



Koito Seats PAD

Question and Answer Summary

From the Briefing Sessions held in Köln on the 14th October and in Singapore on the 21st October below is a summary of the general questions raised.

1. If I know that airline X has the same seats as I do, will the FAA/EASA apply their data to me?

FAA/EASA will take all reasonable steps to aid and promote the sharing of data between airlines in order to reduce the overall burden. However, as always, data supplied to EASA/FAA are considered proprietary and will not be used for any purpose other than that agreed by the person supplying it. EASA/FAA strongly encourages Airbus/Boeing to work with the Airlines to assist in the sharing of data.

2. I have the same seats as airline X, but they won't share their data with me. Didn't the AD say they had to?

As with 1 above, EASA/FAA is not in a position to force airlines to agree to transmittal of data to any third party. However, we strongly encourage operators to work together to minimise the test burden.

3. It takes several actual seat cushions to make a test sample set. How many test sample sets do I need for the oil burner testing?

In general the answer is 3 sets, just as required in the regulations. However this may be an area where the practicalities of test sample manufacture may cause EASA/FAA to agree that deviations to test criteria are appropriate (e.g. a reduced number of tests, compromises of test sample build, ...) in cases where the test results appear significantly better than is permitted by the regulations Airlines should present their particular case for consideration.

4. What if my seat fails a static test, but passes the dynamic test?

This possibility has been considered. EASA/FAA believe it is a remote possibility. However in the event it occurs the particular circumstances will be reviewed and an appropriate course of action determined.

5. I've done modifications to my seats previously that required me to test them dynamically. Can I use that data to show compliance with the AD?

Yes. The data must be presented to the Regulatory Authority for agreement.

6. I'm going to replace my seats in 7 years anyway, can I avoid having to test them?

No. Acceptance for seats to remain in service for more than 2 years from the date of issue of the AD will only be on the basis of firm evidence that they possess a minimum level of crashworthiness/flammability performance. Airlines who believe they may be able to do this by methods other than those outlined in the AD will of course have the option to propose an AMOC to their Regulatory Authority

7. Can the data from my Airbus seats be used to substantiate the same model seat on my Boeing airplanes? (or vice versa)

Yes, assuming the similarities between seats are agreed by EASA/FAA as being appropriate, and there are other data that show the installation itself, i.e., the seat track is capable of carrying the reaction loads. The most critical condition must be considered.

8. Will the FAA or EASA approve/review/comment on my compliance plan, even though I'm not a US (European) operator?

FAA/EASA will try to support other Regulatory Authorities as they review compliance plans. Airlines only need to substantiate compliance to AD requirements to the Authority of the state in which their aircraft are registered. However, as data sharing is a (hopefully) likely outcome it may transpire that plans generated in regulatory area is also viewed by the authority of the other. This is unlikely though to result in additional comments/requirements.

9. How do I find out who has the same seat models I do, so we can maximize data sharing?

This information should be available from the airframe manufacturer (and probably Koito).

10. What are the restrictions on the use of affected Koito seats before the AD becomes final?

All seats currently in service are unaffected until the AD is issued. Applications for changed use of seats, e.g. installation on another aircraft, requiring a new finding of compliance, are unlikely to be accepted before the AD is issued.

11. Why didn't the NPRM include HIC (or any of the other compliance criteria not included)?

This is one area where the EASA and FAA ADs differ. The EASA AD does require compliance to be shown to all compliance criteria after a period of maximum 10 years. This is because of regulatory issues which place difference onuses on EASA and the FAA for the removal of an Unsafe Condition.

12. The only seats I have passed all the tests conducted by Koito under JCAB supervision in the phase 1 program. Is that sufficient to meet the AD?

EASA is unable to automatically accept data generated under the oversight of JCAB due to the absence of a bilateral agreement with this state. This data will be assessed by EASA in due course. At this point, we cannot commit to any specific use of these data.

13. I have taken 3 seat assemblies out of my aircraft (Boeing) to destructively test. This model was the critical seat for a family (Boeing and Airbus). I need to replace these seats. Can I install a seat from the family (currently only installed on Airbus) as I do not have any more seats of this model?

