

EASA	COMMENT RESPONSE DOCUMENT
	EASA PAD No. 12-107 [Published on 10 August 2012 and officially closed for comments on 07 September 2012]

Commenter 1: FAA – Alan Strom – 10/08/2012

Comment # 1

In the Required Actions and Compliance Times section, paragraph (3) appears to require that operators inspect every FCL metering panel to ensure it is made of C263 material, for the entire life of the engine. The way the paragraph is worded, this would apply to new FCLs made by Rolls-Royce after the effective date of the AD and supplied to the operator. Is that the intent of the AD? If not, is there any way of identifying which parts were made before the non-conformance was discovered and corrected?

Can paragraph (3) be re-written to limit testing to a fixed suspect batch of parts, or parts made in a certain time frame?

EASA response:

Not agreed.

Paragraph (3) in the compliance section of the AD has been included to prevent (re-)installation of any parts that have been found not be made of C263 material on any engine in the future. Paragraph (3) does not require the operators to inspect new supplied parts. It is considered that a statement from the supplier (TC holder) will be sufficient evidence to determine future suitability of parts.

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

Commenter 2: US Airways – Cory Black – 31/08/2012

Comment # 2

US Airways would request the following be considered for inclusion into the Required Action(s) and Compliance Time(s) of PAD 12-107.

1) Include an allowance for engines that have completed (NMSB) RB.211-72-AG046 (at any revision) on-wing as not required if previously accomplished. **See below.**

Required as indicated, unless accomplished previously:

(1) Except for engines on which Rolls-Royce Non-Modification Service Bulletin (NMSB) RB211-72-AF572 (at any revision) has already been carried out during a previous shop visit or Non-Modification Service Bulletin (NMSB) RB.211-72-AG046 (at any revision) has already been carried out on-wing, at the next shop visit where access to the FCL metering panel is possible, or within 10 months after the effective date of this AD, whichever occurs first, inspect ...

Reasoning – Some tests have already been completed on-wing in accordance with (NMSB) RB.211-72-AG046 prior to the release of this AD. The current wording would require the procedure to be completed again within the 10 month compliance time.

2) Provide a 15 cycle flyback for panels identified as N75 during the on-wing test to allow time to consult Rolls Royce for a verification and possible re-test of the panel material. A combustion chamber borescope can be completed prior to initiating the 15 cyc flyback to ensure no unserviceable damage exists.

Reasoning –There is a possibility for false indications of N75 material while conducting the on-wing test. Rolls Royce has seen at least one occurrence of this test improperly identifying C263 as N75. As written, each inspection is subject to immediate engine removal even if there are no physical out-of-limits conditions present. This gives no reasonable time to consult Rolls Royce to confirm the results are accurate before engine removal.

3) US Airways would request the following be considered for inclusion into the Applicability of PAD 12-107.

Indicate that the following configuration(s) are not applicable to this PAD:

RB211-535E4/E4-B engines with post SB 72-C230 (Phase 5 Combustors) installed

Reasoning – Rolls Royce has indicated in the NMSB's that N75 FCL metering panels are limited to Phase 2 combustor configurations. As written there is no exemption for RB211-535E4 engines with Phase 5 combustors.

EASA response:

Comment # 2 point 1) Not agreed. Please note that the PAD already states that the action (NMSB RB.211-72-AG046) is “Required as indicated, unless accomplished previously”, which means exactly what it says: if those actions have already been done (on-wing or in-shop), prior to the effective date of the AD (i.e. previously) they do not have to be done again. No changes have been made to the Final AD in response to this comment.

Comment #2 point 2) Not agreed. This AD requires a shop visit inspection to be made and does not make this dependant on a previously accomplished on-wing inspection.

Comment #2 point 3) Agreed. The Final AD has been modified to restrict the Applicability to those RB211-535E4/E4-B engines that do not have Mod 72-C230 embodied.

Commenter 3: United Parcel Service Airlines – Eric Hassell – 05/09/2012

Comment # 3

United Parcel Service Airlines has reviewed the subject NPRM and would like to submit the following comments.

