

EASA	COMMENT RESPONSE DOCUMENT
	EASA PAD No. 10-016 [Published on 05 February 2010 and officially closed for comments on 05 March 2010]

Commenter 1: TAP Maintenance & Engineering – Ana Matanço – 12 February 2010

Comment # 1

Regarding PAD N° 10-016, recently issued, about A340 components replacement to avoid in flight deployment doors, looks not to make sense the priority given for each door modification. According with the figure from PAD, we need to replace inboard doors first, than outboard doors. Is it really like that? Please advice.

EASA response:

EASA confirms that the priority given for each door modification in the PAD is correct. Please note that extensive tests (flight tests, simulator tests) and analytical assessments have been conducted by Airbus, with EASA concurrence, to evaluate the impact of one thrust reverser pivoting door deployment in flight. These tests consisted in evaluation of changes in handling qualities and performances with one reverser door opened at various A/C speeds, Angle of Attack, configurations and engine thrust. The selected doors (10 doors) for retrofit have shown through flight and simulator tests a significant repercussion in case of untimely deployment close to the ground. Handling Qualities and Performance assessments resulted in the priority to be put in the action plan for the retrofit of the Thrust Reverser doors (4 inboard doors first, then 6 remaining ones among the 10 doors identified as critical).

Commenter 2: Iberia – Joaquín García – 22 February 2010

Comment # 2

1. The accomplishment period is too short due to the large number of thrust reverser involved.
2. In addition to the previous comment and due to that, we are not sure that manufacturer will take care of all material for all operators on time to accomplish with the AD requirements.
3. The different thresholds depending on the position in the aircraft could produce some difficulties in the configuration control. In fact, this cause an interchangeability problem that could lead to a AD dis-accomplishment.

We think that a better solution could be, accomplish the AD for all positions in a quite longer period.

EASA response:

The compliance time has been established through risk analysis in accordance with EASA Part21 and has been deeply discussed between EASA and Airbus. The threshold for replacement of the new components has been determined and reviewed with Parker to ensure material availability in order to support the dates required. Furthermore, the different C-Duct configurations can be handled through Primary Lock and Secondary Lock P/Ns. Indeed, the primary lock P/N (ID tag attached with lock-wire to the outside of the P/L heatshield), and secondary lock P/N (name plate bonded on the actuator) are fully visible when opening the Fan Cowl Doors. In addition, please note that a specific red placard is being developed and should be riveted on the FWD frame of the T/R cowl to show the different C-Duct configurations for each pivoting door location. This placard will be introduced through a specific Airbus SB. The aim is to remind line maintenance about interchangeability conditions and should mitigate the risk of maintenance errors.

Commenter 3: GE/CFMI– Brian Gannon – 22 February 2010**Comment # 3**

CFM propose to revise the PAD text as follows

1- a- PAD 10-016 current “Reason” paragraph:

Two A340-300 aeroplanes experienced opening of engine number (n°) 3 Thrust Reverser (TR) pivoting door during climb. These events were the result of a primary lock malfunction and incorrect engagement of the secondary lock.

1- b- The CFM proposal (in red the updates proposed)

Two A340-300 aeroplanes experienced **one single door** opening of engine number (n°) 3 Thrust Reverser (T/R) pivoting door during climb. These events were the result:

- case N°1= of a Primary Lock (P/L) malfunction, associated with the Secondary Lock (S/L) disengagement
- case N°2= of a partial engagement of the P/L, due to an overlapping between the T/R pivoting door and the Fan cowl, associated with the Secondary Lock (S/L) disengagement.

1- c- - PAD 10-016 current “Reason” paragraph

The root cause has now been identified as being a combined failure of the thrust reverser pivoting door primary lock and actuator.

1- d- The CFM proposal (in red the updates proposed)

The root cause has now been identified as being:

- **for case N°1=** a combined failure of the T/R pivoting door P/L and actuator

- for case N°2= a partial engagement of the P/L due to an overlapping between the T/R pivoting door and the Fan cowl, associated with a failure of the T/R pivoting door actuator.

1- e- PAD 10-016 current “Reason” paragraph

- Outer engines (n° 1 and 4): all 4 pivoting doors of each engine.
- Inner engines (n° 2 and 3): upper inboard pivoting door of each engine.

1- f- The CFM proposal (in red the updates proposed)

- **Outboard** engines (n° 1 and 4): all 4 pivoting doors of each engine.
- **Inboard** engines (n° 2 and 3): upper inboard pivoting door of each engine.

2- a- PAD 10-016 current “Required actions and Compliance time” paragraph

- (1) No later than 28 February 2011, do the actions specified in paragraph (3) of this AD on the upper inboard thrust reverser pivoting door of each engine, as identified by the label  in Picture 1 below.
- (2) No later than 31 December 2012, do the actions specified in paragraph (3) of this AD on the upper outboard thrust reverser pivoting doors of engines n°1 and n°4, and lower thrust reverser pivoting doors (inboard and outboard) of engines n°1 and n°4 as identified by the label  in Picture 1 below.

2- b- The CFM proposal

To put  instead of , and  instead of .

Add engine designations (Engine No. 1, Engine No. 2, Engine No. 3, Engine No. 4) in Picture 1.