Assuming the "Airbus" seats installation in the Boeing meets all normal airworthiness requirements, and the seats were shown to comply with the requirements in the AD, such an installation will be accepted. Each case will be assessed and an appropriate approval method found.

14. I am in the processes initiating an STC to install spare seats that I own, new LOPA for this model aircraft. It will not be initiated nor completed by the time the AD is published. If I test these seats (identified by model and serial number) to 25.261, 25.562, 25.853 can I install them?

The AD does not allow such use of Koito seats. However, if it can be shown that the timescale of the project is such that the issuance of the AD and/or its contents could not have reasonably been foreseen at the time of the project go-ahead, EASA/FAA may be in a position to allow the STC. The AD will of course apply to the STC installed seats.

15. I have 100 seats that I bought used, same model, can I retest what I have to the TSO and put a mod tag and 8130 on it? I really want to sell these as spares to an airline.

If the seats are shown to be fully compliant to the applicable requirements, no restrictions will apply.

16. If a non-seat cushion oil burner flammability issue is identified by Koito and a Service Bulletin is issued will I be required to incorporate it?

EASA/FAA will assess such SBs on a case by case basis in regards to mandatory action.

17. I don't want to burn a used seat cushion as the flammability properties may have degraded, can I re-treat the article first?

One of the problems with items of Koito manufacture is in regards to production conformity. This is why testing is required on in-service items. Modifying an item before test may therefore mask the fact that it was not made to the correct specification to start with. Therefore, such a re-treatment will not be acceptable.

18. Which approach has been used by EASA (and FAA) to determine the 2 years and 6 years compliance timeframes?

2 Years

This is the period within which operators must determine the most basic crashworthiness capabilities of their seats. Worst case is that the seats might not even meet "static" strength requirements.

A period of two years, from the issuance of the AD, is longer than has been applied to previous cases where crashworthiness aspects were in question.

Use of the numerical method described in Part 21, GM 21A.3B(d)(4) of also supports this.

Historic accident data suggests an accident rate of approx $1.5E-7/FH$ for accidents where seats play a significant role in reducing fatalities (either directly or by preventing injuries that would stop occupants from rapidly evacuating the aircraft).

Assuming a Catastrophic failure mode (multiple fatalities) and an aircraft life of 100,000 FH, this generates a compliance time of;

$$T_c = 100,000 \times 0.025E-7 / 1.5E-7 = 1666 \text{ FH}$$

A period of two years is thus a generous allowance and has been chosen in order to allow for the practicalities of performing the required tests.

6 Years

This is for the specific case where a seat has only been shown to pass an abbreviated "static" strength test programme, but where it should comply with "dynamic" strength and injury criteria.

This time period was also chosen to align with previous mandatory action that was instigated as a result of problems where "dynamic" seats were found to only comply with "static" requirements.

It is also the same time period that was considered when a retrofit rule for dynamic seats was being considered.

In regards to a numerical approach, it is probably reasonable to assume that only a third of accidents where seat crashworthiness performance is critical do in fact need the higher level of protection afforded by "dynamic seats". This approach would equate to an increase in the compliance time by a factor of three, i.e. 6 years instead of 2 as above.

Again, it must be stressed that 6 years is thus a generous allowance, for the same reason as above.

19. Why does EASA feel the need to put a maximum 10 year limit on continued service of seats even if they successfully passed testing for the other compliance time limits set in the AD?

EASA has been unable to find a way to accept that seats which do not comply with appreciable parts of the applicable requirements remain in service indefinitely. Part 21, AMC 21A.3B(b) Unsafe Condition, paragraph (c), is part of the definition of an "Unsafe Condition", and reads;

"(c) Design features intended to minimise the effects of survivable accidents are not performing their intended function."

The ten year limit in the AD applies to seats which have shown compliance to only an abbreviated (relative to the full set of applicable requirements) test programme. These seats will thus still be lacking proof of compliance to some requirements. After consideration of the requirements in question, EASA believes that the associated reduced level of safety still constitutes an Unsafe Condition which must be handled by setting an upper limit on continued service of seats.

