

Federal Aviation Administration
Aviation Rulemaking Advisory Committee

Transport Airplane and Engine Issue Area
Flight Test Harmonization Working Group

Task 2 – Gate Requirements for High Lift Devices

Task Assignment

established the Aviation Rulemaking Advisory Committee (ARAC). The committee provides advice and recommendations to the FAA Administrator, through the Associate Administrator for Regulation and Certification, on the full range of the FAA's rulemaking activities with respect to aviation-related issues.

In order to develop such advice and recommendations, the ARAC may choose to establish working groups to which specific tasks are assigned. Such working groups are comprised of experts from those organizations having an interest in the assigned task. A working group member need not be a representative of the full committee. One of the working groups established by the ARAC is the Flight Test Working Group.

The FAA announced at the Joint Aviation Authorities (JAA)-Federal Aviation Administration (FAA) Harmonization Conference in Toronto, Canada June 2-5, 1992, that it would consolidate within the ARAC structure an ongoing objective to "harmonize" the Joint Aviation Requirements (JAR) and the Federal Aviation Regulations (FAR).

Task

The Flight Test Working Group's tasks are as follows:

Task 1—Gate Requirements for High Lift Devices: Recommend to the ARAC simplified and clarified requirements related to gated positions on the control used by the pilot select the position of an airplane's high lift devices.

Task 2—Flight Characteristics in Icing Conditions: Recommend to the ARAC new or revised requirements and compliance methods related to airplane performance and handling characteristics in icing conditions.

Reports

For each task listed above, the Flight Test Working Group should develop and present to the ARAC:

1. A recommended work plan for completion of the task, including the rationale supporting such plan, for consideration at the meeting of the ARAC to consider transport airplane and engine issues held following publication of this notice;
2. A detailed conceptual presentation on the proposed recommendation(s), prior to proceeding with the work stated in item 3. below;
3. A draft Notice of Proposed Rulemaking (NPRM), with supporting economic and other required analyses, and/or any other related guidance material or collateral documents the working group determines to be appropriate; or, if new or revised

requirements of compliance methods are not recommended, a draft report stating the rationale for not making such recommendations; and

4. A status report at each meeting of the ARAC held to consider transport airplane and engine issues.

Participation in Working Group Task

An individual who has expertise in the subject matter and wishes to become a member of the working group should write to the person listed under the caption **FOR FURTHER INFORMATION CONTACT** expressing that desire, describing his or her interest in the task and stating the expertise he or she would bring to the working group. The request will be reviewed with the assistant chairman and working group leader, and the individual will be advised whether or not the request can be accommodated.

The Secretary of Transportation has determined that the information and use of the Aviation Rulemaking Advisory Committee are necessary in the public interest in connection with the performance of duties imposed on the FAA by law. Meetings of the Aviation Rulemaking Advisory Committee will be open to the public, except as authorized by section 10(d) of the Federal Advisory Committee Act. Meetings of the working group will not be open to the public, except to the extent that individuals with an interest and expertise are selected to participate. No public announcement of working group meetings will be made.

Issued in Washington, DC, on June 3, 1994.

Chris A. Christie,

Executive Director, Aviation Rulemaking Advisory Committee.

[FR Doc. 94-14145 Filed 6-9-94; 8:45 am]

BILLING CODE 4910-13-M

Aviation Rulemaking Advisory Committee; Transport Airplane and Engine Issues

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of new task assignment for the Aviation Rulemaking Advisory Committee.

SUMMARY: Notice is given of new task assignments for the Flight Test Working Group of the Aviation Rulemaking Advisory Committee (ARAC). This notice informs the public of the activities of the ARAC.

FOR FURTHER INFORMATION CONTACT: Michael H. Borfritz, Assistant Executive Director, Aviation Rulemaking Advisory Committee, Transport Airplane and Engine Issues, FAA Engine & Propeller Directorate, 12 New England Executive Park, Burlington, Massachusetts 01803; telephone (617) 238-7110, fax (617) 238-7199.

