



COMMENT RESPONSE DOCUMENT

EASA PAD No. 18-161

[Published on 27 November 2018 and officially closed for comments on 11 December 2018]

Commenter 1: Rolls-Royce & Partners Finance – Antonio Bey – 29/11/2018

Comment # 1

Rolls-Royce & Partners Finance comments regarding the EASA PAD No. 18-161:

Please note we currently own 7 affected engines in Group 1 and 4 engines in Group 2 of the AD/NMSB. We are also involved in the potential purchase of an additional number engines [] and therefore the final outcome of this AD has a significant influence in the future value and time on wing of these engines. Our main comment is as follows:

There are no instructions for a “Terminating Action” in the AD nor the NMSB 72-AK165.

According to the PAD and NMSB as they’re currently written, the affected engines ESNs will continue to be affected by the 3,500 and 5,800 Cycle limits perpetually, i.e. even if an engine is removed, the HPT blades replaced, and the engine is no longer operated by the affected operators due to engine sale or lease return, the engines ESNs will still be affected by the limit. This will have a huge impact in the future value and time on wing of the engines even after the risk of corrosion is effectively removed completely as described.

Therefore, the AD and/or NMSB should contain instructions for a “terminating action”, and this should be when the Affected blades are replaced by Serviceable blades AND the engine is no longer operated by the affected operators. The AD should also allow for those operators to perform a small number of flights after the blades are replaced in order to accommodate the fleet redelivery or transition to new operators. I understand there is a deliberate intent to avoid mentioning the specific airlines affected by the issue due to sensitivity/confidentiality, but I think this can be solved by referring to them as “the affected operators”, and maybe instructing some way to prove that the engines are no longer operated by them, like maybe a letter from Rolls-Royce upon request. The point is that there must be some way of articulating in the AD that a “way out” exists for the affected engines, and instructions must be included on how to proceed.

EASA response:

Comment noted, but not agreed. To allow a ‘removed’ engine to be returned to service, §(2) of the AD provides reference to instructions how this can be done. Based on that, and taking into consideration the conditions in which the engine is operated following its return to service, Rolls-Royce may propose revisions the Table 1 and Table 2 of Appendix 1 of the NMSB to EASA. If agreed, this could result in a change of the affected engine lists.



No changes have been made to the Final AD in response to this comment.

Commenter 2: European Air Transport Leipzig GmbH – Sándor Koszta – 07/12/2018

Comment # 2

European Air Transport GmbH Leipzig (BCS) would like to provide the following comment:

- A. The NMSB instructs a removal of engines with component life greater than 4.400 cycles not later than 01 JAN 2019. Assumed the AD document will be released mid of December, the affected airlines have a response time of around 15 days. An engine replacement is a significant additional maintenance burden, which needs to be planned well and the availability of spare engines needs to be arranged. While BCS fully understand the urgency of this rule-making action, we would kindly ask EASA to ask for an additional grace period of 90 days for engines with component life greater than 4.400 cycles in order to minimize the operational impact of this short notice requirement.
- B. In addition, BCS would like to comment that the approach by Rolls-Royce is very conservative including even engine serial numbers that have only operated few hundred cycles in the harsh environment. The impact of sulphidation on the HPT blade life has not been fully understood and EASA is asked to challenge the OEM to fully understand the actual impact on the fatigue life of the blades.

EASA response:

- A. *Comment not agreed. The compliance time is based on the results of a safety analysis, in order to reduce the risk of high energy debris release, possibly resulting in damage to, and reduced control of, the aeroplane.*
- B. *Comment not agreed. Based on the current understanding of the problem, it has been possible to limit the AD impact on the engines in Table 1 and Table 2 of Appendix 1 of the NMSB.*

No changes have been made to the Final AD in response to this comment.

