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Changed Product Rule

International Implementation Team
Outreach Meeting
With
European Industry

September 23, 2009
Cologne, Germany



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• IIT Composition

- Organization

- European Aviation Safety Agency:

- Federal Aviation Administration:

- HQ AIR-100, -110

- Transport Directorate

- Small Airplane Directorate

- Rotorcraft Directorate

- Engine and Propeller Directorate

- Transport Canada Civil Aviation:

Participants

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- **CPR IIT Status – Agreement**
- **Changed Product Rule (CPR) International Implementation Team (IIT):**
 - The IIT issues can be addressed through the guidance material.
 - With the exception of EASA proposed operational rule amendment, related to retroactive requirements, similar to the FAA reference to FAR-26, Guidance material will be rewritten to clarify application of the rule.
- **Clarifying text to the AC guidance material will be harmonized between the three Authorities.**
 - Milestones for the three Authorities to complete revised guidance material has been completed.
 - Industry will have another opportunity to participate in the guidance material comment period.



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IIT Focus

- 17 issues needed guidance and/or clarification
- Issues divided into: Primary Focus and Other Items

Primary Focus (5)

- Criteria for substantial change (21.19)
- Conflict on classification of certain changes (e.g. interiors, avionics, product level...etc.)
- Properly identify or describing proposed changes
- Clarification of secondary changes
- Means to apply later requirements for Not Significant change



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IIT Focus *(continued)*

- Issues divided into: Primary Focus and Other Items

Other Items (12)

- Extension of time limit on application
- Exception using Impracticality
- Definition of adequate standards in the certification basis
- Clarification of burden
- Documentation of certification basis
- Use of amendment level that does not have the required standard
- Elect to comply later standards
- Partial compliance
- Maintaining improved design features accepted under the exception of “would not materially increase the level of safety”
- Number or percentages of regulations that have changed
- Use of exceptions for aircraft level requirements
- Clarification of new FAR 21.101(g) (FAR Part 26 requirement)



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- **21.19 Definition of Task**

- Q1. How would you characterize, interpret or apply, from a certification standpoint, a design change as being a “substantial change”?
- Q2. What thresholds would you consider as triggers for a design change to be classified as a “substantial change”?
 - By threshold - the extent of design standards implicated, amount of compliance demonstration, depth of review, complex designs, or any other factors.
 - Please note these criteria are not examples, but a view on what constitutes “ a substantially complete investigation of compliance with the applicable requirements”.



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• 21.19 Definition of Task

– Results

- Survey of examples requested within Authorities
- Defer activity to another working group
- Limit the discussion in the 21.101 guidance material
- At the next Certification Maintenance and Rulemaking (CMR formally CMT) meeting in October a new charter for 21.19 will be proposed



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- **Classification of certain changes (significant changes part 23, 25, 27, 29)**
 - Comprehensive flight deck upgrade
 - New flight guidance system
 - Conversion from a passenger floor to a cargo floor
 - New or revised interior arrangement



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- **Comprehensive flight deck upgrade, such as conversion from entirely federated, independent electro-mechanical flight instruments to highly integrated and combined electronic display systems with extensive use of software and possibly complex hardware.**
 - Affects avionics and electrical systems integration and architecture concepts and philosophies.



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- **New flight guidance system (e.g., automatic pilot, automatic thrust control, flight director)**
 - If the proposed system merely replicates previous functionality, then its assumptions used for certification remain valid. If the proposed system adds to the level of complexity and integration, if there are wholly new modes of operation and functionality (e.g., flight crew interface, avionics architecture), then the assumptions used for certification no longer remain valid.



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- **Conversion from a passenger floor to a cargo floor and installation of a cargo handling system.**
 - Completely new floor loading and design. Redistribution of internal loads, change in cabin safety requirements, system changes.



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- **New interior or revised arrangement to accommodate an increased (or decreased) fuselage length, and/or a new/revised attachment system for interior components (e.g., seats, galleys, or closets)**
- **Not Significant:**
 - New or revised interior arrangement in an unchanged fuselage with retained methods of attachment



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Small aircraft and rotorcraft have similar examples.



