

## DRAFTING GROUP TASKING FORM

### EASA

#### **TERMS OF REFERENCE**

**TOR Nr:** CS-25/015 & CS-25/016

**Issue:** Issue 1

**Date:** 19 January 2006

**Regulatory reference:** CS-25

**Reference documents:** JAA NPA 25C-305: Engine & APU Load Condition  
JAA NPA 25E-306: Sustained Engine Imbalance

#### **1. Subject:**

Engine & APU Failure Loads and Sustained Engine Wind Milling

#### **2. Problem / Statement of issue and justification; reason for regulatory evolution (regulatory tasks):**

##### **a. Engine and APU failure Loads.**

Airworthiness requirements have long been established to ensure engine mounts and supporting structure are designed to withstand engine seizure torque loads imposed by a sudden engine stoppage. However, with the development of larger high-bypass ratio turbofan engines, it has become apparent that engine seizure torque loads alone do not adequately define the full loading imposed and that in order to maintain the level of safety intended, more comprehensive rules are necessary.

The opportunity has also been taken to harmonise requirements with those of the FAA.

##### **b. Sustained Engine Wind milling.**

There are two sustained imbalance conditions that may affect safe flight: the wind milling condition and a separate high power condition.

- The wind milling condition results after the engine is spooled down but continues to rotate under aerodynamic forces. Current rules require provisions to stop the wind milling rotor where continued rotation could jeopardise the safety of the aeroplane. However, large high-bypass ratio engines are practically impossible to stop in flight and the progression towards larger fan diameters and fewer blades with larger chords, adds to this difficulty. In order to show compliance with the rule, it is therefore necessary to ensure that a wind milling engine does not jeopardise the safety of the aeroplane and this can best be demonstrated if a rigorous and harmonised acceptable means of compliance is developed further.
- The high power imbalance condition occurs immediately after blade failure but before the engine is shut down or otherwise spools down. This condition addresses losing less than a full fan blade which may not be sufficient to cause the engine to spool down on its own. This condition may last from several seconds to a few minutes. In some cases it has hampered the crew's ability to read instruments that may have aided in determining which engine was damaged.

### **3.Objective:**

#### **1. Engine and APU failure loads**

To add a paragraph CS 25.362 and associated AMC, and to revise the current requirements of CS 25.361. (This will be based on earlier JAA NPA 25C-305 which was already published for comments. Once CS 25 is amended, it is likely that there will be a need to improve CS-E520(c)(2) concerning Engine Imbalance Loads).

#### **2. Sustained Engine wind milling**

To add a new AMC 25.901(c). (This is to be based on recommendations from an ARAC working group contained in JAA NPA 25E-306, and which has already been published for comment).

These activities will harmonize CS-25 with FAR Part 25.

### **4. Specific tasks and interface issues (Deliverables):**

- Review and disposition comments received on JAA NPAs 25-305 and 25-306. (Draft CRD is available)
- Ensure the Engine community's views are fully taken into account
- Prepare a new EASA NPA for public consultation

### **5. Working Methods** (in addition to the applicable EASA procedures):

- Drafting group
- Meetings shall be held at the Agency's head office in Cologne.

### **6. Time scale, milestones:**

NPA to be published one year after the start of the task.

# **EASA DRAFTING GROUP**

## ***GROUP COMPOSITION***

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**Composition:**

**Members:**

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<b>Mr J List</b>	<b>LBA</b>
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