The figure of ten years was determined by taking an extreme optimistic view on the same accident data as used above.

Assuming only one accident of those studied constituted a situation where occupant protection performance right up to the limit of that provided by the certification basis was essential, the accident rate to consider rate drops to 6.8E-9. Again, assuming a Catastrophic failure mode (multiple fatalities) and an aircraft life of 100,000 FH, this generates a compliance time of;

$$T_c = 100,000 \times 0.025E-7 / 6.8E-9 = 36765 \text{ FH}$$

So, bearing in mind that this figure is the result of assuming only one accident was sufficiently severe to constitute a need for the full protection afforded by the certification basis, the choice of ten years is also to be seen as a generous allowance.

20. How can Spare parts be delivered/ installed with the current situation with regard to the Koito POA?

There are three possible solutions that comply with Part 21 requirements;

- 1 Koito POA is re-instated, the action is with Koito to demonstrate to EASA that the open findings that lead to the suspension have been satisfactory resolved.*
- 2 Airbus as the design approval holder could use another POA to manufacture spare parts to original design data.*
- 3 Another 3rd part DOA could propose a modification to the seats to produce "new" spare parts.*

21. If I test my seats and they fail, am I allowed to modify them to pass one of the levels of testing defined in the AD and thus get allowance for them to remain in service for the associated time period?

No. If modifications are incorporated into Koito seats due to identified non-compliances to crashworthiness and/or flammability requirements, the seats must be made to be fully compliant to the applicable requirements.

However, modifications to Koito seats in order to solve spare parts problems with "wear out" items (such as arm caps, tray tables, ..., etc.) or for "cabin upgrade" reasons (e.g. new IFE, ...) may be acceptable.

22. If I successfully test my "dynamic" seat to only the static requirements of the AD (in order to get an allowance to stay in service for 6 years) may I later, within the six years, successfully test to the dynamic requirements of the AD and be given the allowance for the seats to stay in service for a further 4 years (i.e. a total of 10)?

Yes. This will be an acceptable action plan to cover the AD's requirements.

23. EASA PAD: shall the static lateral test be done with the loading of the aircraft certification basis or directly according to the last amendment of 25.561(b)(3)(iii)? PAD doesn't specify on the contrary of the NPRM.

The seats must be tested to the minimum requirements required by the defined Type Certification Basis of the a/c, or if installed post-delivery by the Certification Basis of the installation modification.

24. How should the oil burner tests be handled: trying to build and conform a test specimen from several cushions or testing directly the cushion and adapting the test set-up and the pass/fail criteria? For each solution, there are a lot of detailed questions.

This issue has been considered and as with FAQ 3 above, EASA/FAA is prepared to consider test sample build methods that might not fully meet normal standards and possibly test method variations where there is evidence that cushions are easily meeting requirements.

25. What should be the pass/fail criteria of the structure tests?

As required in normal certification testing.

26. How to check the conformity of the seat?

Seats taken from service for testing do not need to have extensive conformity testing performed. It must be ascertained that they are built to the drawing (part size, shape, basic material etc.) and have no other obvious oddities.

Post build modifications must be assessed for their impact on the intended test, this is only relevant if the seat tested is used as substantiation for other seat models in a group. Post build modifications will not invalidate the test of that particular seat model.

27. How to cope with the cabins on which seats have been removed for tests (as the PAD/NPRM stop short of allowing a full replacement seat to be manufactured)?

This is an unavoidable consequence of the airworthiness problems resulting from the Koito seat situation. EASA/FAA will be open to discussions regarding any proposed solutions.

28. Spares: should spares be qualified or re-qualified before installation on the aircraft? Also what is EASA and FAA intent about spares that could be manufactured by Koito? Airlines will for sure request a playing field, so this needs to be discussed beforehand.

Koito spares currently in stock may continue to be used. If new spares are available from Koito this will only be under a level of control that is acceptable, and thus it will be similarly acceptable to use them.

This is based on the rationale that any such spares (either made before the need for mandatory action became clear, or more recently) will possess no worse airworthiness related parameters than those parts which are already (and remain, subject to AD limitations) in service.