

**PUBLIC COMMENTS FOR AC-25-7B CHANGE 1  
FLIGHT TEST GUIDE FOR CERTIFICATION OF TRANSPORT CATEGORY AIRPLANES  
FINAL PUBLIC COMMENTS AND DISPOSITION 6/10/2011**

Comment and Number	Requested Change	Disposition
<b>1. Commenter: Cessna, Neale Eyer</b>		
<p>P. 147, 32.c.(7) Extension of Speedbrakes</p> <p>The draft of 14 CFR part 25.253(a)(5) and corresponding guidance appears to assume that the pitch force to accelerate from <math>M_{MO}/V_{MO}</math> to <math>M_{DF}/V_{DF}</math> when trimmed at <math>M_{MO}/V_{MO}</math> will be relatively small. In some cases, the force required to accelerate to <math>M_{DF}/V_{DF}</math> will be large (on the order of 50 lbs or more). In such a cases, the mistrim condition generated by pushing to the higher speed without re-trimming can result in an acceleration approaching 2g when the control column is released even without extension of speedbrakes. If there is a tendency to pitch up when extending speedbrakes in this condition, the acceleration can easily exceed 2g. The draft guidance says the maximum value should be 2.0g.</p> <p>The draft guidance provides some allowance for other means of compliance, including tests conducted to show compliance with 14 CFR part 25.251(b), where speedbrakes are deployed at <math>V_{DF}/M_{DF}</math> but not necessarily with the airplane trimmed at <math>V_{MO}/M_{MO}</math>, and during tests conducted to show compliance with</p>	<p>Cessna respectfully suggests that information be added to the AC which acknowledges that aircraft that require a substantial force to achieve dive speed while trimmed at <math>M_{MO}/V_{MO}</math> will require an alternate means of compliance that considers the effects of speedbrake deployment separately from the acceleration associated with the mistrim condition created by the test procedure.</p>	<p>The rule only requires that speedbrake extension must not result in an excessive positive load factor when the pilot does not take action to counteract the effects of the extension. The draft guidance states, as one acceptable means of compliance, that a load factor should be regarded as excessive if it exceeds 2.0. However, the guidance goes on to note that this value may not be appropriate for all airplanes and will depend on the characteristics of the particular airplane design in high speed flight. The guidance states that other means of compliance may be acceptable provided that compliance has been shown to the qualitative requirements specified in the new end paragraph of the rule.</p> <p>Since the guidance already specifically notes that another means of compliance may be necessary depending on the high speed characteristics of the particular airplane, no changes have been made.</p>

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<p>14 CFR part 25.253(a), where speedbrakes are deployed at speeds greater than <math>V_{MO}/M_{MO}</math> but less than <math>V_{DF}/M_{DF}</math> with the airplane trimmed at <math>V_{MO}/M_{MO}</math>.</p>		
<p><b>2. Commenter: GAMA, Joseph Sambiase</b></p>		
<p>P. 147, Paragraph 32.c.(7) Extension of Speedbrakes</p> <p>The draft of 14 CFR part 25.253(a)(5) and corresponding guidance appears to assume that the pitch force to accelerate from <math>M_{MO}/V_{MO}</math> to <math>M_{DF}/V_{DF}</math> when trimmed at <math>M_{MO}/V_{MO}</math> will be relatively small. In some cases, the force required to accelerate to <math>M_{DF}/V_{DF}</math> will be large (on the order of 50 lbs or more). In such a case, the mistrim condition generated by pushing to the higher speed without re-trimming can result in an acceleration approaching 2g when the control column is released even without extension of speedbrakes. If there is a tendency to pitch up when extending speedbrakes in this condition, the acceleration can easily exceed 2g. The draft guidance says the maximum value should be 2.0g.</p> <p>The draft guidance provides some allowance for other means of compliance, including tests conducted to show</p>	<p>GAMA respectfully suggests that information be added to the AC which acknowledges that aircraft that require a substantial force to achieve dive speed while trimmed at <math>M_{MO}/V_{MO}</math> will require an alternate means of compliance that considers the effects of speedbrake deployment separately from the acceleration associated with the mistrim condition created by the test procedure.</p>	<p>See response to the previous comment.</p>

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<p>compliance with 14 CFR part 25.251(b), where speedbrakes are deployed at <math>V_{DF}/M_{DF}</math> but not necessarily with the airplane trimmed at <math>V_{MO}/M_{MO}</math>, and during tests conducted to show compliance with 14 CFR part 25.243(a), where speedbrakes are deployed at speeds greater than <math>V_{MO}/M_{MO}</math> but less than <math>V_{DF}/M_{DF}</math> with the airplane trimmed at <math>V_{MO}/M_{MO}</math>.</p>		
<p><b>3. Commenter: Individual, Tom Knott, DER</b></p>		
<p>Flight Test is outside my specific area of interest (I'm a structures DER) but there is one area of overlap that could be beneficial as long as the AC is being updated.</p> <p>A couple of years ago, the DER Recurrent Seminars had a topic on the subject of "large externals" and since then "large antennas and radomes" has been added to the Transport Airplanes Issues List. The point was well taken, however, some modification centers have gone to the far extreme and are performing dive tests and heavy duty aerodynamic analysis on the smallest of small antennas (low profile XM and Iridium systems). My source of heartburn is the inconsistency - one client will write their STC certification plan saying "not a large antenna, 25.251 is n/a" while another client installing the same</p>	<p>"The installation of low profile antennas of the kinds typically installed as options on the same model or another similar aircraft with more critical characteristics should not require flight testing. Adequate structural rigidity should be ensured, as well as a comparison made to existing proven configurations."</p>	<p>The commenter's concern is inconsistency in the application of § 25.251(b) to modification projects involving the installation of external antennas and radomes. This concern is outside the scope of this project.</p> <p>The FAA is addressing this concern by notifying the public, through the Transport Airplane Issue List, that an issue paper may be needed. For standardization purposes, the FAA Transport Standards Staff has informed each Aircraft Certification Office that projects involving the addition of external antennas and radomes should be coordinated through the Transport Standards Staff.</p>

