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| <b>EASA</b>                                                                       | <b>COMMENT RESPONSE DOCUMENT</b>                                                                                          |
|  | <b>EASA PAD No. 11-078</b><br><b>[Published on the 26 July 11 and officially closed for comments on the 23 August 11]</b> |

**Commenter 1: Cathay Pacific Airways Engineering, Hong Kong – John Stanway – Tue 09/08/2011 09:46**

**Comment # 1**

"Please find comments from Cathay Pacific Airways on the Compliance Statement on PAD 11-078 for FAFC Issue 17 SW SB73-AG054. If EASA would like to discuss any of our points further then feel free to contact myself and/or Keith Brown directly.

Required as indicated, unless accomplished previously:

- (1) Within 40 months after the effective date of this AD, modify the engine by installing an FAFC featuring software at issue 17 in accordance with paragraph 3 of the Accomplishment Instructions of Rolls-Royce Service Bulletin (SB) RB211-73-AG054, Revision 2.
- (2) Engines which have been modified, before the effective date of this AD, in accordance with previous revisions of Rolls-Royce SB RB211-73-AG054 are compliant with the requirement of paragraph (1) of this AD.
- (3) After modification of an engine as required by paragraph (1) of this AD, do not install an FAFC in an engine, unless the FAFC incorporates software at issue 17.
- (4) From the effective date of this AD, do not install an engine on an aeroplane unless the FAFC installed on that engine incorporates software at issue 17.

**Background**

Cathay Pacific Airways (CX) foresee no problems in achieving compliance with the 40 weeks from AD effective date, or the 31 December 2014 date given in RR SB 73-AG054.

Despite SB73-AG054 being issued in March 2010, CX was not able to commence the SB embodiment until the end of 2010 because our local MRO facility did not have a working Programming Rig for the 524 FAFC. The initial rollover has also been slowed by the availability of some components within the FAFC which were found to be outside CMM limits during the software embodiment. The worst of these issues now seem to have been resolved.

In the last 8 months CX have reprogrammed over 35 FAFCs, approx 30% of the fleet. Based on this rate CX expect to complete the rollover of its fleet by the end of 2012, approx 2 years ahead of the end of 2014 compliance date.

### Concerns with the PAD

Our concerns with the PAD relate to sections (3) and (4), which prohibit the installation of pre-mod engines or FAFCs to the fleet.

CX currently perform a significant number of engine removals and movements over and above engines going into the shop for repair or refurbishment. For example, engines get removed for minor repairs off wing or for repositioning of engines for lease returns or between our PAX and Freighter fleet. The prevention of installation of pre-mod engines will require CX to hold more post mod spare FAFCs in reserve to enable such engine changes. This will tend to slow the rollover down as CX have limited number of spare FAFCs, and this rather than shop capacity is the restriction on the rollover rate.

A similar situation exists with FAFC changes. Interchange of two FAFCs between two engines on an aircraft to see if the fault moves with the FAFC is common troubleshooting practice as is the holding of a FAFC removed as part of troubleshooting in quarantine to see if the fault continues. The prevention of installation of pre-mod FAFCs would not allow this practice and mean that said FAFCs would have to go for reprogramming in an ad hoc manner, not as part of a planned rollover campaign. To protect ourselves for this would require us again to keep more FAFCs in reserve.

In addition to the impact on the programme of the two subject compliance statements, CX is concerned about the effect that the need to send all removed FAFCs for reprogramming would have on the operation and our spares holding. It could in the worst case cause CX to go AOG for the lack of a post mod FAFC spares. CX is also concerned about the ability in practice to prevent movement or re-installation of a pre mod engine or FAFC. This would result in CX being out of compliance with the AD.

### Summary

Cathay Pacific Airways see the additional compliance statement concerning installation of pre-mod engines or FAFCs as being difficult to manage and control and most importantly detrimental to the desired effect of trying to complete the rollover within the shortest time frame.