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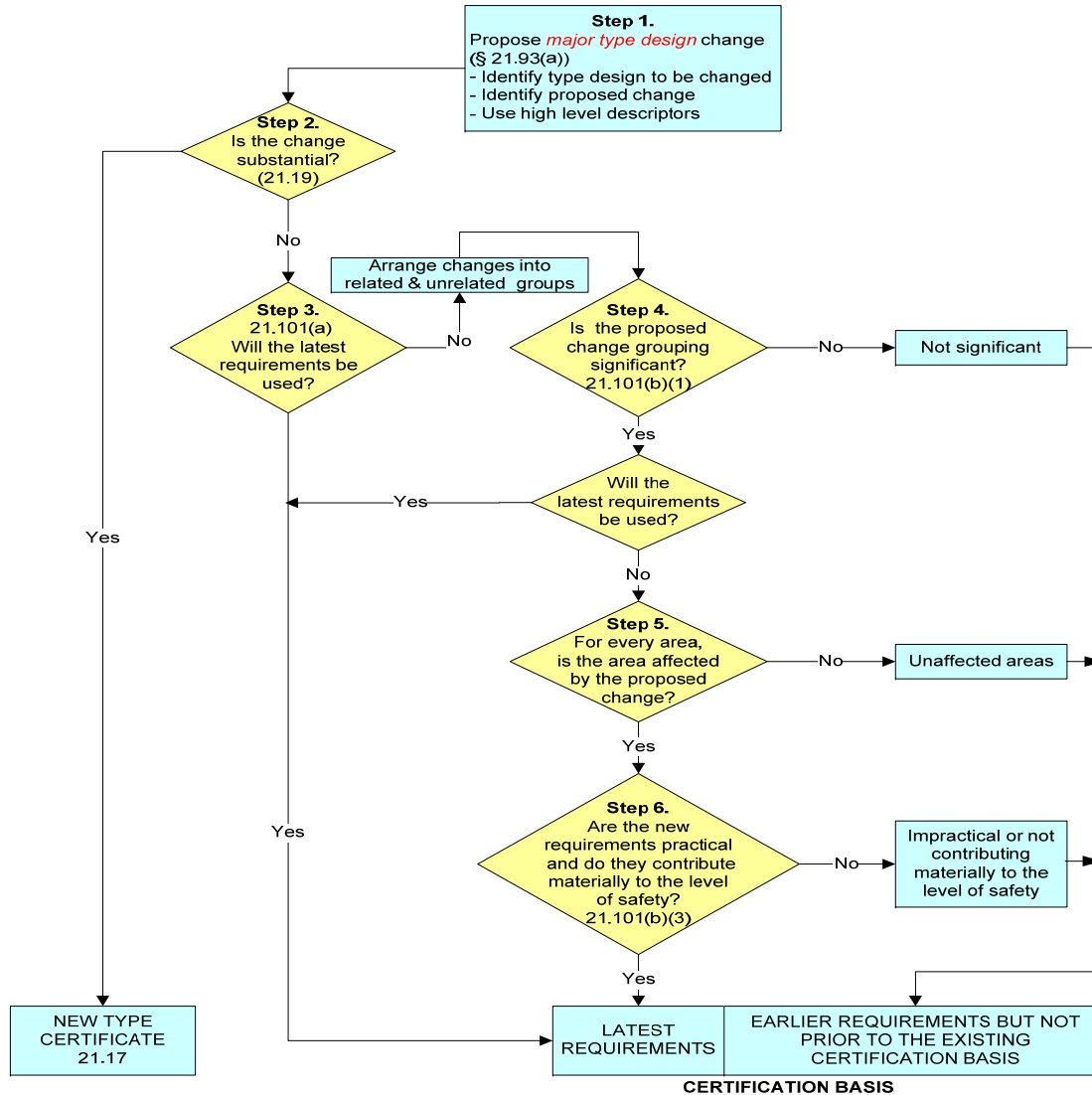
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- **Defining the Product Changes**
 - It is important to clearly identify all of the changes, high level descriptors
 - It is also important to identify the type design configuration to be changed
 - The AC clarifies the importance of the initial steps to apply the rule appropriately
 - Enhanced the flow diagram