SUPPLEMENTARY INFORMATION: On January 22, 1991 (56 FR 2190), the Federal Aviation Administration (FAA)

Recommendation Letter

Gerald R. Mack
Director
Airplane Certification

Boeing Commercial Airplane Group
P.O. Box 3707, #MS 67-UM
Seattle, WA 98124-2207

March 5, 1996
B-T000-ARAC-96-002

Acton AFM
my

Mr. Anthony J. Broderick (AVR-1)
Associate Administrator for Regulations and Compliance
Department of Transportation
Federal Aviation Administration
800 Independence Avenue, S.W.
Washington, DC 20591

BOEING

Dear Mr. Broderick:

On behalf of the Aviation Rulemaking Advisory committee, I am pleased to submit two documents on the following subjects:

Report No. SP4161LA-Q Alternate Means of Compliance Issuance
Improvements

Proposed NPRM

Revision of Gate Requirements for High-Lift
Device Controls

These documents are enclosed in the form of a report and a proposed NPRM. The documents were developed by the Alternate Means of Compliance Working Group chaired by Dave Lotterer and the Flight Test Harmonization Working Group chaired by Jerry Zanatta. The membership of the groups are a good balance of interested parties in the US, Europe and Canada. The groups are currently focusing on other issues tasked to the Working Group but can be available if needed for docket review.

The members of ARAC appreciate the opportunity to participate in the FAA Rulemaking process and fully endorse these recommendations.

Sincerely,

G. R. Mack

Gerald R. Mack
Chairman
Transport Airplane & Engine Issues Group
Aviation Rulemaking Advisory Committee
Tele: (206) 234-9570, Fax: 237-4838

Enclosures

Acknowledgement Letter



U.S. Department
of Transportation

**Federal Aviation
Administration**

800 Independence Ave.. S.W.
Washington, D.C. 20591

APR 11 1996

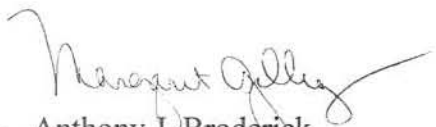
Mr. Gerald R. Mack
Aviation Rulemaking Advisory Committee
Boeing Commercial Airplane Group
P.O. Box 3707, M/S 67-UM
Seattle, WA 98124-2207

Dear Mr. Mack:

Thank you for your March 5 letter forwarding the Aviation Rulemaking Advisory Committee's (ARAC) recommendation for rulemaking on the subject of Gate Requirements for High-Lift Device Controls.

The recommendation was submitted in a format suitable for processing and, therefore, will be presented to the Federal Aviation Administration management as quickly as possible. I would like to thank the aviation community for its commitment to ARAC and its interest in this matter. We pledge to consider your recommendation as a high-priority action.

Sincerely,


for Anthony J. Broderick
Associate Administrator for
Regulation and Certification

Recommendation

[4910-13]

DRAFT 17 August 1995

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

[14 CFR Part 25]

[Docket No. ; Notice No.]

RIN:

Revision of Gate Requirements for High-Lift Device Controls.

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of proposed rulemaking.

SUMMARY: The Federal Aviation Administration proposes to amend part 25 of the Federal Aviation Regulations (FAR) to revise the requirements concerning gated positions on the control used by the pilot to select the position of an airplane's high-lift devices. The proposed amendment would update the current standards to take into account the multiple configurations of the high-lift devices provided on current airplanes to perform landings and go-around maneuvers. The proposed amendment would also harmonize these standards with those being proposed for the European Joint Aviation Requirements (JAR).

DATES: Comments must be received on or before [insert date 90 days from date of publication].

ADDRESSES: Comments on this notice may be mailed in triplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket (AGC-10), Docket No. [insert docket number], 800 Independence Avenue SW., Washington, DC 20591; or delivered in triplicate to: Room 915G, 800 Independence Avenue SW., Washington, DC 20591. Comments delivered must be marked Docket No. [insert docket number]. Comments may be examined in Room 915G weekdays, except Federal holidays, between 8:30 a.m. and 5 p.m. In addition, the FAA is maintaining an information docket of comments in the Transport Airplane Directorate (ANM-100), Federal Aviation

Administration, Northwest Mountain Region, 1601 Lind Avenue SW., Renton, WA 98055-4056. Comments in the information docket may be examined weekdays, except Federal holidays, between 7:30 a.m. and 4 p.m.

