



Koito Seats Information Meeting

14th October, 2010
EASA HQ, Cologne

21st October, 2010
Regent Hotel, Singapore



PAD/NPRM Comment Procedure

- This meeting does not substitute for the formal comment process against PAD and NPRM.
- We hope that the discussion will clarify your understanding of the issue and objectives but to formalise any questions you must submit a formal comment per the comment procedure so that all can be considered concurrently.



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- Background
- Level of Safety Determination
- Corrective Actions
- Data to Show Compliance
- Comments/Questions



➤ Background

- Towards the end of 2009, EASA/FAA became increasingly aware of allegations that the Koito seat company had been falsifying Certification Test results, and had not controlled production conformity, for an appreciable period.
- TC holders (Airbus, Boeing) and JCAB progressively added confirmation to these allegations 1stQ. 2010.
- Initiatives were started by JCAB, TC holders and EASA/FAA to determine scale of the issue.



➤ Background cont.

- It became clear that unsafe conditions existed and thus mandatory action was needed.
- EASA and FAA co-ordinated thoughts and close agreement was reached on an AD framework.
- Regulatory differences however, prevented 100% alignment.



Level of Safety Determination

➤ Two Aspects

- Performance requirements
- Timing

(Performance dictates timing)



Level of Safety: Performance

- Problem: Define the unsafe condition.
- Three basic parameters: structural, flammability, injury.
- Basic safe performance requires structural integrity.
- Structural requirements have evolved over time.
 - "6g" \Rightarrow "9g" \Rightarrow "16g"
 - Each evolution meant to provide structural integrity in the event of an accident.



Level of Safety: Performance

- Therefore, the "16g" criteria are an evolution of the previous 9g criteria, based on data--Basic intent from the structural standpoint is the same.
- Fleet is mixed between 9g and 16g.
- Previous AD action to correct structural defects, for both 9g and 16g.
- **Seats must meet most basic structural requirement at their certification basis.**



Level of Safety: Performance

- Flammability requirements have also evolved.
- Most parts on seats have to meet the Bunsen burner test.
- Seat cushions have to meet a much more stringent oil burner test.
- Seat cushion requirements were made applicable to the existing fleet (3 year retrofit).



Level of Safety: Performance

- Remainder of seat parts generally accessible, and so not a major threat for in-flight fire.
- Materials are generally 'typical'
 - Bunsen burner performance may or may not indicate real-world performance.
 - Bunsen burner gradually being replaced with more threat-derived test methods.
- Cushion performance key for flammability safety determination.



Level of Safety: Performance

- Injury criteria have evolved from qualitative to add quantitative requirements.
- Many derivative airplanes have included structural requirements of later rules, but not all injury criteria.
- These criteria have not been retrofit.
- Therefore, safety determination based on historical criteria prohibiting sharp edges.



Level of Safety: Timing

- Three proposed compliance dates in FAA NPRM and Four in EASA PAD.
- Dates established based on several factors
 - Risk assessment (nature of the potential safety problem and likelihood it would manifest itself)
 - Prior regulatory actions
 - Practical considerations
 - Regulatory aspects



Level of Safety - "AD Phases"

- Phase 1: Initial timescale for showing that at least basic static strength and injury is OK.
- Phase 2: Slightly longer timescale for showing seat cushion flammability is OK.
- Phase 3: Medium timescale for showing "dynamic seats" meet basic "16g" requirements.
- Phase 4: EASA PAD only – Longer final phase-out timescale for seats that meet AD's prescribed minimum conditions (as above) but don't meet full cert requirements.
(FAA NPRM allows indefinite service in these cases)



Level of Safety: Phase 1

- Static strength and injury compliance in 2 years
- Most basic requirements; noncompliance could even affect performance in turbulence
- Consistent with previous AD actions
- Risk analysis suggests it is generous



Level of Safety: Phase 2

- Seat Cushion flammability compliance within 3 years
- Matches original retrofit requirement, which applied to entire fleet (in US part 121 and 135, in Europe similar operational based applicability)
- Limited applicability of AD makes availability of replacement cushions less of a concern



Level of Safety: Phase 3

- Dynamic Seats only - compliance within 6 years to 16g structural requirement (no HIC, femur, 14g, lumbar, etc.)
- Six years correlates with original retrofit proposal
 - NPRM issued in 1988
 - Final Rule anticipated in 1989
 - Compliance date set for 1995
- Evidence of compliance with "16g" would also cover the Phase 1 structural requirement if shown in first 2 years



Level of Safety: Phase 4 (EASA PAD only)

- EASA regulatory framework –
An unsafe condition exists if
(c) design features intended to minimise the effects of survivable accidents are not performing their intended function. (ref AMC 21A.3B(b))
- Phases 1 to 3 only require compliance showing to reduced scope of requirements.
- Whereas static and/or dynamic (e.g., HIC, femur, 14g, lumbar) are intended to minimise the effects of survivable accidents and therefore their compliance needs to be established.
- Seats must be shown to comply with the applicable cert basis or must be removed after ten years.



Corrective Actions

- Proposals are written to require removal of non-compliant seats.
- Operator may elect to bring seats into compliance, rather than remove.
- However, in order to be approved, modifications must result in a fully compliant article per Part 21.
- Modifications that leave non-compliance, cannot be approved.
- The only exception is the replacement of seat cushions.



Corrective Actions

- Replacement of wear-out parts by after market parts (such as foodtrays, armrest covers) are not considered a "*modification*" and thus allowed.
- However such parts must meet all requirements applicable to them.



Data to Show Compliance

- Proposed ADs require compliance data, equivalent to certification data
 - Rationale to identify test articles
 - Quality of data – suitably experienced organisation to develop test plan, select/assess test lab, test article definition, etc.
- This would apply whether data already exist, or are generated specifically to meet the ADs



Data to Show Compliance

- EASA and FAA have direct responsibility for only a limited portion of the affected fleet, i.e.,
 - European
 - US
- Data to show compliance for other Countries are the responsibility of those countries.
- As is normal, EASA and FAA would consult if asked by another authority.



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<http://ad.easa.europa.eu/>

<http://federalregister.gov/a/2010-23936>



European Aviation
Safety Agency



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Comments/Questions