Commenter 3: Lufthansa Technik AG – Rene Schinkel – 11/12/2018

Comment # 3

Please find below comments for PAD 18-161:



- A. Par. (2) requires an inspection against EM criteria, which is not described in the NMSB itself. As the overhaul shops cannot sign off the NMSB (applicable only on-wing), is there any reporting requirement from EASA side required to state accomplishment of this EASA AD inspection requirement (or is a simple statement like “new parts installed” or “inspection iaw EM 72-41-52-200-800 accomplished” sufficient)?
- B. “Serviceable blade”: Can EASA please clarify how blades shall be handled that to go for an unplanned engine removal in the shop and are not removed from the module/disc at this shop visit because there are still “FC remaining on the blades”. Do these blades have to be inspected iaw EM or not?
- C. Is there any special workscoping level where EASA requires inspection of HPT blades in the shop (e.g. accomplish at all Engine Level 3 or Module 41 Level 2 workscope iaw RR Generic EMP)?
- D. What happens when HPT modules or HPT blades are exchanged between group 1 and group 2 engines? Does this affect HPT blade remaining life or is there always an inspection required when parts/modules are exchanged between engines?

EASA response:

- A. Comment not agreed. Paragraph (2) does not ‘require’ the engine to be returned to service and this is not an action described in the NMSB, therefore any NMSB reference for that action would be incorrect. Apart from reference to the EM task, reference to the AD would be sufficient.**
- B. Comment not agreed. Paragraph (2) does not require any inspection of blades and therefore does not affect the existing engine Instructions for Continued Airworthiness, other than complying with the actions as defined in the AD. See also EASA answer to Comment #1 above.**
- C. Comment not agreed. See EASA answer to point B. above.**
- D. Comment not agreed. If components (defined within the NMSB as blades or modules with blades fitted) move, then the life limitation will remain in place for them until such times as the blades are replaced. The engine TC holder will continue to monitor when this happens, to enable the NMSB to be revised. If/when the NMSB is revised to include more ESN, a new AD superseding/replacing the current AD will be issued, expanding the Applicability.**

No changes have been made to the Final AD in response to this comment.

Commenter 4: Cathay Pacific Airways Limited – Anthony Shum – 11/12/2018

Comment # 4

Cathay Pacific Technical Services Powerplants section would like to provide comments on the serviceable blade definition and seek for clarification for Para (2) Corrective Action(s) and the future service management when a new engine serial number (ESN) is introduced:



- A. For Serviceable blade definition, which is either blade that is new, or has passed a crack test inspection as per EM. Based on this definition in theory the overhaul shop may still be able to install the HPT blades with life greater than the component life as described in the NMSB, provided that a crack test is performed. Would this be clearer if EASA could include more clarification for those blades which are not new and are from the affected ESN as listed in Table 1 and 2 that, on top of the crack test requirement, to also include the component life (as defined in NMSB) limitation such that to avoid the installation of any service run HPT blade (from the affected engines) exceeding the component life?
- B. For Para (2) Corrective Action(s), if any of the affected engine is removed before reaching the component life, for reasons such as engine swap requirement or to undergo a hospital / check and repair shop visit where the M41 are not intentionally exposed in those shop visit. Could the operator still re-install the affected engine without the need to replace the HPT blades with the serviceable blades? CPA believe that as long as the engine is not yet reached the component life as stated in NMSB the engine could still be re-installed without the need to replace the HPT blades with serviceable blades.
- C. For new, used or lease in engine entering in to the affected operators' fleet, since operating environment is changed, these engines should be subject to the same risk of corrosion fatigue. We understand from RR that likely they will revise the NMSB to include any new ESN into the Tables but in terms of AD level how will EASA expand the applicability of the AD?

EASA response:

- A. Comment agreed. The Section Definitions of the Final AD is amended to clarify that blades which are removed from an affected engine, as required by this AD, are not 'serviceable blades' and therefore cannot be re-installed.***
 - B. Comment noted. Removal from service for any other reason than to comply with §(1) of this AD allows the engine to be returned to service, provided the engine is thereafter removed from service (again) before exceeding the limit(s) specified in the NMSB.***
 - C. Comment agreed. See EASA answer to Comment #3, point D. above.***
- No changes have been made to the Final AD in response to points B and C of this comment.***

