EASA	COMMENT RESPONSE DOCUMENT
	EASA PAD No. 12-057 **[Published on 04 June 2012 and officially closed for comments on 18 June 2012]**

Commenter 1: Air France – Patrick Theodet – 13/06/2012

Comment # 1

Please find below AIR FRANCE comment / question about PAD 12-057, relative to A320 fam. THSA inspection.

AA - Original release of AIRBUS SB 27-1214 dated feb 23/12 requires a compliance [time] based on THSA Time Since New, where PAD and VSB call first for Entry Into Service Date, or date of manufacture according to identification plate, if not available.

Inspections have begun at AFR, and we have elected to trigger all inspections according to THSA manufacture date, since more conservative and definitely more accurate.

BB - The PAD does not state if THSA already inspected according to SB 27-1214 rev 0, before effective date of the AD, will be considered compliant with initial inspection as mandated per final AD.

If yes, please consider adding a note in the final rule, for clarification.

EASA response:

AA –The date to be considered as a reference is the one listed in the VSB Goodrich SB 47145-27-16, or the manufacturing date when the THSA P/N is not listed in Goodrich SB 47145-27-16. The Airbus Service Bulletin A320-27-1214 which refers to the accumulated THSA time since new will be revised accordingly.

BB – The inspections done before the effective date of this AD in accordance with the instructions of Airbus Service Bulletin A320-27-1214 are covered by the statement "Required as indicated, unless accomplished previously".

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

Commenter 2: EasyJet Airline Company Ltd – Mark Billington – 11/06/2012

Comment # 2

I would just like to pass comment on the proposed PAD 12-057 regarding THSA ballscrew lower splines:

With regards to the compliance time in table 1 the statement "whichever occurs later, A or and B" is confusing when applied to the two statements. It is unclear if the

AD is only affective for THSA's that have accumulated 20 years and over as the compliance B states "within 3 months after effective date of AD".

Compliance statement B should read "for THSA' s that have accumulated more than 22 years, within 3 months after the effective date of this AD". This would then make a clear and less confusing statement.

EASA response:

EASA partially agrees. The word 'and' was a typographical error (probably causing the confusion) and has been removed from the Final AD. It should be clear that the time accumulated by the THSA, on the effective date, determines which (A or B) compliance time applies. If the THSA has accumulated 21 years and 9 months or less, A applies. In case the THSA has already exceeded 21 years and 9 months, B (additional 3 months compliance time, thereby exceeding the 22 years) will occur later, so B applies. This is a common principle applied in AD writing.

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

Commenter 3: Avianca – Diogo Bertoldi Youssef – 06/06/2012

Comment # 3

In accordance with Applicability field, this AD will be applicable to all MSNs and does not have a terminating action. The referenced SB is applicable to MSN 5000 and the major THSA SN referenced on VSB is 5043. Could you please clarify if there will be a terminating action for future aircraft?

EASA response:

A new design for production aircraft and retrofit is under development. The Timescale is not finalised yet.

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

Commenter 4: Lufthansa Technik – Karsten Hinkel – 06/06/2012

Comment # 4

1. **§ (1) Table 1 – Initial THSA inspection; line A**:
   LHT/DLH recommends to change the wording into:

   "Before accumulating 22 years."

   Otherwise, if an operator want to do the inspection earlier, because of environmental conditions or because of service experience, it would be in conflict with the order of the AD-Note, that forbids an earlier inspection. To avoid an earlier setup point for the repetitive inspection an additional note is necessary:
   "**Note: Inspections, which are done before accumulating 20 years are not initiating the repetitive inspection, which is described by paragraph (1)**."
   This note is additional required because of comment No. 4.
2. **§ (4)** LHT/DLH understands the requirement for an appropriated reporting. But, due to the mandated inspection every 24 months, Airbus and Goodrich will have appropriated knowledge about the numbers of inspections that will be done. In fact, if there are no findings without a reporting Goodrich and Airbus are able to

calculate the rates if they will get a mandated reporting in case of findings. The administrative work, which will be generated is not acceptable in comparison with the collected data. LHT/DLH expects no terminating action for the coming years, which will lead to a huge number of reports, which must be generated and assessed by the operators and later again by Airbus and Goodrich, for no findings, without an added-value for the manufacturers.

