

Response to comments on NPA-E-36

1 - Justification of the NPA

ACJ E 80, as in JAR-E Amendment 11, states that an engine manufacturer, when certifying an engine, should consider the applicability of 36 additional items for certain equipment which need specific substantiation. At the 54th ESG meeting, a question was raised regarding the standard that could provide acceptable test and analysis procedures for each of the items. Several comments have then been made on the matter.

The changes to the ACJ, which are proposed in this NPA, result from the analysis of these comments.

In particular, one comment was to provide a new list of items by removing those which were deemed to be already covered by JAR-E and therefore not relevant to the objective of current ACJ E 80 paragraph (1) which stated the need for additional requirements. This was not accepted because it was felt that to have a complete list would help the manufacturer, as well as the certifying authority, in ensuring the completeness of the certification process for equipment.

One other comment was to specify test / analysis procedures that would be acceptable for compliance substantiation. The same question occurred during the harmonisation discussion on rules applicable to the electronic engine control systems, which showed the need to clarify how individual units of the system are certified. This is done by this proposal.

The format of the list of items has been modified and specification for test or analysis procedures have been attached to each item.

This NPA proposes only advisory material. Therefore, for compliance with CPR rules of 21.101 (b)(3) of amendment 2 of JAR-21, it has no effect on the level of safety.

2 - Economic impact analysis

This NPA aims at providing more precise guidance regarding the substantiation process for certain equipment. It does not introduce new rules and does not introduce significantly new interpretations.

Therefore, there should be no economic impact

3 - Comments received during the circulation of the NPA

Comments were received from the following organisations :

- Authorities of Austria, Canada, Denmark, France, United Kingdom and USA
- SAS (Sweden), SBAC (UK)

4 - Response to comments

Four commenters provided a « no comment » statement on the proposal.

General comment

One commenter questioned the references to NPA-E-33 which was under review after world wide circulation for comments and therefore not yet ready and asked if this situation would affect NPA-E-36. This has been noted and taken into account.

One commenter suggested that, in relation to results of disposition of comments on NPA-E-33, the need for an ACJ E 80 instead of an ACJ to new JAR-E 470 or 760 or to a new JAR-E 170 should be reviewed. This has been noted and will be taken into account in NPA-E-33. This NPA-E-36 will apply to the current JAR-E 80.

Comments on paragraph (1) of ACJ E 80

One commenter noted that it is recognised that JAR-E 80 requires to “subject an item of equipment to such cycles of operation as **to adequately represent all the critical conditions affecting its airworthiness** to which it may be expected to be exposed during service” and that the proposed ACJ states that “All equipment, including all electronic units, sensors, harnesses, hydromechanical elements, and any other relevant elements or units, **should be shown to operate properly in their declared environment**”. This commenter also recognised that this represents the requirement to be complied with and a consistent interpretation. Therefore the commenter considered that DO 160, whatever its version, is only a standardisation means but is not a requirement and that other documents may be used.

However, the commenter noted that, at aircraft level, it is considered that it is difficult to define all environmental conditions for all equipment and that DO 160 is supposed to represent the in-service experience. Therefore, the latest version, which represents the “state of the art” and an useful means for standardisation, should be considered. This commenter then recommend to state “DO 160 at latest issue” and proposed to add a note at the end of paragraph (1) of ACJ to read :

Note : DO160 is revised periodically to reflect in-service experience or changes in technology. The issue of DO160 to be considered should be the latest published issue, or the issue in effect at the date of application, unless it can be justified that an earlier issue of DO160 is more appropriate to the equipment and installation being considered.

This has not been accepted because it is considered normal practice to apply requirements at date of application or previous versions where appropriate (see JAR 21.101 as in amendment 2 of JAR-21).

Comment on paragraph (2)(d) of ACJ E 80

One commenter suggested to delete the last sentence of this paragraph, related to “overheat”. This commenter noted that this appeared as not being consistent with AMJ 20X-1 and that the aircraft manufacturer would not be able to assess the consequence of an overheat of the FADEC. This commenter added that the functioning of the equipment in all environmental conditions specified in the installation instructions should be verified during engine certification. This has been agreed in principle and the text has been improved to clarify the intent.

Comment on paragraph (4) of ACJ E 80

One commenter proposed to change the reference from table 6 to table 5. This was agreed.