European Aviation Safety Agency

Deviations request #86 for an ETSO approval for CS-ETSO applicable to VOR Receiving Equipment (ETSO-2C40c)
Consultation Paper

1. Introductory note

The hereby presented deviation requests shall be subject to public consultation, in accordance with EASA Management Board Decision No 7-2004 as amended by EASA Management Board Decision No 12-2007[1] products certification procedure dated 11th 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."

2. ETSO-2C40c#2 VOR Receiving Equipment

Deviate from ETSO-2C40c and EUROCAE ED-22B section 3.1.1 and reduce the course deviation indicator sensitivity by a factor of 2.

Requirements:

As per EUROCAE ED-22B

3.3.1 Deflection sensitivity
If a course deviation indicator is provided, the course deviation pointer shall visibly deflect at least 1/2 inch (12.7 mm) when the phase difference between the two components of a standard VOR test signal is changed 10 degrees from that producing an "on course" indication. This requirement shall be met at all input signal levels between 10 and 20 000 microvolts (-93 to -27 dBm).
NOTE: The requirements of this paragraph are based on a course deviation indicator of the moving pointer type. It is recognized that display devices using other types of indication are possible. When such display devices are provided as part of the equipment, the intent of the requirements of this paragraph shall be met.

Industry:

Allowed course deviation pointer deflection of ¼ inch (6.35 mm) when the VOR test signal is changed 10 degrees from that producing an 'on-course' indication.

The Standby Instrument System is constrained by its 3ATI size. The VOR deviation size is further constrained by its placement between the airspeed and altitude tapes, with the attitude display above, and the heading tape below per basic T configuration as identified in AMC 25-11 to meet primary display format.

Equivalent level of Safety:
The design objective of the VOR deviation indicator was to reflect the VOR deviation indicator on the primary displays. Due to constraints of the displays size, limitations were necessary to reduce the viewing area of the VOR deviation indicator. To offset the size

[1] Cf. EASA Web: http://easa.europa.eu/management-board/docs/management-board-meetings/2007/04/MB%20Decision%2012-2007%20amending%20the%20certification%20procedure.pdf

constraints of the VOR deviation indicator, on the standby, industry incorporated a highly visible white scale on a semi-transparent dark background with a coloured pointer to visually enhance the VOR deviation indicator. The pointer on the semi-transparent background and white scale are judged by industry engineers, human factors specialist and the test pilots to ensure that the design is sufficient for maximum readability and is consistent with the accuracy of the instrument for the installed environment.

Illustrating drawing showing a course deviation pointer for 10 degree left off. The symbol for the deviation indication is configurable.

EASA:
We accept the deviation for a standby instrument. This may lead to installation limitations and the subject will be treated differently for the primary display.