FOR FURTHER INFORMATION CONTACT: Don Stimson, Flight Test and Systems Branch, ANM-111, Transport Airplane Directorate, Aircraft Certification Service, FAA, 1601 Lind Avenue SW., Renton, WA 98055-4056; telephone (206) 227-1129; facsimile (206) 227-1320.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested persons are invited to participate in this proposed rulemaking by submitting such written data, views, or arguments as they may desire. Comments relating to any environmental, energy, or economic impact that might result from adopting the proposals contained in this notice are invited. Substantive comments should be accompanied by cost estimates. Commenters should identify the regulatory docket or notice number and submit comments in triplicate to the Rules Docket address above. All comments received on or before the closing date for comments will be considered by the Administrator before taking action on this proposed rulemaking. The proposals contained in this notice may be changed in light of comments received. All comments received will be available in the Rules Docket, both before and after the comment period closing date, for examination by interested persons. A report summarizing each substantive public contact with FAA personnel concerning this rulemaking will be filed in the docket. Persons wishing the FAA to acknowledge receipt of their comments must submit with those comments a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket No. [insert docket number]." The postcard will be date stamped and returned to the commenter.

Availability of the NPRM

Any person may obtain a copy of this notice by submitting a request to the Federal Aviation Administration (FAA), Office of Public Affairs, Attention: Public Inquiry Center, APA-230, 800 Independence Avenue SW., Washington, DC 20591; or by calling (202) 267-3484. The notice number of this NPRM must be identified in all communications. Persons interested in being placed on a mailing list for future rulemaking documents should also request a copy of Advisory Circular No. 11-2A, Notice of Proposed Rulemaking Distribution System, which describes the application procedure.

Background

Section 25.145(c) of 14 CFR part 25 (part 25) of the Federal Aviation Regulations prescribes conditions under which it must be possible for the pilot, without using exceptional piloting skill, to prevent losing altitude while retracting the airplane's high-lift devices (e.g., wing flaps and slats). The intent of this requirement is to ensure that during a go-around from an approach to landing, the high-lift devices can be retracted at a rate that prevents altitude loss if the pilot applies maximum available power to the engines at the same time the control lever is moved to begin retracting the high-lift devices.

Prior to amendment 23 to part 25, the § 25.145(c) requirement applied to retractions of the high-lift devices from any initial position to any ending position, including a continuous retraction from the fully extended position to the fully retracted position. In amendment 23 to part 25, the FAA revised this requirement to allow the use of segmented retractions if gates are provided on the control the pilot uses to select the high-lift device position.

Gates are devices that require a separate and distinct motion of the control before the control can be moved through a gated position. The purpose of the gates is to prevent pilots from inadvertently moving the high-lift device control through the gated position. Gate design requirements were introduced into part 25 with amendment 23, which

revised § 25.145(c) to allow the no altitude loss requirement to be met by segmented retractions of the high-lift devices between the gated positions. Amendment 23 specifies that the no altitude loss requirement applies to retractions of the high-lift devices between the gated positions and between the gates and the fully extended and fully retracted positions. In addition, the first gated control position from the landing position must correspond to the position used to establish the go-around procedure from the landing configuration.

In this notice, the FAA proposes to update the gate design standards to clarify which positions of the high-lift device control should be gated and to harmonize these standards with those being proposed for the European Joint Airworthiness Requirements (JAR-25). The proposal contained in this notice was developed by the Aviation Rulemaking Advisory Committee (ARAC) and presented to the FAA as a recommendation for rulemaking.

The Aviation Rulemaking Advisory Committee

The ARAC was formally established by the FAA on January 22, 1991 (56 FR 2190), to provide advice and recommendations concerning the full range of the FAA's safety-related rulemaking activity. This advice was sought to develop better rules in less overall time using fewer FAA resources than are currently needed. The committee provides the opportunity for the FAA to obtain firsthand information and insight from interested parties regarding proposed new rules or revisions of existing rules.

There are over 60 member organizations on the committee, representing a wide range of interests within the aviation community. Meetings of the committee are open to the public, except as authorized by section 10(d) of the Federal Advisory Committee Act.

The ARAC establishes working groups to develop proposals to recommend to the FAA for resolving specific issues. Tasks assigned to working groups are published in the **Federal Register**. Although working group meetings are not generally open to the

public, all interested parties are invited to participate as working group members.

Working groups report directly to the ARAC, and the ARAC must concur with a working group proposal before that proposal can be presented to the FAA as an advisory committee recommendation.

The activities of the ARAC will not, however, circumvent the public rulemaking procedures. After an ARAC recommendation is received and found acceptable by the FAA, the agency proceeds with the normal public rulemaking procedures. Any ARAC participation in a rulemaking package will be fully disclosed in the public docket.

