COMMENT RESPONSE DOCUMENT

Proposed Equivalent Safety Finding on CS 29.1305 (a) (25), CS29.1309(c)
Applicable to AgustaWestland AW189 Helicopter
Issue 1

Commenter: UK CAA

Comment # 1

Page: All – Paragraph: All

Comment: This issue should be identified by an entry in the OEB/OSD, specifically in Training Areas of Special Emphasis (TASE). Suggest a new ESF paragraph 7.

Proposed Text (if applicable): It is proposed to add the following paragraph at the end of the document.

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7. Pilots are to be made aware of the relationship between the EECU and PFD 30"/2 min OEI timers to ensure that full use off all the 30 second OEI rating is achieved.
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Justification: Without training emphasis on this system anomaly there exists the possibility of not having full 30 sec power available at a critical stage of flight.

EASA response:

EASA acknowledges that an improved training in the specific area will increase the situation awareness of the pilot. Nevertheless, it is also recognised that the equivalent level of safety must be shown through design features, RFM limitations and procedures, more than training requirements. Therefore the proposed test is not accepted, but the comment will anyway be considered in the frame of the OSD activity.

Comment # 2

Page: All – Paragraph: All

Comment: (EASA note: the comment has been received by commenter as a whole paragraph. Nevertheless, for better reading, the paragraph numbering has been added, in order to correctly address all comment's items in the EASA response)

1. It is questioned whether the design of both the alerting means (CDS and PFD/MFD counters) and the Auto Power Reduction is appropriate and that this could be re-designed to meet the intent of the requirements rather than attempting to make arguments for an ESF.
   For example the counter should reset to '0' if the 30 second rating is exited, and then the counter start again if the 30 second rating is re-entered.

2. One of the factors affecting the system is the automatic system that reduces power without recourse, for example in an emergency. The pilot should have ready and intuitive availability of subsequent 30 second power after exit from this rating. (The reset button may not be intuitive in a high workload situation). In other words the system should reset completely and immediately after 30 second use – unless there is for example a 'per flight' limitation. This would not result in an NR droop.

3. The proposal attempts to show that equivalent safety is maintained. If the use of 30 second rating power is exactly as expected in the RFM procedures then there will be no consequence of non-synchronised counters and equivalent safety can be probably be shown. If the usage of 30 second rating is not exactly as expected then there can be consequences. This situation is addressed in the proposal (Cases A and B) but it is not clear how equivalent safety is maintained. If there is less power available than the pilot is led to believe (from the CDS counter), there may be insufficient power available to achieve the required flight profile and an accident could result. The NR droop may be noticed and collective lowered to control it, but there is still less power supplied to the rotor. The resetting of counters (and therefore re-attainment of 30 second power) at 95% Nr could be a mitigation but if the pilot is controlling Nr correctly (as required by emergency procedures) then this would not occur.

4. Non-synchronised counters could result in crew confusion. 30 second power rating will only be used in an emergency situation and workload will be very high. The effect of additional workload on the continued safety of the flight has not been adequately addressed in the proposal.

5. A CAUTION in the RFM is unlikely to be adequate. The proposal does not state if there is any description of the system (specifically non-synchronised counters) in the RFM.

Proposed Text (if applicable): None

Justification: The ESF mitigation or equivalency is that although the NR can droop, this is not considered unacceptable or hazardous. However, a system that does not result in an NR droop (and reduction of power) should be possible and for this reason the basis of the

ESF does not appear to achieve a performance standard as good as a system that does not limit power.

EASA response:

1. The purpose of an ESF is always to show that the design meets the same level of safety of the requirement, although not being fully compliant with it. Nevertheless, it must be noted that the applicant has notified the Agency that a design change is already under development and for which airworthiness approval is foreseen by end of next year. In the current design, all the counters already zeroes if the requested TQ is lowered within the MCP OEI (TQ < 136%). However, the misleading conditions being addressed by this ESF can happen in cases when the 30" rating is exited before expiration and TQ level maintained within the 2.5 m OEI (TQ < 155%).

2. The system is designed to prevent transmission over-torque and reduce pilot workload during critical phases of OEI conditions. After 30 seconds, torque is automatically reduced. There is no reset button for 30 sec power availability. The pilot can always re-enter the 30 seconds rating once expired, by drooping the NR below 96%.

3. As explained in the document, a usage of the 30 sec power for less than expected is not in line with the RFM procedures. Nevertheless, the considerations n. 1 and 2 show how the helicopter safety level is not impaired in case of abuse conditions. It is not questioned that these situations are the ones where power available may be lowered to an insufficient level without due pilot notice. As previously stated, the level of safety is not impaired, since if the pilot continues to request a power in the 30 sec OEI regime, this will be available after a very short time characterised by NR droop, which anyway will not adversely affect aircraft controllability and handling qualities, as well as pilot workload.

4. It should be clarified that the counter presented to the crew is only one, i.e. the one on the PFD, generated by Cockpit Display System. Therefore there is no risk of confusing information being provided to the crew. The effect on the crew workload of the current system behaviour, as well as aircraft handling qualities have been positively assessed during the certification flight test activity, excluding any possible hazardous condition.

5. In order to further improve the crew awareness of the system behaviour, the proposed CAUTION in the RFM will be implemented as follows:

CAUTION
The Automatic Power Reduction will reduce the torque available to 155% after 30 seconds from the first application, regardless of whether the rating is used for the entire 30 seconds.