Therefore LHT/DLH strongly recommends to change paragraph (4) as follows:

"**In case of findings during the inspection as required by paragraph (1) of this AD, as applicable, report the results within 90 day, to Airbus.**"

3. **§ (5)** The paragraph should be deleted completely and the AMM-task: 27-44-51-400-001-A "Installation of the Trimmable Horizontal Stabilizer (THS) Actuator" shall contain the same inspection requirements like those, described by SB A320-27-1214. For this inspection LHT/DLH recommends to allow only "THSA CLASSIFIED TYPE 1(NO CORROSION)" as acceptable for the installation. This will also have the administrative improvement that every operator will know that an installed THSA has to be inspected the next time 24 months after installation (if the THSA has accumulated more than 20 years). If a THSA will be delivered as a spare part it is not mandated for the shop to list the last inspection of the THSA on the form 1, therefore the operators do not have knowledge about the last inspection and are not able to determine the correct due date for the repetitive inspection.
   Another aspect is that there is currently storage limit for the inspection. If a THSA is inspected during a workshop visit (which is hopefully implemented within the CMM soon) and then stored for 23 months and 29 days as spare part before delivery to an operator, the operator has to do the inspection within 1-2 days after installation without having knowledge about this situation (if the inspection "4. Acceptation criteria for screw assembly parts" of the CMM:27-44-51 is acceptable is relation to the here described background, but at least there is no requirement to record such an inspection on the form 1).
4. **§ (1)** Because of the request to add the inspection within the installation task of the THSA of the AMM and to highlight the THSA as tracking unit for the inspection, paragraph (1) of the AD-Note should be change to taking benefit of the inspection as installation requirement as follows:
   "**Initially, within the compliance time indicated in Table 1 of this AD, and thereafter at intervals not to exceed 24 in service months of the THSA from the last inspection or from the date of installation in accordance with AMM: 27-44-51-400-001-A, whichever comes later, perform a detailed inspection of the THSA ballscrew having a P/N 47145-XXX in accordance with the instructions of Airbus Service Bulletin (SB) A320-27-1214.**"

EASA response:

1. ***EASA disagrees. The inspection of the THSA ballscrew is looking for degradation/corrosion which have been demonstrated in various and severe environmental conditions to occur after the 20 years threshold. If the inspection is done before, it will unfortunately not be relevant what we are looking for.***
2. ***The reporting is not necessary in case no findings are made. The Final AD has been amended accordingly, by deleting paragraph (4) and adding the reporting requirement to paragraph (2).***
3. ***This paragraph is to cover spare part installation. Paragraph (4)*** **[was paragraph (5) in PAD 12-057]** ***has been reworded as follows: "From the effective date of this AD, do not install a THSA having P/N 47145-XXX on an aeroplane, unless the THSA has not yet accumulated 20 years since its first flight, or unless it has been determined that the THSA is classified as Type 1 (no corrosion) at time of installation, in accordance with criteria defined in Airbus SB A320-27-1214, and on the conditions that the THSA is thereafter inspected and, depending on findings, corrected in compliance with the requirements of this AD."***
4. ***This is covered by updated paragraph (4)*** **[was paragraph (5) in PAD 12-057]** ***of the AD – see answer to point 3 above.***

Commenter 5: AERLINGUS – Dan Fanning – 05/06/2012

Comment # 5

I've just reviewed PAD 12-057 and for information, Goodrich VSB 47145-27-16 is due to be revised to rectify anomalies I noted which were then discussed with Airbus. The latest information I have is that this will be revised in July.

This may [or] may not affect your decision as to when to release the AD to ensure all referenced information is up to date.

EASA response:

Airbus has confirmed that Goodrich VSB 47145-27-16 will be revised to clarify one aspect on how the manufacturing date is engraved on the THSA name plate. To sum up current VSB revision advises that the quarter of year and the year is engraved whereas in some cases the month and year is engraved. As no additional work will be requested by VSB 47145-27-16 revision we do not feel that it is needed to postpone AD issuance for this point.