Discussion of the Proposals

The FAA proposes to update the gate design standards to clarify which positions of the high-lift device control should be gated and to harmonize these standards with those being proposed for the European Joint Airworthiness Requirements. First, the FAA proposes to re-codify the gate requirements of § 25.145(c) as a new § 25.145(d). Second, the FAA proposes to update and clarify the requirement that the first gated control position from the landing position corresponds to the configuration used to execute a go-around from an approach to landing. Third, the FAA proposes to clarify that performing a go-around maneuver beginning from any approved landing configuration should not result in a loss of altitude, regardless of the location of gated control positions. Fourth, the FAA proposes to add a statement to clarify that the "separate and distinct motion" required to move the high-lift device control through a gated position must be made at that gated position.

The existing gate requirements are contained in a separate, but undesignated paragraph at the end of § 25.145(c). To be consistent with current codification practices, the FAA proposes to re-codify these requirements as a new § 25.145(d). Re-codification would not affect the content or intent of the requirement..

Currently, § 25.145(c) requires the first gated control position from the landing position to "correspond with the high-lift devices configuration used to establish the go-around procedure from the landing configuration." The wording of this requirement implies that airplanes have only one configuration that can be used for landing and one configuration that can be used to perform a go-around maneuver. Modern transport category airplanes, however, typically have multiple configurations that can be used for performing a landing or a go-around. Airplane manufacturers provide multiple landing and go-around configurations to optimize an airplane's performance for different environmental conditions (e.g., field elevation and temperature) and for non-normal situations (e.g., inoperative engines or systems).

To provide for airplanes with multiple landing and go-around configurations, the FAA proposes to revise the portion of the gate requirements relating to the placement of the first gated control position from the landing position by inserting the word "maximum" preceding "landing position" and by replacing "the high-lift devices configuration" and "the go-around procedure" with "a configuration of the high-lift devices" and "a go-around procedure," respectively. The FAA considered allowing the location of the flap gates to be made independent of the go-around position; however, from a human factors standpoint, providing a gate at a go-around position assists the pilot in selecting the proper configuration for a maneuver that is usually unexpected and entails a high workload. The FAA considers that requiring a gate at every approved go-around position would also be undesirable. Too many gates would make it difficult for the pilot to move the control through high-lift device positions that might not be used during normal operations. For go-around maneuvers using a different high-lift device position than the position that is gated, the gate can still serve as a guide for selecting the proper configuration (e.g., the pilot could move the control to the gate and either forward or backward one or more positions).

The FAA is proposing to revise Advisory Circular (AC) 25-7, "Flight Test Guide for Certification of Transport Category Airplanes" to provide additional guidance regarding criteria for locating the gate when the airplane has multiple go-around configurations. Public comments concerning this proposed revision to AC 25-7 are invited by separate notice published elsewhere in this issue of the **Federal Register**.

Regardless of the location of any gates, initiating a go-around from any of the approved landing configurations should not result in a loss of altitude. Therefore, the FAA proposes to further revise the existing gate standards to require applicants to demonstrate that no loss of altitude will result from retracting the high-lift devices from each approved landing position to the position(s) corresponding with the high-lift device configuration(s) used to establish the go-around procedure(s) from that landing configuration.

The existing § 25.145(c) also requires that a separate and distinct movement of the high-lift device control must be made to pass through a gated position. The FAA proposes to further clarify the gate design criteria in the proposed § 25.145(d) to specify that this separate and distinct movement can occur only at the gated position. This provision would ensure that the pilot receives tactile feedback when the control reaches a gated position. Although the FAA has always interpreted the current requirements in a manner consistent with this provision, this proposal will assist applicants by clarifying the part 25 design requirements for gated high-lift device control positions.

The amendments proposed in this notice have been harmonized with proposed amendments to JAR-25. The Joint Aviation Authorities intend to publish a Notice of Proposed Amendment (NPA), which, in combination with the proposed part 25 changes contained in this notice, would achieve complete harmonization of the affected portions of part 25 and JAR-25. When it is published, the NPA will be placed in the docket for this rulemaking.

Regulatory Evaluation Summary

Preliminary Regulatory Evaluation, Initial Regulatory Flexibility Determination, and Trade Impact Assessment

Proposed changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency shall 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 effect of regulatory changes on small entities. Third, the Office of Management and Budget directs agencies to assess the effects of regulatory changes on international trade. In conducting these analyses, the FAA has determined that this proposed rule: 1) would generate benefits that justify its costs and is not a "significant regulatory action" as defined in the Executive Order; 2) is not significant as defined in DOT's Policies and Procedures; (3) would not have a significant impact on a substantial number of small entities; and 4) would not constitute a barrier to international trade. These analyses, available in the docket, are summarized below.

