


<b>EASA</b>	<b>COMMENT RESPONSE DOCUMENT</b>
	<p align="center"><b>EASA PAD No. 14-077</b>  <b>[Published on 30 April 2014 and officially closed for comments on 28 May 2014]</b></p>

**Commenter 1: UPS – Mr Mark R. Hilborn – 27 May 2014**

**Comment # 1**

**References:**

A. Proposed Airworthiness Directive (PAD) No. 14-077, dated 30 April 2014

B. Airbus Service Bulletin A300-57-6115, Revision IR, dated April 04, 2014

Per Reference (A), EASA has released a proposed new airworthiness directive to establish repetitive inspections of the fuselage frame FR40 lower junction between stringers S-32 and S-33. The inspection area and procedures are outlined in Airbus SB A300-57-6115. The proposed rule identifies the initial inspection to be accomplished within 1,000 flight hours after the ruling effective date and thereafter at 1,000 flight hour intervals until accomplishment of the rotoprobe inspection. The initial rotoprobe inspection is within 36 months of the ruling effective date and thereafter at 7,000 flight cycle intervals. United Parcel Service Co. (UPS) has the following comment regarding the proposed ruling parameters.

Our comment is with regards to the ruling inspection threshold and repeat intervals. All documentation related to this proposed rule indicates that the reported damage is fatigue related (support of Extended Service Time Program; ESG-2).

The OEM report on the one reported event states that analysis concluded that the crack initiates early in service life. Based on the available information available, it is also logical to conclude that the crack growth rate is slow as this discrepancy was not detected during the aircraft service life. With this in mind, UPS does not believe that a flight hour initial inspection threshold regardless of aircraft total service time is representative of a fatigue related issue. In addition, the intervals for the same inspection method, high frequency eddy current, are defined using two different measures, flight hours and flight cycles. Use of calendar time measurements for inspection threshold and intervals is not consistent for a fatigue related issue.

Review of the proposed inspection requirements noted two aspects that do not appear to be accounted for in establishing the SB A300-57-6115 inspection threshold. The first aspect is prior inspection history in the area. Airbus SB A300-57-6052 / -6053 accomplished repeat inspections and rework in the area adjacent to this new inspection area. The SB A300-57-6052 inspection threshold and repeat intervals was defined by total service time (flight cycles), not a given time period from a ruling issuance date. In addition to SB A300-57-6052 / 6053 accomplishment, general zonal inspections have been accomplished in this same area which detected the damage reported in Airbus All Operator Telex (AOT) 57A6111 (area previously reworked per SB 57-6082). With finite element modeling and damage tolerance analysis capabilities available, UPS believes a service time related threshold can be determined rather than a single threshold for all aircraft without consideration for service time or configuration.

The second item not considered in the inspection threshold establishment is the embodiment of Airbus Modification number 10221 S20394. This production modification changed the FR40 fitting material from 2618A aluminum alloy to 717 5T73 51 aluminum alloy to enhance the fitting fatigue strength. In addition to the

material change, the intent of Airbus SB A300-57-6053 was embodied during production which alters the load path in the affected area. Based on the evaluated aircraft service time (41,548 total flight hours; 35,108 total flight cycles), it is logical to conclude that this aircraft was a pre-mod 10221 configuration. Airbus SB A300-57-6115 and the proposed rule do not take into consideration this design change and the potential impact on the reported discrepancy as there is not a different threshold for aircraft with Airbus Modification number 10221 S20394 embodied.

UPS acknowledges the need for inspection of the FR40 fitting in this area based upon prior service bulletin history. However, the information provided does not appear to provide a comprehensive evaluation of the proposed inspection threshold and follow-on actions. Based on these two considerations and to reflect prior fleet experience in this area, UPS proposes changing the inspection threshold to reflect a typical fatigue related issue (MSG-3 type analysis, FEM, etc.) as follows:

- For A300 / A310 aircraft with more than 20,000 total flight hours, inspect within 1,000 flight hours or 750 flight cycles after the ruling effective date, whichever occurs later.
- For A300 / A310 aircraft with less than 20,000 total flight hours, inspect prior to the accumulation of 20,000 total flight hours or within 1,000 flight hours or 750 flight cycles after the ruling effective date, whichever occurs later.
- For A300 / A310 aircraft with Airbus Mod 10221 embodied in production, inspect prior to the accumulation of 20,000 total flight hours or within 2,000 flight hours or 1,500 flight cycles after the ruling effective date, whichever occurs later.