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- **Process to Identify the Proposed Change**
 - Step 1. No bucketing at step one. Aggregated changes included related and unrelated
 - Define baseline of type design change
 - New Step – Arrange changes into related (co-dependent) and unrelated groupings
 - A determination of “significance” must be done for each of the stand alone changes and groupings



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- **Clarification of secondary changes**
 - Should not be defined as a grouping by itself
 - Identified only when the “does not contribute materially to the level of safety” exception is usable
 - Has to be related to significant change
 - Training material lead to the confusion
 - Definition of secondary changes has been clarified



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A secondary change is a physical change that is part of and consequential to an overall significant product level change. A secondary change is a physical change that restores, without changing the system or structural capacity or functionality but is necessary to support a product level significant change. A secondary change is eligible for an exception from meeting the latest requirements under the “not contributing materially to the level of safety” exception.



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Means to apply later requirements for Not Significant change

- Industry is not clear on application of this policy.
- It is the Authority's responsibility to ensure a changed product does not have any unsafe feature.
- Later requirements will be required if the existing cert basis is not adequate for the proposed design change, which if not addressed may result in an unsafe design feature.



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Extension of time limit on application

- **US Industry not clear on time limits for pre- and post CPR applications.**
- **Pre-CPR applications are subject to previous time limits.**
- **Post-CPR applications must comply with current time limitations.**



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Exception using Impracticality

- **Industry is concerned about the exhaustive analysis required to justify an intuitive, qualitative agreement between Authority and Applicant.**
- **Authorities recognize it is difficult to arrive at a streamlined or harmonized approach as different impracticality models can be used.**
- **Industry encouraged to discuss early with Authority and agree on how impracticality may be demonstrated or substantiated, and eventually documented.**



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Clarification of burden

- Applicant is not clear on the burden placed on them under CPR.
- Applicant has burden on clearly defining their proposed changes and identifying those that are related and unrelated.
- Applicant has the burden of substantiating their claims for exceptions when using an earlier amendment.
- Authority has burden of ensuring the certification basis has adequate level of safety for the proposed change.



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Documentation of certification basis

- Industry wants better detail of the certification basis for Supplemental Type Certificates, to allow future applicants to establish a baseline certification basis for their proposed change.
- Authorities agree, and have introduced policies on the recording of certification basis of STCs to be done in a manner similar to Type Certificate data sheet.
- Authorities also agreed to make the certification basis data accessible to the public.



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Elect to comply later standards

- **Current guidance material is not clear that an applicant may elect to comply with amendments issued after the application date.**
- **Applicant may choose to comply with later amendments provided they comply with other related amendments determined by the Authority.**
- **Once an Authority accepts an elect to comply, it becomes part of the certification basis, and compliance is mandatory.**



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Sub-paragraph compliance at different amendment levels

- Clarify whether partial compliance with a required or elect-to-comply regulation (or design standard) is allowed, or not, under the following conditions
 - Intermix of amendment levels for the same regulation, or
 - Compliance with selected parts only of a regulation at a fixed amendment level.
- Under deliberation by IIT due to differing practices.



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Maintaining improved design features

- Clarification is needed on how improved design features are considered or used for 21.101 exceptions.
- Authorities will approve and document compliance with the amendment level whose requirements have been fully met or exceeded.
- Compensating design features approved for the purpose of showing compliance with an earlier amendment is still for discussion by the IIT on the methodology.



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New 21.101(g) on FAR 26 requirement

- **Design changes on applicable Transport Category aeroplanes must show compliance, as a minimum, with Part 26 requirements, or higher amendments of Part 25.**
- **21.101(b) can not be used to comply with earlier amendments than what Part 26 requires as a minimum.**



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Conclusions



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Question and Answer Session