Regulatory Evaluation Summary

U.S. manufacturers currently design high-lift device controls in compliance with the proposed rule. Industry representatives indicate that U.S. manufacturers would not have to redesign high-lift device controls on either newly certificated airplanes or derivatives of currently certificated models. The costs of the proposed rule, therefore, would be negligible. However, the FAA solicits information from all manufacturers of transport category airplanes concerning any possible design changes and associated costs that would result from the proposed amendment.

The primary benefit of the proposed rule is the clarification of gate design standards of high-lift device controls. A second benefit is the harmonization of FAR certification requirements for controls on high-lift devices with proposed JAR

certification requirements. The FAA has determined that the proposed rule would be cost-beneficial.

Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily or disproportionately burdened by government regulations. The RFA requires a Regulatory Flexibility Analysis if a proposed rule would have a significant economic impact, either detrimental or beneficial, on a substantial number of small entities. FAA Order 2100.14A, Regulatory Flexibility Criteria and Guidance, establishes threshold cost values and small entity size standards for complying with RFA review requirements in FAA rulemaking actions. The Order defines "small entities" in terms of size thresholds, "significant economic impact" in terms of annualized cost thresholds, and "substantial number" as a number which is not less than eleven and which is more than one-third of the small entities subject to the proposed or final rule.

Order 2100.14A specifies a size threshold for classification as a small manufacturer as 75 or fewer employees. Since none of the manufacturers affected by this proposed rule has 75 or fewer employees and any costs of the proposed rule would be negligible, the proposed rule would not have a significant economic impact on a substantial number of small manufacturers.

International Trade Impact Assessment

The proposed rule will not constitute a barrier to international trade, including the export of American airplanes to foreign countries and the import of foreign airplanes into the United States. The proposed gate design requirements in this proposed rule would harmonize with those of the JAA and would, in fact, lessen the restraints on trade.

Federalism Implications

The amended regulations proposed in this rulemaking would not have substantial direct effects on the States, on the relationship between the national government and the

States, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this proposal would not have sufficient federalism implications to warrant preparing a Federalism Assessment.

Conclusion

Because the proposed changes to the flap gate design requirements for transport category airplanes are not expected to result in substantial economic cost, the FAA has determined that this proposed regulation would not be significant under Executive Order 12866. Because this is an issue which has not prompted a great deal of public concern, the FAA has determined that this action is not significant under DOT Regulatory Policies and Procedures (44 FR 11034, February 25, 1979). In addition since there are no small entities affected by this proposed rulemaking, the FAA certifies, under the criteria of the Regulatory Flexibility Act, that this rule, if adopted, will not have a significant economic impact, positive or negative, on a substantial number of small entities. An initial regulatory evaluation of the proposal, including a Regulatory Flexibility Determination and Trade Impact Analysis, has been placed in the docket. A copy may be obtained by contacting the person identified under **FOR FURTHER INFORMATION CONTACT**.

List of Subjects in 14 CFR part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The Proposed Amendments

Accordingly, the Federal Aviation Administration (FAA) proposes to amend 14 CFR part 25 of the Federal Aviation Regulations (FAR) 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. app. 1344, 1354(a), 1355, 1421, 1423, 1424, 1425, 1428, 1429, 1430; 49 U.S.C. 106(g); and 49 CFR 1.47(a).

2. Section 25.145 would be amended by revising paragraph (c), revising the text following paragraph (c)(3), and designating that text as paragraph (d) to read as follows:

§ 25.145 Longitudinal control.

* * * * *

(c) It must be possible, without exceptional piloting skill, to prevent loss of altitude when complete retraction of the high-lift devices from any position is begun during steady, straight, level flight at $1.1 V_{S1}$ for propeller powered airplanes, or $1.2V_{S1}$ for turbojet powered airplanes, with -

(1) * * *

(2) * * *

(3) * * *

(d) If gated high-lift device control positions are provided, paragraph (c) of this section applies to retractions of the high-lift devices from any position from the maximum landing position to the first gated position, between gated positions, and from the last gated position to the fully retracted position. The requirements of paragraph (c) of this section also apply to retractions from each approved landing position to the control position(s) associated with the high-lift device configuration(s) used to establish the go-around procedure(s) from that landing position. In addition, the first gated control position from the maximum landing position must correspond with a configuration of the high-lift devices used to establish a go-around procedure from a landing configuration. Each gated control position must require a separate and distinct motion of the control to pass through the gated position and must have features to prevent inadvertent movement of the control through the gated position. It must only be possible to make this separate and distinct motion once the control has reached the gated position.

