

Comment				Comment summary	Suggested resolution	Comment is an observation or is a suggestion*	Comment is substantive or is an objection**	EASA comment disposition	EASA response
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1	Laurent CAPRA (IIAAV) - Airbus	Identification of Issue	1	Airbus understands the design covered by this ESF as limiting the angle of attack possibly below the incidence associated to VSR but taking full credit of the VSR when defining operational speeds. This design has some similarities with Airbus design of angle-of-attack protection.	N/A	yes	no	Noted	
2	Laurent CAPRA (IIAAV) - Airbus	Appendix A	2	In the proposed ESF, it appears that the evaluation of A/C handling characteristics up to the incidence associated to VSR will be performed through compliance to 25.103. Usually these tests are carried out at maximum forward CG (as it corresponds to the highest reference stall speed). It is therefore not obvious that A/C handling characteristics up to the incidence associated to VSR will also be evaluated at maximum aft CG. Airbus considers that a demonstration of non dangerous characteristics and conventional use of the control up to the incidence associated to VSR shall cover the complete CG range.	Evaluation of handling qualities up to the angle-of-attack corresponding to CLmax shall be explicitly required on the complete CG range to be certified	no	yes	Agreed	The following text has been added to Appendix A (after first compensating factor): <i>Demonstration of aeroplane handling qualities up to AoAs associated to reference stall speeds, determined as specified in the previous bullet point, must be evaluated at the most unfavourable (CG) position. During these demonstrations, the aeroplane must not exhibit unacceptable characteristics and it must always be possible to reduce AoA by conventional use of the controls.</i>
3	Laurent CAPRA (IIAAV) - Airbus	Appendix A	2	This ESF is not addressing the effect of atmospheric disturbances on the operations of this design feature. Airbus believes that this design feature should be shown not to adversely affect aircraft control during expected levels of atmospheric disturbances, nor impede the application of recovery procedures in case of wind-shear.	The ESF shall specify that this design feature should be shown not to adversely affect aircraft control during expected levels of atmospheric disturbances, nor impede the application of recovery procedures in case of wind-shear.	no	yes	Agreed.	The following text has been added to Appendix A (as part of the first compensating factor): <i>In addition, it must be shown that the ESP will neither adversely affect the aircraft control during expected levels of atmospheric disturbances, nor impede the application of recovery procedures in case of windshear.</i>
4	Laurent CAPRA (IIAAV) - Airbus	Appendix A	2	For compliance to 25.207, the ESF offers the possibility to set the maximum AoA command to a higher value than for the normal production setting. In this case, the ESP may still interfere with the demonstration, in particular when demonstration relies on a minimum time before recovery (25.207(e),(f)). If this is the option retained, it shall be checked that the retained setting of maximum AoA command is such that the ESP did not participate to the recovery. Alternatively, if some favourable contribution from ESP is evidenced in the recovery from stall waring, the effect of increased deceleration rates shall be evaluated. Current practices suggest up to maximum deceleration rate in dry conditions and up to 3kt/s in icing conditions.	The ESF shall specify that compliance to 25.207 needs to be performed free of any ESP contribution or, if some favourable ESP contribution is evidenced, deceleration rates greater than currently specified shall be evaluated.	no	yes	Agreed	The following text has been added to Appendix A (as part of the second compensating factor): <i>In case the applicant choses to show compliance with CS 25.207 (e) and (f) with the ESP enabled and the maximum AoA command shifted to a higher value than for the normal production settings, it shall be checked that the shifted maximum AoA command is such that the ESP does not have any adverse effect in the recovery manoeuvre.</i>

