

COMMENT RESPONSE DOCUMENT

EASA CRD of ESF E-37 “Engine controls in icing conditions”

[Published on 10 July 2019 and officially closed for comments on 31 July 2019]

Commenter 1: Rolls Royce

Comment # 1

Rolls-Royce offer just one comment, seeking to clarify the coverage of compensating factor 4 – as shown below:

4. By means of tests, it must be shown that the controllability of the aircraft in lateral and longitudinal stability is not affected **under both steady state and worst case transient thrust conditions with** ~~once~~ the NDZ logic is activated.

EASA response: EASA Agrees. Text will be modified as proposed.



Commenter 2: Boeing**Comment # 2**

COMMENT #1 of 3			
Type of comment (check one)	Non-Concur	Substantive X	Editorial
Affected paragraph and page number	Page: 2 Paragraph: Compensating Factors for the Equivalent Safety to CS 25.1143(c), Amendment 13, Note 2		
What is your concern and what do you want changed in this paragraph?	<p>THE PROPOSED TEXT STATES:</p> <p>"2. It must be shown that there are no failure conditions of the NDZ logic that would prevent continued safe flight and landing in complying with the requirements of CS 25.901(c) and CS 25.1309."</p> <p>REQUESTED CHANGE:</p> <p>"2. It must be shown that there are no failure conditions of the NDZ logic that would prevent continued safe flight and landing in complying comply with the requirements of CS 25.901(c) and CS 25.1309."</p>		
Why is your suggested change justified?	<p>JUSTIFICATION:</p> <p>Requested change more accurately aligns with the latest AMC 25.1309 which removed 'continued safe flight and landing' from the definition of 'catastrophic'.</p>		

EASA response:

EASA partially agrees, however the applicable amendment for the project is 13, where 'continued safe flight and landing' is still in the definition for Catastrophic. The initial text will be kept.



Commenter 3: Boeing**Comment # 3**

COMMENT #2 of 3			
Type of comment (check one)	Non-Concur	Substantive X	Editorial
Affected paragraph and page number	Page: 2 Paragraph: : Compensating Factors for the Equivalent Safety to CS 25.1143(c), Amendment 13, Note 3		
What is your concern and what do you want changed in this paragraph?	<p>THE PROPOSED TEXT STATES:</p> <p>"3. It must be shown that any trim conditions requiring a N1 within the NDZ would not introduce any Airplane Pilot Coupling (APC)."</p> <p>REQUESTED CHANGE:</p> <p>"3. It must be shown that any trim conditions requiring a N1 within the NDZ would not introduce are compliant with 25.143(a)(b) with respect to any Airplane Pilot Coupling (APC) susceptibility."</p>		
Why is your suggested change justified?	<p>JUSTIFICATION:</p> <p>Requested change specifically lists the regulations for compliance showing, so the compliance showing requirement is not vague.</p>		

EASA response:

EASA: Partially agrees with Boeing's proposal. The rules 25.143 (a) and (b) are indeed applicable, but there might also be other rules affected, and for this reason, EASA refrain from narrowing it down to only those two specific rules. The rules affected by the design shall be identified and agreed in the Certification Plan for the project.

The EASA final text will be: "3. It must be shown that any trim conditions requiring a N1 within the NDZ would not introduce any Airplane Pilot Coupling (APC) susceptibility".



Commenter 4: Boeing

Comment # 4

COMMENT #3 of 3			
Type of comment (check one)	Non-Concur	Substantive X	Editorial
Affected paragraph and page number	Page: 2 Paragraph: : Compensating Factors for the Equivalent Safety to CS 25.1143(c), Amendment 13, Note 4		
What is your concern and what do you want changed in this paragraph?	<p>THE PROPOSED TEXT STATES:</p> <p>"4. By means of tests, it must be shown that the controllability of the aircraft in lateral and longitudinal stability is not affected once the NDZ logic is activated."</p> <p>REQUESTED CHANGE:</p> <p>"4. By means of tests, It must be shown that the controllability of the aircraft in lateral, directional and longitudinal stability is not affected-compliant with 25.143(b) during activation and once the NDZ logic is activated."</p>		
Why is your suggested change justified?	<p>JUSTIFICATION:</p> <p>- "By means of tests," should be removed as it would not be appropriate for every certification which may use this ESF (e.g. this design change and ESF may be applied to a similar minor model airplane where an analysis means of compliance is acceptable). The specific means of compliance (test or analysis) can be addressed in the certification plan.</p> <p>- Added "directional" stability as it may be affected by the change.</p> <p>- Changed "not affected" to "compliant", as "not affected" appears to be impossible to meet, as some effect would be expected. The magnitude of the effect just needs to be compliant.</p> <p>- Added the specific regulation for compliance showing, "with 25.143(b)", so the compliance showing requirement is not vague.</p> <p>- Added "during activation and" to clarify this applies to the transient condition of activation, as well as the steady state condition of "once...activated".</p>		

EASA response:



"by means of tests": **disagrees**

- ***This is not a generic ESF, this is project specific and acceptance of compensating factors is made on test and accepted only based on the existence of testing.***

"directional": **agrees**

"not affected": **partially agrees. Not affected is an absolute wording, and the NDZ will affect somehow the aircraft. However, those effects must be negligible. EASA will modify the language as follows: "not affected" with "not objectionably affected".**

"...compliance with 25.143(b)...": **EASA disagree with Boeing's proposal because also other requirements than 143 (b) might be affected, and for this reason, EASA would refrain from narrowing it down to only those two specific rules. The rules affected by the design should be identified and agreed in the Certification Plan for the project**

"..during activation...": **partially agrees. The proposal is to adopt the language as reported in Rolls Royce's proposal.**

The final text will be:

"4. By means of tests, it must be shown that the controllability of the aircraft in lateral, **directional** and longitudinal stability is not **objectionably** affected **under both steady state and worst case transient thrust conditions with** the NDZ logic activated.