Proposed Revisions to Advisory Circular 25-7
Flight Test Guide for Certification of Transport Category Airplanes

Revise paragraph 21a(2) as follows:

(2) Section 25.145(b) requires changes to be made in flap position, power, and speed without undue effort when retrimming is ~~not impractical~~. The purpose is to ensure that any of these changes are possible assuming that the pilot finds it necessary to devote at least one hand to the initiation of the desired operation without being overpowered by the primary airplane controls. The objective is *to show* that ~~mean~~ excessive change in trim ~~will~~*does not* result from the application of power or the extension or retraction of wing flaps. *The presence of gated positions on the flap control does not affect the requirement to demonstrate full flap extensions and retractions without changing the trim control.* Compliance with ~~its terms~~ § 25.145(b) also requires that the relation of control force to speed be such that reasonable changes in speed may be made without encountering very high control forces.

Revise paragraph 21a(3):

(3) Section 25.145(c) contains requirements associated primarily with attempting a go-around maneuver from the landing configuration. Retraction of the high-lift devices from the landing configuration should not result in a loss of altitude if the power or thrust controls are moved to the go-around setting at the same time that flap/slat retraction is begun. The design features involved with this requirement are the rate of flap/slat retraction, the presence of any flap gates, and the go-around power or thrust setting. *The go-around power or thrust setting should be the same as is used to comply with the approach and landing climb performance requirements of §§ 25.121(d) and 25.119, and the controllability requirements of §§ 25.145(b)(3), 25.145(b)(4), 25.145(b)(5), 25.149(f), and 25.149(g). The controllability requirements may limit the go-around power or thrust setting.*

(i4) Section 25.145(d) provides requirements for demonstrating compliance with § 25.145(c) when gates are installed on the flap selector. Section 25.145(d) also specifies gate design requirements. Flap gates, which prevent the pilot from moving the flap selector through the gated position without a separate and distinct movement of the selector, allow compliance with these requirements to be demonstrated in segments. High lift device retraction must be demonstrated beginning from the maximum landing position to the first gated position, between gated positions, and from the last gated position to the fully retracted position.

(ii) ~~The go-around power or thrust setting should be the same as is used to comply with the approach and landing climb performance requirements of §§ 25.121(d) and 25.119, and the controllability requirements of §§ 25.145(b)(3), 25.145(b)(4), 25.145(b)(5), 25.149(f), and 25.149(g). The controllability requirements may limit the go-around power or thrust setting. If gates are provided, § 25.145(d) requires the first gate from the maximum landing position to be~~

to be located at a position corresponding to a go-around configuration. If there are multiple go-around configurations, the following criteria should be considered when selecting the location of the gate:

- (A) The expected relative frequency of use of the available go-around configurations.
- (B) The effects of selecting the incorrect high-lift device control position.
- (C) The potential for the pilot to select the incorrect control position, considering the likely situations for use of the different go-around positions..
- (D) The extent to which the gate(s) aid the pilot in quickly and accurately selecting the correct position of the high-lift devices.

(ii) Regardless of the location of any gates, initiating a go-around from any of the approved landing positions should not result in a loss of altitude. Therefore, § 25.145(d) requires that *compliance with § 25.145(c) be demonstrated for retraction of the high-lift devices from each approved landing position to the control position(s) associated with the high-lift device configuration(s) used to establish the go-around procedure(s) from that landing position.* A separate demonstration of compliance with this requirement should only be necessary if there is a gate between an approved landing position and its associated go-around position(s). If there is more than one associated go-around position, conducting this test using the go-around configuration with the *most retracted* high-lift device *position* should suffice, unless there is a more critical case. If there are no gates between any of the landing flap positions and their associated go-around positions, the demonstrations discussed in paragraph 21a(4) above should be sufficient to show compliance with this provision of § 25.145(d).

Revise paragraph 21c(6) as follows:

- (6) Longitudinal control, flap retraction and power application, §§ 25.145(c) and (d).