Cathay Pacific Airways request that EASA removes both sections (3) and (4) from the AD Compliance Statement”

### **EASA response:**

***We partially agree.***

***The subject PAD/AD provides a reasonably sized compliance interval of 40 months to accomplish the required actions. In addition to this, it is assumed that the Rolls-Royce SB referenced in the PAD and the actions prescribed herein have been already communicated to the operators (initial issue of the SB was dated 18 March 2010) thus providing time for adequate planning of maintenance activities.***

***In order to provide some alleviation with respect to the logistical situation of operators and based on the risk analysis for the potentially unsafe condition addressed by the present PAD/AD, it is considered acceptable to allow engines to be installed on aircraft without the required upgrade of FAFC software if from the effective date of the AD these engines have not undergone maintenance related to or affecting installation of the FAFC.***

***However, in order to ensure an even and smooth distribution of engine modifications over the compliance time, it is considered necessary that from the effective date of this AD no FAFC that does not feature the prescribed software upgrade should be installed on an engine.***

***The AD will be modified in order to reflect the above considerations.***

**Commenter 2: Cargolux Airlines International S.A. – Paul Rasquin – Thu 04/08/2011 16:19**

**Comment # 2**

"Dear all,

Cargolux (CLX) have following comments on PAD 11-078:

....

(3) states an engine cannot be de-modified after compliance – It is quite complicated to manage a rollover program with subject constraint. Even if we could manage it would slow down the rollover as we would always be aware of the need to keep both standards of spares in stores.

(4) states that we cannot install an engine unless the FAFC is Issue 17 SW. That can be ensured with engines coming from the shop but what about all the ad hoc engine changes for positioning or off-wing repair.

...

Subject additional constraints (3) and (4) are not part of RR SB RB211-73-AG054. CLX is anticipating the modification of their FAFCs to software 17 but those additional constraints are very difficult to control/ manage, will slow down the rollover process and will affect the FAFC spare situation.

CLX is asking EASA to look into these comments.

Best regards,"

**EASA response:**

**As for Comment 1 above.**

**Commenter 3: FAA, Aircraft Certification Service, Burlington, MA – Alan B. Strom – Tue 26/07/2011 16:54**

**Comment # 3**

"Dear EASA:

I am writing to provide my comments to your PAD No.: 11-078, Engine Fuel and Control – Full Authority Fuel Controller (FAFC). I have two comments:

1) Rather than requiring compliance 'within 40 months of the effective date of this AD,' the FAA recommends compliance within a specified number of cycles in service or flight hours. Because the potential for flutter is dependent on engine running time and not calendar time, our orders require us to set up our compliance requirements accordingly. Having the EASA AD compliance based on flight time or flight cycles will ensure that the FAA will be able to issue our AD in a timely manner.

2) If the FAA implements the EASA AD as written, operators will be prevented from installing any FAFC with a software version later than version 17. We would prefer that the AD be written to require removal of any FAFC with a software version prior to version 17. Worded the AD that way, rather than specifically requiring the installation of an FAFC with version 17 installed, will obviate the need for future AD revisions as new FAFC software versions are issued.

Sincerely, "

**EASA response:**

*We partially agree.*

*1)It is correct that fan blade damage due to flutter depends on running time. For this reason, the risk analysis associated with the potentially unsafe condition addressed by this PAD/AD has taken into account the operational characteristics of the fleet in order to enable the limiting running time to be translated into a calendar period. Based on this methodology, the compliance time quoted as a calendar time is correct. The technical publication referenced in the PAD, this is Rolls-Royce SB No. 73-AG054, as well as the logistical planning for the rollover of the modification have been tailored based on a calendar date limit and therefore, we prefer to keep the calendar time limit in the PAD/AD.*

*2)It is correct that in the case of a future, EASA approved FAFC software upgrade the presence of this AD will prevent operators to install the latest standard of software. As the technical documentation around this change has been written based on installation of a new standard of software rather than removal of an FAFC with an older standard of software, it was chosen for reasons of clarity and consistency to formulate the requirements for upgrade of the software.*

*In the case of any future FAFC software upgrade, the AD will need to be superseded by a new AD that enables the latest standard of software to be embodied.*