Deviation Request ETSO-C115c#2 for an ETSO approval for CS-ETSO applicable to Airborne Area Navigation Equipment Flight Management Systems (FMS) Using Multi-Sensor Inputs (ETSO-C115c)
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 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-C115c#2 Airborne Area Navigation Equipment Flight Management Systems (FMS) Using Multi-Sensor Inputs

2.1 Summary of Deviation

Deviates from RTCA DO-283A sections 2.2.2.7, 2.2.2.9, and 2.4.3.4 by not implementing fixed-radius transitions.

2.2 Original Requirement

RTCA DO-283A

2.2.2.7 Parallel Offsets:

(…) When flying a parallel offset, the RNP RNAV value and any defined fixed radius transitions applicable to the host route in the active flight plan shall be applicable to the offset route. (…)

2.2.2.9 Transitions Between Legs:

The navigation system shall provide a means to automatically transition from one leg to another. Two categories or transition between fixed path segments can be defined:
- *Fly-by transitions; and*
- *Fixed radius transitions.*

The navigation system shall be capable of accomplishing both of these transitions. Fly-by transitions shall be the default transition when the transition type is not specified. (…)

2.2.2.9.2 Fixed-Radius Transitions:

The system shall be able to define a transition using a fixed turn radius of either 22.5 NM, for routes at or above FL195, or 15 NM, for routes below FL195 (Figure 9).(…)

2.4.3.4 Waypoint Transitions:

(…) Where the active waypoint is defined in the navigation database as having a fixed radius transition, verify by demonstration and/or analysis that the equipment generates a circular waypoint transition path of the required radius for the applicable altitude.

2.3 Industry

Fixed radius transitions are not implemented at this time. RTCA committee SC-227 is debating changes in the requirements for this function. The UK NATS Aeronautical Information Circular AIC: Y 023/2012 identifies this feature as planned for implementation in the interval from 2018 (consistent with the planned European PBN-IR). The applicant plans to implement fixed radius transitions using the radius of turn from the navigation database. The requirements are not yet clear and to applicant's knowledge is not implemented in any airspace in the world.

Procedures containing fixed-radius transitions will be removed from the navigation database.

The following statement will be included as an AFMS Limitation and also inserted in the Operator's Manual in multiple locations:

The FMS does not support fixed-radius transitions

2.4 Equivalent Level of Safety

An equivalent level of safety is provided by removing the procedures containing fixed-radius transitions from the navigation database, preventing the flight crew from loading the procedures into the flight plan, thus eliminating any hazard.

2.5 EASA position

We accept the deviation, but encourage applicants to follow the standard (once clearly defined by the industry) to support future airspace requirements.