Revise paragraph 21c(6)(ii) as follows:

(ii) With the airplane stable in level flight at a speed of 1.1 V_S for propeller driven airplanes, or 1.2 V_S for turbojet powered airplanes, retract the flaps to the full up position, or the next gated position, while simultaneously setting go-around power. Use the same power or thrust as is used to comply with the performance requirement of § 25.121(d), as limited by the applicable controllability requirements. It must be possible, without requiring exceptional piloting skill, to prevent losing altitude during the maneuver. Trimming is permissible at any time during the maneuver. If gates are provided, conduct this test from the maximum landing flap position to the first gate, from gate to gate, and from the last gate to the fully retracted position. ~~The gate design requirements are specified within the rule.~~ *If there is a gate between any landing position and its associated go-around position(s), this test should also be conducted from that landing position through the gate to the associated go-around position. If there is more than one associated go-around position, this additional test should be conducted using the*

go-around position corresponding to the most retracted flap position, unless another position is more critical. Keep the landing gear extended throughout the test.



U.S. Department
of Transportation
**Federal Aviation
Administration**

Hi Lift 94-463 *ARM-1200* *ARM-1200*
→ Len
Memorandum

Subject: **INFORMATION**: Regulatory Evaluation of the
Proposed Rule for Revision of Gate Requirements for
High-Lift Device Controls

Date: **AUG 16 1985**

From: Manager, Aircraft Regulatory Analysis
Branch, APO-320

Reply to
Attn. of:

To: Manager, Regulations Branch, ANM-114

Attached are copies of the Regulatory Evaluation, Regulatory Flexibility Determination, and International Trade Assessment for the proposed rule. Also attached are corresponding summaries for insertion into the preamble of the rule. If you have any questions, please contact Marilyn DonCarlos at 202-267-3319.

Ward L. Keech

Ward L. Keech

Attachments

cc: ARM-1

PREAMBLE SUMMARIES FOR GATES NPRM

REGULATORY EVALUATION SUMMARY

Preliminary Regulatory Evaluation, Initial Regulatory Flexibility Determination, and Trade Impact Assessment

Proposed changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency shall 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 effect of regulatory changes on small entities. Third, the Office of Management and Budget directs agencies to assess the effects of regulatory changes on international trade. In conducting these analyses, the FAA has determined that this rule: 1) would generate benefits that justify its costs and is not a "significant regulatory action" as defined in the Executive Order; 2) is not significant as defined in DOT's Policies and Procedures; (3) would not have a significant impact on a substantial number of small entities; and 4) would not constitute a barrier to international trade. These analyses, available in the docket, are summarized below.

Regulatory Evaluation Summary

U.S. manufacturers currently design high-lift device controls in compliance with the proposed rule. Industry representatives indicate that U.S. manufacturers would not have to redesign high-lift device controls on either newly certificated airplanes or derivatives of currently certificated models. The costs of the proposed rule, therefore, would be negligible. However, the FAA solicits information from all manufacturers of transport category airplanes concerning any possible design changes and associated costs that would result from the proposed amendment.

The primary benefit of the proposed rule is the clarification of gate design standards of high-lift device controls. A second benefit is the harmonization of FAR certification requirements for controls on high-lift devices with proposed JAR certification requirements. The FAA has determined that the proposed rule would be cost-beneficial.

Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily or disproportionately burdened by government regulations. The RFA requires a Regulatory Flexibility Analysis if a proposed rule would have a significant economic impact, either detrimental or beneficial, on a substantial number of small entities. FAA Order 2100.14A, Regulatory Flexibility Criteria and Guidance, establishes threshold cost values and small entity size standards for complying with RFA review requirements in FAA rulemaking actions. The Order defines "small entities" in terms of size thresholds, "significant economic impact" in terms of annualized cost thresholds, and "substantial number" as a number which is not less than eleven and which is more than one-third of the small entities subject to the proposed or final rule.

Order 2100.14A specifies a size threshold for classification as a small manufacturer as 75 or fewer employees. Since none of the manufacturers affected by this proposed rule has 75 or fewer employees and any costs of the proposed rule would be negligible, the proposed rule would not have a significant economic impact on a substantial number of small manufacturers.

International Trade Impact Assessment

The rule will not constitute a barrier to international trade, including the export of American airplanes to foreign countries and the import of foreign airplanes into the United States. The proposed gate design requirements in this rule would harmonize with those of the JAA and would, in fact, lessen the restraints on trade.



