EASA	COMMENT RESPONSE DOCUMENT (CRD) to Proposed Equivalent Safety Finding on CS-E 740 - Endurance Test. Published: 21 Dec 2012. Closing date for comments: 10 Jan 2013.	12 Mar 2013

Commenter 1 : UK CAA

Comment 10/1/13: Please note that there are no comments from the UK CAA regarding proposed ESF CS-E 740.
EASA response: Noted.

Commenter 2 : Jan Novak

Comment 1, 11/1/13: My experiences in general aviation turboprops and large turbofans certification show that an engine will deteriorate by 2/3 of the total amount in the first half of the endurance test and the final 1/3 in the second half of the test. In addition, the first Part 5 may cause up to 1 % deterioration in HP speed at TET and Part 1´s can deteriorate the engine in the same manner. Therefore proposed blocking with Parts contributing massively to averages (CS-E 740 is still based on mean values reached during endurance testing) to block 1 followed by block 2 with parts contributing to deterioration does not provide test schedule equivalent to CS-E 740. Parts contributing to deterioration should be evenly distributed in both blocks.
EASA response: *Not Accepted. It is not considered that there will be a massive effect on the shaft speed averages from this re-ordering however undoubtedly some effect on averages will occur, but it is considered to be non-significant and also to act in the direction of increased safety. Limits for the T/O conditions are biased towards the end of the test which will lead to reduced limits for the highest power / highest stress condition (as opposed to the MC condition). The reasons for the revised ordering are outlined in the ESF and relate to the physical limitations caused by non-standard hardware adjustments associated with having to produce simultaneous multiple red line conditions, as demanded by the test. These reasons have driven a compromise which achieves a reasonable representation of service conditions to meet the various intents of the test without consideration of any possible advantage or disadvantage in terms of limitations achieved. It should also be noted that the ESF applies only to tests which are primarily intended to satisfy Part 33 (and validated to CS-E) where limits are established from the test minimums and not averages, the lowest of which will appear in both the FAA and EASA TCDS.*

Comment 2, 11/1/13: Schedule proposed by the applicant also does not include complete stage running without stop, which is also requirement of CS-E 740, at least one complete stage, i.e. Part 1,2,3,4,5 (order of parts does not matter) should be completed without engine being stopped and without oil exchange.
EASA response: *Not accepted. One complete stage, i.e. Part 1,2,3,4,5 in that order, was conducted during the endurance test without stopping or oil exchange.*

Comment 3, 11/1/13: AS CS-E 740 requires to demonstrate TET limits, EGT should be replaced by EGT equivalent to TET limit.
EASA response: *Not accepted. This is understood and applied by the applicant to establish useable limits for service operation. EGT is referred to in the ESF because it is the critical parameter for the test.*

Comment 4, 11/1/13: In summary, proposed ESF does not provide compliance equivalent to CS-740 and the applicant should significantly update test schedule to provide equivalent demonstration.
EASA response: *Addressed in the responses above.*