The subject NPRM states in the Required Action(s) and Compliance Times that the proposed AD is to be accomplished at next engine shop visit where access to the FCL metering panel is possible, or within 10 months after the effective date of the AD. Compliance stated in calendar terms offers a hardship to UPS Airlines from two perspectives, in that we are a low utilization operator. The first consideration is the longevity of our RB211 engines on wing. Given the limited number of hours flown by our RB211 fleet on an annual basis, and the engine's ability to retain performance, it takes many years for our entire fleet to go through a shop visit cycle. Although we started inspecting our shop engines to service bulletin RB211 72-AF572 soon after its release, we now have slightly less than half our engines inspected. To date there have been no findings. The second consideration is the time that will be accumulated on our engines as we progress through the proposed 10 month compliance period. UPS's average daily utilization is 2.3 hours, while the current RB211-535E4 fleet daily average is 7.0 hours. During the proposed 10 month compliance period, the fleet average RB211 engine would fly approximately 2100 hours, while in the same time period, the UPS engine would have flown only 700 hours. In terms of average daily cycles a similar situation exists with UPS averaging approximately 1.4 cycles per day on Rolls powered aircraft, vs. a fleet average of 2.3. If it is the

intent of the AD to limited exposure to the metering panel failure, then this would correlate to thermal cycles and/or time at temperature. Both of these factors are mitigated during a given calendar period by low utilization.

UPS requests that the compliance period for low utilization operators, such as UPS, are stated in terms of engine flight hours / cycles at 2000 hours and/or 700 cycles, whichever occurs first. To insure compliance within a reasonable amount of time, a 24 month calendar date cap could be established. UPS feels that the equivalent level of safety would be maintained for low utilization operators, with the proposed changes.

EASA response:

Not agreed. The proposed requirements are the result of a thorough safety analysis carried out by the Type Certificate holder and agreed by EASA.

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

However, it should be noted that the Final AD (as do all EASA ADs) contains the statement that “If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD”. This means that each operator has the possibility to apply to EASA for approval of an Alternative Method of Compliance (AMOC), which could include an extension of the compliance time, based on adequate justification, provided that additional actions are proposed to be taken (i.e. part of the AMOC application) to mitigate the risk during such an extended compliance time. Without such ‘additional actions’, EASA does not consider extending the compliance time as being an AMOC to an AD. Individual cases of AD compliance time extension are considered a temporary exemption, for which the operator should contact the National airworthiness authority of the State of Registry of the affected aircraft, to be approved under regulation EC 216/2008 Article 14 (4) ‘flexibility provisions’.

Commenter 4: American Airlines – John Beavers – 05/09/2012

Comment # 4

American Airlines (AAL) wishes to provide the following comments and request regarding EASA PAD 12-107.

Rolls-Royce first released [service bulletin] RB211-72AF572 on October 15, 2007 to direct operators of affected RB211-535 and RB211-524 engines to inspect front combustion liners for the presence of N75 material instead of the correct C263 material when the combustion liners were accessible at shop visit. The C263 material was introduced by service bulletin RB211-72-7221 in 1984 to address the problems of cracking in the front combustion head section. N75 material remains the material of choice for industrial applications of the Rb211. After April 23, 2007, material testing was done during manufacture on all front combustion liners destined for aerospace RB211s to verify the correct material type.

[Service bulletins] RB211-72AG046 and RB211-72AG183 were released for on-wing accomplishment of the front combustion liner inspection on the -535 and -524 fleets respectively, using an alloy sorting probe. According to Rolls-Royce data, a total of 3 engines have been rejected by the on-wing inspection, requiring engine removal and deep penetration shop visits – all three (100%) proved to be erroneous “false positive” findings and caused otherwise unnecessary engine removals and shop visits.

Although the large majority of AAL’s [affected] fleet will have been inspected at the shop level, we estimate [that] a total of 18 [affected] engines will remain on-wing at the proposed AD due date. As such, these 18 engines would be subject to the unreliable inspection process specified by the PAD and substantial risk of false positive(s) causing premature engine removals and very costly engine shop visits. Rolls-Royce has recognised the inadequacy of the on-wing inspection and is preparing a revision to the on-wing inspection service bulletins to include additional analysis of the cleaning pads to confirm presence of N75 material, prior to requiring engine removal and shop visit.

AAL requests that EASA defer and mandated inspections until this improved process can be released and validated [as being] effective [for] the -535 and -524

operators to avoid unnecessary and very costly engine shop visits. Combustion liner condition will continue to be monitored for cracking in accordance with the MRB and AMM requirements.

Should no acceptable on-wing inspection process be achievable, the note the projected 18 [affected] engines in AAL's fleet remaining at the AD due date are expected to reach their natural mature shop visit by the end of 2014, and would be inspected in accordance with [service bulletin] RB211-AF572 at that time.

