

Proposed Deviation on FAR 25.1301(a)(b) Amendment 0, FAR 25.1329(h) Amendment 25-46, FAR 25.1335 Amendment 25-41 and FAR 25.1555(a) Amendment 0

Applicable to Bombardier DHC-8-311

Introductory note:

The following Deviation 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 Applicant has applied for an EASA Airworthiness Approval to install an Universal UNS 1-Ew and UNS 1-Fw Flight Management System (FMS) unit into the DHC-8-311 aircraft.

In addition, the Applicant is seeking approval of Required Navigation Performance (RNP) Approach (APCH) operations down to Localiser Performance with Vertical Guidance (LPV) minima using the Global Navigation Satellite System (GNSS) augmented by the Satellite Based Augmentation System.

The proposed design includes the use of the «MLS» (Microwave landing system) channel of the existing Flight Guidance System (FGS) to process signals from the Flight Management Computer (FMC). This results in an indication of the letters «MLS» on the respective displays.

The letters «MLS» describe a different intended function than that selected by the flight crew. The existing RNAV channel of the FGS is not as accurate as the MLS channel. The use of the RNAV channel might not support the Total System Error (TSE) requirements of LPV specifications.

- Deviation F-01 - FAR 25.1301(a)(b) Amendment 0, FAR 25.1329(h) Amendment 25-46, FAR 25.1335 Amendment 25-41 and FAR 25.1555(a) Amendment 0

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The proposed design includes non-compliances to:

- FAR 25.1301(a)(b) Amendment 0
- FAR 25.1329 (h) Amendment 25-46
- FAR 25.1335 Amendment 25-41
- FAR 25.1555(a) Amendment 0

The acronym «MLS» is solely used for «Microwave Landing System». The use of «MLS» for the intended function of «LPV» is therefore a deviation to the applicable requirements listed above.

While the RNAV channel could be used to provide LPV guidance, there are risks in doing so as substantiated by the Applicant. The use of the RNAV channel would also not provide an LPV but an RNAV indication and is therefore considered to be not appropriate to indicate the intended function correctly. Therefore, the MLS channel is preferred.

Due to the obsolescence of MLS ground and airborne equipment and limited deployment of MLS approaches, MLS and LPV approaches are unlikely to co-exist at any given airport. Therefore, the risk of inducing human error due to labelling/indications (i.e., the pilot could be confused into believing that he operates on one type of approach where he is actually flying another type) can be mitigated via placards, training and AFMS instructions.

Other than the use of “MLS” instead of “LPV”, all indications and behaviours are consistent regarding to existing approach standards.

The proposed design’s deficiencies are sufficiently offset by the improvements to safety that are provided by LPV approaches vs. circling approaches or approaches to LNAV minima with no vertical guidance.