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<p>antenna will go overboard. This is primarily a competitiveness issue; the mod center doing unnecessary, redundant, or marginally informative tests and compliance findings has higher costs. Being the capitalist I am, I would much rather both companies stay in business. There is also the (admittedly slight) risk to persons and property in flight test.</p> <p>Currently, AC25-7B envisions this type of scenario: in Section 8 Chapter 31 page 138, for 25.251 Vibration and Buffeting, where it says “(5) Modifications to airplanes, particularly modifications that may affect airflow about the wing, should be evaluated for their effect on vibration and buffeting characteristics...” I think the key word is “evaluated,” perhaps what I am looking for is additional criteria or clarification.</p>		
<p><b>4. Commenter: Boeing, Terry McVernes</b></p>		
<p>Enclosed are comments from Boeing Commercial Airplanes concerning the subject proposed AC 25-7B, Change 1. We fully support this proposal, but have found one area where a change to the text would be appropriate in order to align this guidance material with the intent of the associated proposed rule (ref Docket</p>	<p>Boeing recommends the text be revised as follows:</p> <p>“(i) Section 25.177(c) requires, in steady, straight sideslips throughout the range of sideslip angles appropriate to the operation of the airplane, but not less than those obtained with one-half of the available</p>	<p>The text for both the final rule and AC 25-7B, Change 1 will be revised to clarify that compliance with § 25.177(c) must be shown using at least one-half of the available rudder control input, but not exceeding a rudder control force of 180 pounds. If using one-half of the available rudder control input requires the pilot to</p>

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<p>FAA–2010–0310; Notice 10–17, “Harmonization of Various Airworthiness Standards for Transport Category Airplanes—Flight Rules“,</p> <p>Comment #1 of 1.</p> <p>Section 5. STABILITY Paragraph 27.a.(3)(a) Page 112</p> <p>The proposed text states:</p> <p>“(i) Section 25.177(c) requires, in steady, straight sideslips throughout the range of sideslip angles appropriate to the operation of the airplane, but not less than those obtained with one-half of the available rudder control input (e.g., rudder pedal input) or a rudder control force of 180 pounds, that the aileron and rudder control movements and forces be proportional to the angle of sideslip.”</p>	<p>rudder control input (e.g., rudder pedal input) or a rudder control force of up to 180 pounds, that the aileron and rudder control movements and forces be proportional to the angle of sideslip.”</p> <p>Boeing intends to recommend a change to the text of 14 CFR §25.177(c) in our forthcoming comments that we plan to submit to FAA’s corresponding NPRM (“Harmonization of Various Airworthiness Standards for Transport Category Airplanes—Flight Rules,” Docket No. FAA–2010–0310, Notice No. 10–17), which, if accepted, would impact this section of AC 25-7B, Chg. 1, as noted above. [There would be no change necessary to other parts of the §25.177(c) guidance material, which are, in fact, consistent with our comment.]</p> <p>The justification for the change that we will be presenting in our NPRM comments is as follows:</p> <p>... In October 2002, the JAA released its final rule for Section 25.177(c) that incorporated some "final" comments, one of which was a suggestion to add the words "up to 180 pounds of pilot effort," so that the rule text would read: " ... sideslip angles appropriate to the</p>	<p>apply more than 180 pounds of force to the rudder control, then compliance may be shown using the rudder control input that corresponds to 180 pounds of force on the rudder control.</p>

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	<p>operation of the aeroplane but not less than those obtained with one-half of the available rudder control, up to 180 pounds of pilot effort... ."</p> <p>This suggestion was accepted by the JAA.</p> <p>... However, when the rule was published, the actual wording was changed slightly from what was suggested in the comment to read instead as:</p> <p>"... not less than those obtained with one-half of the available rudder control input or a rudder control force of 801 N (180 lbf)... ."</p> <p>This new text could be read to mean that the JAA (now EASA) is requiring a minimum of 180 lbs. of pedal force as part of this requirement. However, we believe that the actual intent was to require at least 1/2 rudder input, but no more than 180 lbs. of pedal force.</p> <p>Our suggested text change will align the AC with the intent of the proposed rule.</p>	
<p><b>5. Commenter: Airbus, Philippe de Gouttes</b></p>		
<p>Page 113, In the related draft Change 1 to AC 25-7B, Airbus interpretation of paragraph 27 a(3)(d) (quoted below) is that</p>		<p>The means of compliance guidance proposed for AC 25-7B recognizes there is no need to apply more rudder control input</p>

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<p>there is no need to consider a rudder control input beyond that corresponding to the maximum commanded sideslip angle for the current flight conditions, even if it is lower than one-half of the maximum possible displacement of the rudder pedal control input:</p> <p>Page 113, Paragraph 27a(3)(d) : For the purposes of showing compliance with the requirement out to sideslip angles associated with one-half the available rudder control input, there is no need to consider a rudder control input beyond that corresponding to full available rudder surface travel or a rudder control force of 180 pounds. Some rudder control system designs may limit the available rudder surface deflection such that full deflection for the particular flight condition is reached before the rudder control reaches one-half of its available travel. In such cases, further rudder control input would not result in additional rudder surface deflection.”</p>		<p>than that which results in the maximum commanded sideslip angle for the flight condition. Further rudder control input would not result in additional sideslip angle, and therefore would not affect compliance with the rule.</p>