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

Commenter 6: Ken Dickenson – 15/06/2012

Comment # 6

This PAD (eventually AD) requires repetitive detailed inspections of the ball screw lower splines of the Airbus A320 family Trimmable Horizontal Stabilizer Actuators (THSA), which are identified by the part number (PNR) 47145 series. The objective is to detect corrosion and, depending on findings, to accomplish applicable corrective actions following similar experience on the Airbus A330/A340 THSA.

1. DISCUSSION INTRODUCTION

According to the PAD, detailed inspections must be performed every 24 months, once the initial inspection has been accomplished.

The way chosen to publish these mandatory instructions and corresponding airworthiness limitations is causing some concerns: It currently contributes to the dissemination of mandatory instructions and related airworthiness limitations within different documentations. The lack of consolidation has proven to be misleading (some airworthiness limitations exceeded) and this hazard may unleash its damaging potential (serious events or accidents).

The FAA stressed the impact of using ambiguous terms and the importance for providing clarity and accuracy (Note 1). We have tried to pay particular attention to the terms used in this discussion: For example, "approved" does not mean "mandatory", and "safety task" does not necessarily imply "mandatory compliance".

Note 1 Refer to the Advisory Circular (AC) 20-176 "Design Approval Holder Best Practices for Service Bulletins Related to Airworthiness Directives".

Finally, our comments and recommendations take also into account experience gained on human factors.

2. REGULATIONS REVIEW

To understand the concerns within the frame of this PAD, some background information has to be presented on the certification process:

(a) CERTIFICATION SPECIFICATIONS FOR THE DEVELOPMENT OF ICA

It is TC/Supplemental Type Certificate (STC) holders' responsibility to develop ICA in accordance with the paragraphs CS/FAR 25.1529, 25.1729, and the related CS/FAR 25 Appendix H. The paragraphs H25.3(b)(1) and H25.5, and the paragraph H25.4 of the CS 25 Appendix H require respectively:

- The scheduling information that provides the recommended periods at which the aeroplane (including any of its parts/components) should undergo work, and the recommended work at these periods, and

- The mandatory airworthiness limitations and associated mandatory instructions.

The paragraph H25.4 of the CS 25/FAR 25 Appendix H relates to the following International Standards and Recommended Practices of the Annex 8 (Amdt 103) to the Convention on International Civil Aviation:

- For aeroplanes over 5700 kg for which application for certification was submitted on or after 13-Jun-1960, but before 02-Mar-2004: Standard: "**Maintenance tasks and frequencies that have been specified as mandatory by the State of Design in approval of the type design shall be identified as such**".
Ref.: paragraph 10.4 of Chapter 10 in the Part IIIA.

- For aeroplanes over 5700 kg for which application for certification was submitted on or after 02-Mar-2004:
Standard: "**Mandatory maintenance requirements that have been specified by the State of Design as part of the approval of the type design shall be identified as such and included in the maintenance information […]**".

Recommended practice: "**Note - Mandatory requirements identified as part of the type design approval are often referred to as Certification Maintenance Requirements (CMR) and/or airworthiness limitations**". Ref.: paragraph 7.7.4 of Chapter 7 in the Part IIIB.

The ICA originate from outcomes of the aeroplane design reviews carried out in accordance with CS/FAR 25 technical standards.

(b) PUBLICATION OF ICA

Once the aeroplane design reviews are completed, some of the outcomes are converted into ICA, which are made available to operators (refer to EASA Part 21A.61): It is operators' responsibility to ensure the aeroplane continuing airworthiness. This is mainly ensured by compliance with the ICA published by holders of a design approval.

The Maintenance Review Board Report (MRBR) is the usual main means to publish the subject recommendations referred to in the previous paragraph (i.e. 2., a)). It is developed in accordance with the Air Transport Association (ATA) of America MSG-3.

