amend § 25.175 by revising paragraph (d)(4) to read as follows:

§ 25.175~~(d) Landing~~ Demonstration of Static longitudinal Stability

* * * * *

(d) * * *

(4) The airplane trimmed at 1.3 V_{SR0} with -

(i) power or thrust off, and

(ii) power or thrust for level flight.

* * * * *

6. Amend § 25.677 by revising paragraph (b) to read as follows:

§ 25.677 Trim systems.

* * * * *

(b) There must be means adjacent to the trim control to indicate the direction of the control movement relative to the airplane motion. In addition, there must be clearly visible means to indicate the position of the trim device with respect to the range of adjustment. The indicator must be clearly marked with the range within which it has been demonstrated that takeoff is safe for all center of gravity positions approved for takeoff.

* * * * *

7. Add a new paragraph (b)(5) to § 25.945 to read as follows:

§ 25.945 Thrust or power augmentation system.

* * * * *

(b) * * *

(5) Each tank must have an expansion space of not less than 2 percent of the tank capacity. It must be impossible to fill the expansion space inadvertently with the airplane in the normal ground attitude.

* * * * *

8. Republish the introductory text and revise paragraph (d) of § 25.973 to read as follows:

§ 25.973 Fuel tank filler connection.

Each fuel tank filler connection must prevent the entrance of fuel into any part of the airplane other than the tank itself. In addition --

* * * * *

(d) Each fuel filling point must have a provision for electrically bonding the airplane to ground fueling equipment.

9. Amend section 25.1141 by revising paragraph (f) to read as follows:

§ 25.1141 Powerplant controls: general.

* * * * *

(f) For powerplant valve controls located in the flight deck there must be a means:

(1) for the flightcrew to select each intended position or function of the valve; and

(2) to indicate to the flightcrew:

(i) the selected position or function of the valve; and

(ii) when the valve has not responded as intended to the selected position or function.

10. Revise paragraph (b) of § 25.1181 to read as follows:

§ 25.1181 Designated fire zones; regions included.

* * * * *

(b) Each designated fire zone must meet the requirements of §§ 25.863, 25.865, 25.867, 25.869, and 25.1185 through 25.1203.

11. Republish the introductory text and revise paragraphs (a)(7) and (d)(2) of § 25.1305 to read as follows:

§ 25.1305 Powerplant instruments.

The following are required powerplant instruments:

(a) * * *

(7) Fire-warning devices that provide visual and audible warning.

* * * * *

(d) * * *

(2) A position indicating means to indicate to the flightcrew when the thrust reversing device -

(i) is not in the selected position, and

(ii) is in the reverse thrust position, for each engine using a thrust reversing device.

* * * * *

12. Amend § 25.1423 by republishing the introductory text and revising the text of paragraph (b) to read as follows:

§ 25.1423 Public address system.

A public address system required by this chapter must—

* * * * *

(b) Be capable of operation within 3-seconds from the time a microphone is removed from its stowage.

* * * * *

13. Revise § 25.1439 to read as follows:

§ 25.1439 Protective breathing equipment.

(a) Fixed (stationary, or built in) protective breathing equipment must be installed for the use of the flightcrew, and at least one portable protective breathing equipment shall be located at or near the flight deck for use by a flight crewmember. In addition, portable protective breathing equipment must be installed for the use of appropriate crewmembers for fighting fires in compartments accessible in flight other than the flight deck. This includes isolated compartments and upper and lower lobe galleys, in which crewmember occupancy is permitted during flight. Equipment must be installed for the maximum number of crewmembers expected to be in the area during any operation.

(b) For protective breathing equipment required by § 25.1439(a) or by the applicable Operating Regulations:

(1) The equipment must be designed to protect the appropriate crewmember from smoke, carbon dioxide, and other harmful gases while on flight deck duty or while combating fires.

(2) The equipment must include -

(i) masks covering the eyes, nose and mouth, or

(ii) masks covering the nose and mouth, plus accessory equipment to cover the eyes.

(3) Equipment, including portable equipment, must allow communication with

other crewmembers while in use. Equipment available at flightcrew assigned duty stations must also enable the flightcrew to use radio equipment.

(4) The part of the equipment protecting the eyes shall not cause any appreciable adverse effect on vision and must allow corrective glasses to be worn.

(5) The equipment must supply protective oxygen of 15 minutes duration per crewmember at a pressure altitude of 8,000 feet with a respiratory minute volume of 30 liters per minute BTPD. The equipment and system must be designed to prevent any inward leakage to the inside of the device and prevent any outward leakage causing significant increase in the oxygen content of the local ambient atmosphere. If a demand oxygen system is used, a supply of 300 liters of free oxygen at 70° F. and 760 mm. Hg. pressure is considered to be of 15-minute duration at the prescribed altitude and minute volume. If a continuous flow open circuit protective breathing system is used, a flow rate of 60 liters per minute at 8,000 feet (45 liters per minute at sea level) and a supply of 600 liters of free oxygen at 70° F. and 760 mm. Hg. pressure is considered to be of 15-minute duration at the prescribed altitude and minute volume. Continuous flow systems must not increase the ambient oxygen content of the local atmosphere above that of demand systems. BTPD refers to body temperature conditions (that is, 37° C., at ambient pressure, dry).

(6) The equipment must meet the requirements of § 25.1441.

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