

Response to comments on NPA-E-24

1 - Justification of the NPA

The « fire » subject was an identified difference between FAR 33 and JAR-E. As part of the FAA / JAA harmonisation effort, a common proposal has been determined by a working group with representatives from FAA, Transport Canada, JAA, AIA and AECMA.

This NPA-E-24 covers the necessary changes to JAR-E Section 1.

The proposed text is very close to the current text of JAR-E 530 and the changes which are made are mainly related to clarification of the rules and their interpretation. These rules were made applicable to all engines as was the case for FAR 33.17. Accordingly the requirements have been moved from the turbine engine section to the general section (in JAR-E 130).

The first sentence of the proposed JAR-E 130 (a) is essentially an editorial re-writing of JAR-E 530 (a). The second sentence was added in harmonisation with current FAR 33.17 (a) second sentence : this covers, for example, internal oil fires leading to shaft failures.

JAR-E 130 (b) is an editorial re-writing of JAR-E 530 (b).

First sentence of JAR-E 130 (c) is identical to JAR-E 530 (c). The second sentence has been added for consistency with current FAR 33.17 (c) second sentence as well as with JAR 23 / 25 / 27 / 29 paragraph 1183 (a). A clarification has been added so that an integral oil sump in a reciprocating engine still needs to be Fire Resistant.

JAR-E 130 (d) differs from current JAR-E 530 (d) by some minor improvement of the wording.

The current requirements of JAR-E 530 (e) (engine mounts fire resistance) have been retained with a minor clarification. It is recognised that this could constitute a difference with FAR 33 if this requirement is not incorporated into FAR 33.17. The results of the new harmonisation effort on FAR/JAR 25.865 will be considered for any future revision of this requirement when these results are available.

JAR-E 130 (e) is a clarification of current JAR-E 530 (f) using the JAR-1 definition of "fire resistant". The basic requirement remains the same : no hazardous effect. The advisory material will also provide interpretation.

JAR-E 130 (f) is a clarification of current JAR-E 530 (g) by addition of the word "unintentional" to avoid that oil tanks for example be considered under this paragraph : obviously an oil tank will intentionally contain a hazardous quantity of flammable fluid (the advisory material will define the hazardous quantity). The FAR 33 word « unwanted » was not felt as being appropriate.

JAR-E 130 (g) is a clarification of current JAR-E 530 (h) avoiding reference to "applicable aircraft requirements". A specific JAR-E requirement will be considered in the future for dealing with grounding for reasons other than fire.

The current JAR-E 220 for piston engines was not very explicit. It was considered that the current JAR-E 530 requirements, which were compatible with the aircraft requirements, could be made applicable to piston engines. Consequently the new common requirements have been placed in the sub-section A (in JAR-E 130). Therefore, JAR-E 220 and JAR-E 530 have been deleted. This is also harmonised with FAR 33.17 which is applicable to all engine types.

2 - Economic impact analysis

This proposal is harmonising the JAR-E and FAR 33 rules on fire protection. The corresponding aircraft rules have also been considered for consistency. Basically there is no significant change in the intent of the JAR-E requirements.

Therefore it is assumed that there will be no economic impact.

3 - Comments received during the circulation of the NPA

Comments or approval were received from the following organisations :

Authorities of Italy and United Kingdom.
AECMA, Boeing, Rolls Royce and a member of the JAA RAP.
The JAA « piston engine sub group » also provided comments.

4 - Response to comments

JAR-E 130 (a)

One commenter suggested to delete the word « turbine » in JAR-E 130 (a). This was accepted : the new rule is applicable to all engines.

One commenter requested clarification of the term « structural failure ». This will be done by the ACJ 130 to be proposed by NPA-E-37.

One commenter questioned the words « other Hazardous Effects ». There is no ambiguity as they are, throughout JAR-E, used to refer to JAR-E 510 definitions of such effects. This is the purpose of the capital H and E.

JAR-E 130 (b)

One commenter questioned the cross reference to JAR-E 570. The comment was agreed and this cross reference was deleted.

One commenter suggested to change « provided by JAR-E 130 (c) » into « required by JAR-E 130 (c) ». This was accepted.

One commenter suggested that this rule required shrouded fuel lines and questioned the aircraft manufacturers willingness to adopt them or the engine manufacturer ability to provide them. The comment was not retained as this rule is reproducing exactly the current rules of JAR-E 530 and FAR 33.17. There is no known difficulty in applying such rule.

JAR-E 130 (c)

One commenter required to replace the word « reciprocating » in JAR-E 130 (c) by « piston ». This was not accepted because the text was exactly copied on the aircraft requirements. Such a change would require simultaneous changes to many codes : this task is outside the scope of this NPA.

One commenter suggested to clarify the second sentence to be sure that it is understood that an oil sump needs to be at least fire resistant. A cross reference to JAR-E 130 (b) was added.

One commenter considered that a content of 23.7 liters should be considered as hazardous. This was not accepted because there is no in-service difficulty supporting such assumption and because this text is identical to the aircraft requirement.

JAR-E 130 (e)

One commenter opposed to the deletion of current JAR-E 530 (f) reference to Hazardous effects on the basis that the new rule would degrade the safety. The comment was not accepted as the JAR-1 definition of fire resistant implies no hazardous effect. Then the rule is exactly the same with different wording. The ACJ will provide explanation.

JAR-E 130 (f)

One commenter questioned the word « unintentional » and proposed to delete it. This was not accepted. The response is given in the « justification » above.

JAR-E 130 (g)

One commenter suggested that bonding was necessary for other reasons than the fire protection (this was also supported by another commenter) and proposed to address the subject elsewhere in JAR-E. This was accepted. A separate action will be initiated in the Engine Study Group.

Current JAR-E 130 (h)

Almost all commenters required to keep the current JAR-E 530 (e) requirement for fireproofness of mounts. This was considered as an important rule for keeping the responsibility of this requirement onto the engine manufacturer for the engine parts of the mounting system. This was accepted with an exemption if fireproofness is not required for the particular aircraft installation : all aircraft codes do not have the same requirements for the fire resistance of mounts.

Various

One commenter noted that the Table 1 of ACJ E 30 was still making reference to JAR-E 530 fire precautions and electrical bonding. This will be corrected.

One commenter noted that the ACJ E 530 should be deleted. This was agreed. A new ACJ E 130 will be introduced by NPA-E-37.

One commenter suggested to require the engine to be designed to minimise the occurrence of engine case burnthrough. This requirement already exists in some manner in JAR-E 520 (d).

Some commenters questioned the references to NPA-E-31 and NPA 20-4 as they were not widely known. The comment is noted for future NPAs which would propose appropriate explanation. When many NPAs are circulated and not published, it is difficult to write an additional NPA which is influenced by these NPAs without creating some confusion.

One commenter made a suggestion for adding « a case burnthrough requirement » but did not specify what this requirement could be. This comment was rejected because the engine level threat is adequately dealt with in JAR-E 520 (d) and the subject is being considered at the aircraft level by the powerplant harmonisation group.

One commenter thought that the new JAR-E 130 degraded the requirements. This comment was not accepted because the new JAR-E rules are very close to the current rules and it should be noted that they represent an improvement for FAR 33. This commenter discussed engine failure conditions. This was not relevant to the subject of the NPA and the commenter is invited to check the outcome of the JAR-E / FAR 33 harmonisation on the « failure analysis » subject.