Proposed Temporary Deviation on Throttles Design

Applicable to A400M

Introductory note:

The hereby presented Temporary Deviation has been classified as important and as such 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

During A400M certification flight testing there have been two occasions where the pilot did not achieve to move the four throttle levers symmetrically when going from Flight Idle to Ground Idle. The throttle of the engine #4 was either moved to the desired ground idle position with a delay or was not fully set to ground idle. It has also been noticed that holding the throttles with the palm upwards could facilitate symmetrical throttle levers movement but with a higher risk to lift them to ground regime in flight when selecting flight idle.

In addition, during full flight simulator testing sessions there have been a few instances where the pilot was not aware of the actual position of the throttles, mistaking FI/GI/GI/FI position for GI/REV/REV/GI position (probably due to the locking logics of the throttles for the inner engines).

EASA CS 25.777(a) requirement says:

> "*Each cockpit control must be located to provide convenient operation and to prevent confusion and inadvertent operation*"

In the light of the above mentioned events, EASA consider that compliance with CS 25.777(a) has not been demonstrated.

Following evaluation of tests conducted and debriefing discussions between EASA Certification Team and Airbus, it was agreed that A400M's throttles and locking logic designs need to be improved.

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The applicant agree to improve the design. The specific improvement features under consideration are:

- Parts added to the front of the internal frame on external throttle levers in order to separate fingers and help the pilot to know if he/she correctly positions his/her hand on the levers.
- Small horizontal elements on the front of the external levers. This may help the little finger prehension when the pilot lifts the levers to go to the reverse range.
- Rib added to the side of the external levers, under the A/B switch, to signalize a wrong handling to the pilot (no finger is allowed to be positioned under the A/B switch).
- In addition, the effectiveness of the keep out zone locking and reverse interlock device will be reviewed.

The design improvement will be implemented after initial EASA A400M certification.

The applicant has identified the following mitigations for the particular scenarios described in the statement of issue and the identified non-compliance with CS 25.777(a):

- During the whole A400M flight test campaign, no unsafe conditions have occurred related with the current throttle design.
- There is no short term safety issue with current throttle design and there is only a potential risk of throttle mishandling.
- Airbus has performed assessments which show that effects are no more than Major even in case of throttle mishandling during Rejected Take Off or landing.
- Compliance with CS 25.777(a) will be shown before first entry into service of any A400M aircraft through the design improvement certification process.

Supported by these considerations, Airbus SAS request EASA a Temporary Deviation with regards compliance with CS 25.777(a) requirement.

As EASA conclusion, a Temporary Deviation with regards compliance with CS 25.777(a) for the A400M can be granted by EASA associated to the following condition:

> This EASA temporary deviation will be valid since initial A400M certification until 31st December 2012 or until first A400M aircraft entry into service, whichever will occur first.