EASA response:

1-b: The first part of the proposal is agreed “Two A340-300 aeroplanes experienced one single door opening of engine number (n°) 3 Thrust Reverser (T/R) pivoting door during climb”. However, EASA does not wish to enter in too much details concerning case n°1 and 2. This is not the aim of the AD.

1-d I: Proposal disagreed.. See above

1-f: Proposal agreed.

2-b : Proposal agreed.

Commenter 4 :Air France Industries – Jérôme MINNE – 24 February 2010

Comment # 4

Primary lock and actuator modifications are required according priority date identified by flag 01 or 02 shown on the picture:
Flag 01 should be the first priority .

Modification of the actuator requires to remove set of shims that was previously mandated to be installed par AD 2009-0063. We would like to highlight that it will be unable for the operator to warrant the PAD 10-016 requirement as both configuration will take place on the inboard thrust reversers of inboard engines due to :

- Mechanics are sensitive to AD requirement and confusion in configuration may lead to maintenance error (shims reinstallation)
- there is any installed device that can prevent maintenance error, furthermore pre or post modified actuators are physically similar.
- thrust reversers are subjected to be fitted on all engine position, that means that spares should be post modification configuration before installation and de-modified at aircraft level with shims sets installation that may lead to maintenance error
- in service event where actuator standard exchange is required may lead to maintenance error in shimming required or not

EASA response:

1 - There is no typo error in the PAD. The flag 02 is the first priority.
Please refer also to the response to comment # 1 and comment # 3 2-b-.

2- Regarding the point you raised about possible maintenance errors, your concern is understood and noted. See also response to comment #2.

Commenter 5: Swiss International Airlines – Lukas Zuellig – 04 March 2010

Comment # 5

Information given:

- In PAD 10-016 it has been proposed that "only" 10 of the 16 T/R doors have to be modified. In addition, the work on these 10 doors then is divided into 2 different due dates.
 - o On the other hand and according to the attached presentation issued by Parker / CFM, page 19, I find following recommendations:
 - "...determined 10 critical for aircraft handling....."
 - "...CFM and Airbus strongly recommend that operators complete implementation of the remaining 6 positions for total reliability improvement"

Concerns / requests:

- SWR cannot fully understand the reason why 2 different due dates have been set for the different sets of T/R doors. SWR would highly appreciate to

have just one final due date for ALL affected T/R doors. In our eyes, this would make all the logistics much more easier. Also the future handling (for example in case of component replacements) will be affected to a much lower extent. Of course, with this in mind, we would also support to mandate the replacement of ALL 16 doors. Having all 16 doors replaced by one final due date would alleviate the future risk of having any component mismatch sooner or later.

- According to the presentation as already mentioned above, the 10 affected T/R doors are determined as "critical". Even this word has been allocated to all of these T/R doors, almost 3 years will be given to have the final modification performed. This sounds like a contradiction to me. Why has the final due date set that much in the future?
- In summary, SWR proposes to EASA to proceed with the following intention:
 - o Modify all 16 T/R doors within a time frame, in which every affected A340 will at least have a ground time minimum of a C-check, allowing sufficient time to perform the modification in one go. This of course shall be defined after consultation of Parker Aerospace confirming the availability of the required parts.

EASA response:

With regards to the retrofit of the 6 remaining positions, please note that a specific SB will be provided by Airbus to the airlines to allow retrofit of new primary and secondary locks on these pivoting doors. A communication was already made available to all operators of A340-200/300 aeroplanes to inform them of the 6 doors MODs certification and of the possibility to provide a Technical Adaptation to retrofit all positions even before the SBs availability. Please refer also to responses to Comment #1 and #2.

Commenter 6: Deutsche Lufthansa AG – Brigitte Gilles – 05 March 2010

Comment # 6

Due to the fact, that the upcoming AD will demand the replacement of primary lock and actuator only on 10 positions of 16 positions of the thrust reverser pivoting doors on the engines, we see a big problem because of the interchangeability between these positions.

In the operation it will be difficult to guarantee that only modified reverser doors will be installed on the positions, listed in the PAD resp. AD. It has to be clear described in the A/C documentation e.g. AMM and IPC, to prevent an installation of reverser door with wrong actuator and / or primary lock. According an information from Airbus (AI Ref. 946.0002/10, dated 23 February 2010), Airbus is planning a mandatory SB, which will request operators to implement a red placard on each thrust reverser forward frame. The placard will depict a drawing of the aircraft with the mandatory thrust reverser pivoting door highlighted and the requested primary lock and actuator partnumbers indicated. Experience has shown that placards in this area get lost over and over again. Again, we think it is difficult to guarantee the compliance of the upcoming AD, also in respect of the two compliance times for different positions.

EASA response:

The configuration management issue has been carefully considered. In fact, in the aircraft maintenance manual (AMM) and component maintenance manuals (CMMs) notes have been added for the C-duct, primary lock and actuator levels, referring to Airbus SBs A340-78-4037 and/or A340-78-4038 for interchangeability instructions. The IPC as well as the PPIPC (power plant IPC) have also been updated to clearly show new part number requirements and to refer to Airbus service bulletins. The decision to install a red placard on each T/R forward-frame was then taken in order to further increase the configuration management robustness. The initial proposal

for the placard to be fixed to the bulkhead using adhesive was rejected after discussion with Airlines (in line with your comments above); the placard will be therefore kept in place using rivets, just like the ID plate on the thrust reverser, for which reports of loss have never been received.