EASA response:

Not agreed. This AD requires a shop visit inspection to be made and does not make this dependant on a previously accomplished on-wing inspection.

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

Commenter 5: The Boeing Company – D. A. Biggs – 0609/2012

Comment # 5

Boeing has reviewed the subject [PAD] and provides the [following two] comments:

Comment 5#1

What does the commenter request?	Change Applicability section to match Rolls-Royce Service Bulletin RB211-72-AG046 for the RB211-535 series.
How is the request justified?	The Applicability section as currently written applies the action to "RB211-535C, 535E4-37, 535E4-B-37 and 535E4-B-75 engines, all serial numbers". However, SB AG046 specifically excludes some -535 engines [from] the Effectivity and Compliance sections. If the AD Applicability section is not changed to match the SB, some engines would be required to be inspected unnecessarily.
List paragraphs that change; describe (non-obvious) changes	"Applicability"

Comment 5#2

What does the commenter request?	Change [paragraph] (2) to allow limited continued operation if N75 material is found.
How is the request justified?	The Required Action(s) and Compliance Time(s) [section], [paragraph] (2), as currently written, requires "If, during the inspection as required by paragraph (1) of this AD, it is found that the FCL metering panel is made of N75 material, before release to service of the engine, replace the FCL metering panel...". However, SB AG046 allows limited continued operation within specified fly-on limits, of [engines with] N75 metering panels if found during on-wing inspections under Accomplishment Instructions 3.B.(6).(c) and 3.C.(6).(c) if the panel meets AMM requirements. If the AD Required Action(s) section is not changed, undue burden will be placed on the airlines.
List paragraphs that change; describe (non-obvious) changes	"Required Action(s) and Compliance Time(s), [paragraph] (2)"

EASA response:

Comment 5#1: Not agreed. In the section “Required Action(s) and Compliance Time(s)” the PAD provides a clear distinction between the different engine types and the respective NMSBs applicable to those engine types.

Comment 5#2: Not agreed. The PAD proposes to require the inspection to be done at shop visit. For the case of the FCL being inspected at shop visit, NMSB RB211-72-AG046 Revision 1, Section 3. Accomplishment Instructions, subsection B.(6)(a) includes the requirement to replace the FCL at this shop visit if it is found to be not conforming with the material standard prescribed by this NMSB.

No changes have been made to the Final AD in response to these two comments.

Commenter 6: FedEx Express – Colin Nichols – 06/09/2012**Comment # 6**

The subject [PAD] states in the required action(s) and compliance time(s) [section] that the proposed AD is to be accomplished at next shop visit where access to the Front Combustion liner (FCL) metering panels is possible, or within 10 months after effective date of the AD. The compliance time stated in calendar terms offers a significant hardship to FedEx from two (2) perspectives:

1. Longevity of our RB211 engines on wing. Given the number of hours flown by FedEx RB211 fleet on an annual basis and the engine's ability to retain/maintain performance, it currently takes many years for our entire fleet to cycle through a shop visit. FedEx has started inspecting our engines at shop visit in accordance with SB RB211-72-AF572, after subsequent release of the SB. However, to date we have less than one third of our engines inspected at ESV. On engines that have been inspected per SB RB211-72-AF572, to date there has been no adverse finding.
2. FedEx is a relatively low utilisation operator, time accumulated on FedEx engines as we progress through the 10 months compliance period. FedEx average daily utilisation is approx. 3.0 hours, while the RB211-535E4 fleet daily average is 7.0 hours and above. During the proposed EASA AD 10 month compliance period, the average RB211 engine would accumulate approx. 2 100 hours, while in the same period, [a] FedEx engine would have accumulated approx. 900 hours. In terms of average daily cycles, a similar situation exists, with FedEx averaging 1.9 cycles per day on Rolls-Royce powered aircraft, versus a fleet average of 2.3 cycles per day. If the purpose of the EASA AD is to limit the exposure to a possible metering panel failure, then I believe it should be correlated to a thermal cycle and/or time at temperature, both of these factors are mitigated during a given calendar period by low utilisation.

FedEx request that the compliance time period for relatively low utilisation operators, such as FedEx, be stated in terms of engine flight hours/cycles, [at] 2 500 hours and/or 750 cycles, whichever occurs first. However, to assure compliance within a reasonable time frame, FedEx requests a 24 months calendar [period] cap should be established. FedEx believes that the equivalent level of safety would be maintained for relatively low utilisation operators within these proposed changes.

EASA response:

See reply to Comment # 3 above.

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