Proposed Special Condition for Soft Go-Around mode

Applicable to Airbus A-380

Introductory note:

The hereby presented Special Condition to the EASA Certification Basis shall be subject to public consultation, in accordance with EASA Management Board decision 12/2007 dated 11 September 2007, Article 3 (2.) of which states:

"2. Deviations from the applicable airworthiness codes, environmental protection certification specifications and/or acceptable means of compliance with Part 21, as well as important special conditions and equivalent safety findings, shall be submitted to the panel of experts and be subject to a public consultation of at least 3 weeks, except if they have been previously agreed and published in the Official Publication of the Agency. The final decision shall be published in the Official Publication of the Agency."

Statement of issue

The A380, is proposed to be equipped with a new thrust setting "Soft Go-Around (Soft GA)" which is available after GA initiation.

When the pilot selects TOGA during an approach, the Soft GA thrust is «armed», and becomes active when thrust levers are retarded by the pilot to the MCT/FLX position. In this case, the MCT/FLX position corresponds to Soft GA thrust actually commanded (active). Autothrust (A/THR) is engaged but not active and AP/FD modes switch to Go-around mode (SRS / GA TRK or NAV).

At Reduction Altitude (LVR CLB flashing on FMA), the pilot brings back thrust levers to CLB position and Engine Limit mode changes to "CLB" and the A/THR becomes active (to SPEED/THR CLB mode).

Soft Go-Around setting is a function of weight, altitude and temperature designed to provide the thrust necessary to achieve 2000ft/min. When the 2000ft/min is forecasted not achievable, GA thrust is used for Soft GA.

At any time during a Soft Go-Around, Max thrust can still be commanded by pushing thrust levers to TOGA detent.

According to JAR 25.1587 b)3)ii), the climb gradient in the approach configuration must be established in the Airplane Flight Manual in Performance section:

> *quote*
>
> *25.1857 (b) Each aeroplane Flight Manual must contain the performance information computed under the applicable provisions of this JAR-25 (including JAR 25.115, 25.123 and 25.125 for the weights, altitudes, temperatures, wind components, and runway gradients, as applicable) within the operational limits of the aeroplane, and must contain the following:*

(1) In each case, the conditions of power, configuration, and speeds, and the procedures for handling the aeroplane and any system having a significant effect on the performance information.

(2) VSR determined in accordance with JAR 25.103.

(3) The following performance information (determined by extrapolation and computed for the range of weights between the maximum landing weight and the maximum take-off weight):

(i) Climb in the landing configuration.

(ii) Climb in the approach configuration.

(iii) Landing distance.

unquote

AMJ 25.1581 6)d) (15) gives further guidance as follows:

quote

(15) Approach Climb Performance. For the approach climb configuration, the climb gradients (JAR 25.121(d)) and weights up to maximum take-off weight (JAR 25.1587(b)(3)) should be presented, together with associated conditions (e.g. procedures and speeds). The effects of ice accretion on unprotected portions of the airframe and the effects of engine and wing ice protection systems should be provided.

unquote

In the above material, it has been implicitly assumed that the all-engines-operating go-around climb gradient would be higher than or equal to the one-engine-inoperative go-around climb gradient, and that publishing the latter in the Airplane Flight Manual would therefore be sufficient.

The new "Soft GA" thrust setting, potentially leading to lower climb performance with all engines operating than with one engine inoperative, invalidates this assumption and is therefore a novel and unusual design feature as defined in Part 21.16B, which necessitates a Special Condition to be raised.

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It is deemed necessary to ensure that Go-Around climb gradient is always equal to or higher than the approach climb gradient published in the AFM.

Special Condition

Therefore, as a Special Condition, the JAR 25.1587 (b)(3)(ii) paragraph shall be amended to read as follows:

25.1587 (b) (3) (ii) Climb in the approach configuration. Published approach climb performance shall represent the lower of

      a. *the performance obtained with GA thrust and one engine inoperative*
      b. *the performance obtained with "Soft GA" thrust and all engines operating*

Alternatively, when "Soft GA" thrust setting is used and resulting climb gradient with all engines operating is lower than the climb gradient that would be obtained with GA thrust and one engine inoperative, there shall be a clear and unmistakable means to alert the flight crew of this situation