Note: Additional recommendations may need to be published separately from the MRBR. The MSG-3 analyses do not always cover the requirements of CS/FAR 25 entirely: e.g. it is possible that MSG-3 does not consider systems failure conditions that have three or more failures". (Note 2)

At the end of the process, the MRBR is approved, but compliance is not mandatory for operators: When the MSG-3 analysis activity produces safety-related maintenance tasks, their frequency should at the same time take into account operational and/or economic considerations (e.g. reparability). The ATA MSG-3 Revision 2007.1 explains that the approach is to accomplish the goals of efficient aeroplane scheduled maintenance "at a minimum total cost, including maintenance costs and the costs of resulting failures".

These economic considerations perfectly suit the requirements of the CS 25 Appendix H paragraph H25.3(b)(1). However, the tasks and frequencies the MRBR process gathers must not be mistaken for mandatory instructions and associated airworthiness limitations, which cover safety aspects only.

Note 2: Refer to "Disposition of public comments AC No. 25-19X", page 17, FAA's answer to comment "Page 10/11, para 13b(4)(a)1" using the following link.

The Airworthiness Limitations Section (ALS) is the means to publish the mandatory instructions and airworthiness limitations not to exceed. It includes instructions necessary to maintain those design features of the structure and systems that have been defined in the type design (Note 3) to preclude the development of major, hazardous and catastrophic failure conditions (Note 4). This information is crucial to ensure that maintenance, repairs, or alterations do not unintentionally violate the integrity of the aeroplane type design (e.g. to ensure that this important information is evident to organizations, other than the TC holder and the EASA, that may develop, perform and/or approve repairs and/or alterations).

Note 3: The EASA Part 21A.31 states that the type design includes "an approved airworthiness limitations section of the instructions for continued airworthiness as defined by the applicable airworthiness code".

Note 4: Refer to: - CS/FAR 25.1309 for systems (Maj/Haz/Cat), and CS/FAR 25.571 for structure (Cat). Haz/Cat for aeroplanes for which application for certification will be submitted on or after 24-Feb-2013 (Refer to the Annex 8 to the Convention on International Civil Aviation).

Finally, it is to be noted that the MRBR deals with scheduled maintenance only, while the scope of ALS is not restricted and can cover unscheduled maintenance (note 5) as well: The ATA MSG-3 is "a means for developing the scheduled maintenance tasks and intervals which will be acceptable to the regulatory authorities, the

operators, and the manufacturers" (extracted from the ATA MSG-3 Revision 2007.1, Chapter 1, paragraph 1-1).

Note 5: Mandatory unscheduled maintenance can be found in the applicable Aircraft Maintenance Manual chapter 05-50 (e.g. inspections following hard landings, operation in heavy turbulences or through volcanic ash plumes, etc…).

3. PRESENT CASE

The regulation materials referred into the previous paragraph clearly participate in the effort to gather all mandatory instructions and airworthiness limitations in a single location, i.e. the ALS. This consolidation has also been required within the frame of the INT/POL/25-12. The paragraph 6 of the INT/POL/25-12 states:

"The safety analysis conducted to comply with INT/POL/25/12 and this EASA letter may result in the need to define certain required inspection or maintenance items as well as changes to procedures and design changes. Any item that is required to prevent an unsafe condition by ensuring that an ignition source does not develop within the fuel tank or maintain protective features incorporated to preclude a catastrophic fuel tank ignition event must be incorporated in the limitation section of the instructions for continued airworthiness. […]."

This raises the question why this effort should be stopped once aeroplanes entered service. It cannot be stressed enough that Airworthiness Directives are the ***unique*** tool to alert public on safety issues for in-service aircraft. However, the management of safety issues affecting fleets not defined at the level of aircraft serial numbers (Note 6) and organized on a term sufficiently long (i.e. other than immediate or short term), including repetitive requirements, should be organised with the help of the Airworthiness Limitations Section. The less active ADs there are for a given Product, the more attention will be given to AD when they are issued.

Note 6: For example, the requirements of the PAD 12-059 are not eligible for introduction in the ALS.