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5	ANDRE LUIZ CHIOSSI FORNI - EMBRAER	N/A	N/A	The subject of flight envelope protection, including High Angle-of-Attack Limiting Function, has been considered, for almost all FBW transport airplanes, as a Special Condition with detailed interpretative material and means of compliance. Besides that, the ARAC FTHWG Phase 2 report has already recommended standards in the areas of Fly-by-Wire flight controls (e.g., a revised 25.103 as well as new sections 25.202 and 25.204). However, document ESF-B25.103-01 follows a different approach, and considers that an ESP doesn't present any novel or unusual design feature.	The ESF-B25.103-01 could adopt a verbiage that reflects the contents and the language recommended by the Aviation Rulemaking Advisory Committee (ARAC) Flight Test Harmonization Working Group (FTHWG) Phase 2 report (that is, the revised 25.103 as well as the new sections 25.202 and 25.204), for easy of understanding and making clear for the public that a fair and uniform approach is adopted by EASA.	yes	no	Noted	Enhanced Stall Protection (ESP) and High Angle-of-Attack Limiting Function (HALF) are different concepts and have been addressed with different requirements.
6	Fidelio Eugenio - Bombardier Aviation	Appendix A, compensating factors	2/2	Based on the first 2 bullets of Appendix A: Is the AOA for stall warning angle (and associated airspeed) the same value for both the ESP function active and the ESP function disabled? If yes, are the paragraphs CS-25.207 (a) through (i) shown to be compliant (in terms of margin stall warning to maximum AOA command limit) with the ESP function disabled? If no, then how is the robustness of the ESP function shown, in normal operation, with the normal AOA stall warning angle?	It should be clarified or specified that the measurement of the margin will be done using the same AOA stall warning reference for either ESP enabled or disabled.	Yes		Noted	Yes, AoA of stall warning is the same with ESP activated or de-activated. Yes, disabled or set to a AOA not interfering with the demonstration of compliance to CS 25.207 (a) to (i).
7	Willer Cruz - ANAC	General	All	Currently there are two major paths for AOA protection certification: the traditional as per AC 25-7D and the one applied to envelope protected airplanes as per FTHWG harmonized agreement (based on previous Special Conditions). This ESF looks like a blend of both, but with less requirements (as per the next comments). Also, the system does not look unique to justify a different treatment. Aircraft with an ESP that limits the AOA with stall warning were already certified using the normal CS 25 requirements.	ANAC believes a throughout discussions is necessary for a new AOA protection certification strategy. While ANAC considers that an ESP may present an additional safety level as compared to traditional designs, the system description looks similar to previously approved designs using usual requirements and MoC. The proposed ESF would allow a gain in performance when compared with these previous certified designs. A “level playing field” should be maintained.	Yes	Yes	Disagreed	The ESF requires the integrated performance to be equivalent with ESP activated or de-activated (first bullet of Appendix A) There is no gain in performance (same level playing field), but a higher level of safety.
8	Willer Cruz - ANAC	General	All	It is not clear if there is any handling qualities demonstration at AOA CLMAX.	To include handling demonstration up to AOA CLMAX for 25.201 and 25.203 (not up to the ESP protection angle).	Yes	Yes	Agreed	See EASA response to comment 2 above.
9	Willer Cruz - ANAC	General	All	It is not clear if 25.207(a) and (b) will be applicable as usual.	To confirm that 25.207(a) and (b) will be complied as usual, specially in all normal configurations.	Yes	Yes	Noted	Yes, the mentioned requirements are still applicable. The ESF is only for CS 25.207(c), (e), (f). The stall warning activation is not affected by the ESP setting.

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10	Willer Cruz - ANAC	General	All	There is not demonstration of the ESP robustness. Previous Special Conditions require additional robustness tests for the ESP to justify performance credit.	To include robustness tests for the ESP such as maximum practical rate pilot input instead of 3kt/s.	Yes	Yes	Noted	<p>The previous SC was applicable to a design which is different from the ESP. In the ESP design the stall warning is always retained.</p> <p>Therefore, the flightcrew is not expected to operate beyond stall warning and the ESP control law includes a logic to ensure that there is no unsafe diminishing of margin between stall warning and the ESP maximum AoA command.</p> <p>ESP will not restrict the operational envelope of the airplane and it will not degrade the pilot’s ability to aggressively maneuver the airplane in unusual circumstances such as collision avoidance or late flare.</p> <p>In addition, the ESP maximum AOA command will always be set above stall warning and transient operation beyond stall warning as a result of an emergency action or inadvertent excursion due to an atmospheric event will be demonstrated and evaluated in a conventional manner.</p>
11	Willer Cruz - ANAC	General	All	It is not clear how the ESF applies to icing conditions.	To include an explanation on how the ESF applies to icing conditions.	Yes	Yes	Noted	The aeroplane ESP maximum AoA command is intended to enforce an end-point beyond stall warning coinciding with full aft longitudinal column input. The ESP maximum AoA command may be scheduled as a function of aeroplane configuration, <u>aeroplane icing state</u> , flight condition and other relevant parameters.
12	Willer Cruz - ANAC	General	All	It is not clear the maneuver capability of 25.143(h) will be demonstrated as usual.	To confirm that 25.143(h) will be complied as usual.	Yes		Noted	This ESF does not alter any existing guidance or regulatory expectations regarding maneuver capability in accordance with 25.143(h).
13	Willer Cruz - ANAC	General	All	It is not clear if there is a single failure that affects the ESP and if the 25.672(c) would be applicable to it.	To confirm if there is a single failure that affects the ESP and if the 25.672(c) would be applicable to it.	Yes	Yes	Noted	The subject of 25.672 is indeed pertinent but is under a separate discussion. 25.672 discussions are hence decorrelated from the specific subject of this ESF.

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