*U.S. Department of Transportation
Federal Aviation Administration
Office of Aviation Policy and Plans*

**PRELIMINARY REGULATORY EVALUATION,
INITIAL REGULATORY
FLEXIBILITY DETERMINATION,
AND TRADE IMPACT ASSESSMENT**

**REVISION OF GATE REQUIREMENTS
FOR HIGH-LIFT DEVICE CONTROLS
PART 25**

**AIRCRAFT REGULATORY ANALYSIS BRANCH, APO-320
Marilyn DonCarlos
August 1995**

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I. INTRODUCTION

This regulatory evaluation examines the impacts of a proposed rule to revise the certification requirements concerning gated positions on the control used by the pilot of a transport category airplane to select the position of the airplane's high-lift devices. The proposed amendment would update the current standards to take into account the multiple configurations of high-lift devices provided on current airplanes to perform landings and go-around maneuvers. The proposed amendment would also harmonize these standards with those being proposed for the European Joint Aviation Requirements (JAR).

II. BACKGROUND

Section 25.145(c) of 14 CFR part 25 (part 25) of the Federal Aviation Regulations (FAR) prescribes conditions under which it must be possible for the pilot, without using exceptional piloting skill, to prevent losing altitude while retracting the airplane's high-lift devices (e.g., wing flaps and slats). The intent of this requirement is to ensure that during a go-around from an approach to landing, the high-lift devices can be retracted at a rate that prevents altitude loss if the pilot applies maximum available power to the engines at the same time the control lever is moved to begin retracting the high-lift devices.

Prior to amendment 23 to part 25, the § 25.145(c) requirement applied to retractions of the high-lift devices from any initial position to any ending position, including a continuous retraction from the fully extended position to the fully retracted position. In amendment 23, the FAA revised this requirement to allow the use of segmented retractions if gates are provided on the control the pilot uses to select the high-lift device position. Gates are devices that require a separate and distinct motion of the control before the control can be moved through a gated position. The purpose of the gates is to prevent pilots from inadvertently moving the high-lift device control through the gated position if so doing would result in a subsequent loss of altitude. The current rule requires that the first gated control position from the landing position must correspond to the position used to establish the go-around procedure from the landing configuration.

The proposal would recodify the gate requirements by moving them from a separate and undesignated paragraph at the end of § 25.145(c) to a new § 25.145(d). It would update and clarify the requirement that the first gated control position from the landing position corresponds to the configuration used to execute a go-around from an approach to landing. The proposal would also clarify that performing a go-around maneuver beginning from any approved landing configuration should not result in a loss of altitude, regardless of the location of gated control positions. Finally, the proposal would add a statement to clarify that the “separate and distinct motion” required to move the high-lift device control through a gated position must be made at that gated position.

The proposed amendment was developed by the Aviation Rulemaking Advisory Committee (ARAC) and presented to the FAA as a recommendation for rulemaking. If adopted, the proposal would harmonize gate design standards with those being proposed by the Joint Aviation Authorities (JAA).

III. COSTS AND BENEFITS

U.S. manufacturers currently design high-lift device controls in compliance with the proposed rule. Industry representatives indicate that U.S. manufacturers would not have to redesign high-lift device controls on either newly certificated airplanes or derivatives of currently certificated models. The costs of the proposed rule, therefore, would be negligible. However, the FAA solicits information from all manufacturers of transport category airplanes concerning any possible design changes and associated costs that would result from the proposed amendment.

The primary benefit of the proposed rule is the clarification of gate design standards of high-lift device controls. A second benefit is the harmonization of FAR certification requirements for

controls on high-lift devices with proposed JAR certification requirements. The FAA has determined that the proposed rule would be cost-beneficial.

IV. REGULATORY FLEXIBILITY DETERMINATION

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily or disproportionately burdened by government regulations. The RFA requires a Regulatory Flexibility Analysis if a proposed rule would have a significant economic impact, either detrimental or beneficial, on a substantial number of small entities. FAA Order 2100.14A, Regulatory Flexibility Criteria and Guidance, establishes threshold cost values and small entity size standards for complying with RFA review requirements in FAA rulemaking actions. The Order defines "small entities" in terms of size thresholds, "significant economic impact" in terms of annualized cost thresholds, and "substantial number" as a number which is not less than eleven and which is more than one-third of the small entities subject to the proposed or final rule.

Order 2100.14A specifies a size threshold for classification as a small manufacturer as 75 or fewer employees. Since none of the manufacturers affected by this proposed rule has 75 or fewer employees and any costs of the proposed rule would be negligible, the proposed rule would not have a significant economic impact on a substantial number of small manufacturers.

V. TRADE IMPACT ASSESSMENT

The proposed rule would not constitute a barrier to international trade, including the export of American airplanes to foreign countries and the import of foreign airplanes into the United States. The proposed gate design requirements in this rule would harmonize with those of the JAA and would, in fact, lessen the restraints on trade.