This proposed compliance schedule is weighted towards aircraft with higher service experience which was the subject of the original evaluation on the out-of-service aircraft. Evaluation of high time in-service aircraft will provide more information to support finite element modeling (FEM) and damage tolerance analysis (DTA) of the affected area as well as the production modification introduced.

UPS believes the proposed changes ensure the continued safe operation of the worldwide Airbus widebody fleet by providing an equivalent level of safety to the proposed rule while gathering. Thank you for your time in considering these comments.

#### **EASA response:**

*EASA does not agree with this comment.*

*The finding discovered during the tear-down inspections is not directly related to the ESG-2 exercise and therefore the proposed inspection programme does not apply only to operators willing to operate the aircraft beyond ESG2. The finding was discovered after Airbus took opportunity to do some additional tear-down inspections on areas not covered by any existing inspections. In the root cause analysis Airbus currently cannot rule out potential material embrittlement due to the manufacturing process. With this scenario in mind it can be justified that the inspections are not driven by aircraft total service time, but rather flight hour based as cracks could potentially develop at any stage in the aircraft's service life. Additionally, in a worst case scenario cracks at the 3 fasteners locations could potentially develop simultaneously due to the common cause of material embrittlement, which significantly reduces the structural integrity. The TCH proposes a HFEC at 1 000 hrs interval without bolt removal (but with potentially longer cracks to be found) to allow operators sufficient time to plan for the rotoprobe inspection with bolt removal (defueling necessary and planning needed to avoid spare supply issues). The 7 000 FC interval has been determined as a first step which can be updated by the TCH following a full detailed DT analysis taking into account further feedback from in-service experience.*

*The potential material embrittlement root cause could both apply to pre- and post- mod 10221 configurations.*

*Adequacy of the intervals for HFEC and rotoprobe inspections will be reassessed by Airbus and EASA as soon as in-service data collected from the HFEC permit. If it is shown that relaxation can be granted, a revision of the AD requirements will follow.*

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

**Commenter 2: FedEx – John Hill – 28 May 2014****Comment # 2**

1. FedEx would like inquire about the threshold and intervals of inspection of the HFEC inspection in paragraph (1) and the rototest inspection in paragraph (3). Are these intervals based on critical crack length data in this area or DT analysis? The critical crack length and rate of progression of the crack should drive the threshold and interval of the inspection. If no cracks were present on two A300-600 fleet leading aircraft, does Airbus know if the cracks progress at a rapid rate? What does Airbus' DTA analysis show? Based on the fact that there have only been findings on one retired fleet leader aircraft during aircraft tear-down and two other A300-600 fleet leaders were inspected with no findings the short inspection thresholds for both the HFEC and rototest inspections seem to be overbearing.
2. FedEx would also prefer that approved repair methods be available in the service bulletin. This would allow for more timely repairs in the event cracking was found. Having to contact Airbus for an approved repair for each crack finding causes work stoppage, material delays, revenue losses and delays during communications with Airbus.

**EASA response:**

*For point (1): As the root cause analysis performed by Airbus cannot rule out material embrittlement, the intervals for initial inspection are based on the fact that the cracks can be present at any stage in the aircraft's service life without having any clear view on the crack length relative to the critical crack length . Moreover, in a worst case scenario, the cracks due to material embrittlement can develop simultaneously near all 3 fastener locations. Therefore, to obtain initial feedback, short HFEC threshold intervals (without bolt removal but with potential longer crack to be found) are defined to allow operators sufficient time to plan for a rotoprobe inspection at 36 months with bolt removal. The repetitive interval of 7,000 FC has been determined as a first step pending the full DTA based on further feedback obtained from in-service experience.*

*For point (2): EASA understands FedEx' s concerns and is also of the opinion that having proved repair methods in the Service Bulletin would help operators. EASA will forward to Airbus the FedEx proposal. EASA also recommends FedEx to raise the point during the A300 / A310 Family Symposium – that will take place in Berlin, from the 31st March to 2nd April 2015. (Airbus OIT ref: 999.0080/14 dated 22 July 2014 refers.)*

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