The point is whether the requirements of this PAD will be transferred or not into the Airbus A320 family ALS when the compliance time of three months after the effective date of this AD is over (case B). This practice has already been accepted by the EASA for the Airbus A330/A340: several AD have been superseded by one single AD (2012-0020 & 0021) that requires the compliance with an ALS revision, which incorporates the requirements (still active) of the superseded AD.

Should they be not included in the ALS, one could then reasonably ask why there are such disparities between products of a same TC holder, under the same jurisdiction. A special treatment for the A320 family aeroplanes could also contribute to the confusion, particularly for operators or organisations managing the continuing airworthiness of aeroplanes of both families.

Some airlines operate both Airbus A320 and A330 aircraft. The question arises… "Why does the ICA/Maintenance Programmes have to be managed differently for two aircraft types from the same manufacturer"? This can lead to difficulties or tasks being overlooked if the same team of Planning Engineers are responsible for planning maintenance checks for both aircraft types. So what is the solution in the present case? We would like to propose the following answer:

- Issue the AD resulting from the PAD 12-057,

- Require the publication of an ALS revision that will address the subject within a reasonable timeframe,

- Issue an AD superseding the AD resulting from the PAD 12-057 and to require compliance with this ALS revision simultaneously.

4. CONCLUSION

We believe that the proposal presented in the PAD 12-057 may regrettably contribute to the confusion and its potential consequences, if not properly managed within the coming months. The engineers who have commented the PAD 12-057 would like to express in anticipation their thanks to the EASA for the consideration given to their comments and for the release of public answers.

EASA response:

Comments understood and partially agreed. The TC holder has confirmed that the repetitive detailed inspection of the THSA ballscrew may be included in the ALS for Airbus A320 family aeroplanes. At this time, it is not known when this incorporation will occur. Assuming the relevant ALS is updated accordingly, a new 'ALS' AD will likely incorporate the requirements of this AD, thereby superseding it.

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

Commenter 7: CES – Haoran Ye – 11/06/2012

Comment # 7

PAD 12-057 is published to require repetitive detailed inspection of the ballscrew lower splines of THSA P/N 47145-XXX to detect corrosion and, depending on findings, the accomplishment of applicable corrective actions. For the action (3), CES wish AIRBUS can help to understand the sentence. It means that if the THSA is removed from the aircraft due to the corrosion issue, the aircraft where the other THSA is installed should perform the repetitive inspections or the removed THSA should perform the repetitive inspection after repair.

Which one is right?

EASA response:

The inspection should be performed at THSA level, so in this case, if the new THSA fitted on aircraft is less than 20 years, the repetitive inspection should start after the unit reaches 20 years. If the THSA is above 20 years at installation on aircraft, repetitive inspections apply directly.

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

Commenter 8: Cathay Pacific (on behalf of Hongkong Dragon Airlines - HDA) – Christopher Tse – 05/06/2012

Comment # 8

1. Required Action(s) and Compliance Time(s) Paragraph (1) Table 1 Item "B" should read: "For THSAs over 22 years since THSA first flight, within 3 months after the effective date of this AD"

2. Required Action(s) and Compliance Time(s) Paragraph (4): This paragraph should be removed from this section. The objective of an AD is to mandate a technical change to restore the aircraft to an acceptable level of airworthiness.

Documentation feedback requirements should not be a mandatory requirement.

To conclude, HDA proposes that the PAD to be amended to:

A.) Clarify the thresholds for initial inspection, and

B.) Remove the feedback requirement from the "Required Action(s) and Compliance Time(s)" section.

EASA response:

A) Inspection is required for THSA more than 20 years since first flight. No change has been made to the Final AD in response to this comment.

B) The reporting is not necessary in case no findings are made. The Final AD has been amended accordingly – see answer to Comment 4 above, point 2.

Commenter 9: Air Canada – Stephane Perron – 12/06/2012

Comment # 9

The EASA issued the PAD 12-057 which mandated the inspection of the THSA for the A320 Fleet. Per the paragraph 4, the results of the inspection must be report within 90 days after each inspection including no findings. The mandatory reporting represents a labour intensive process involving the search of the information age of the unit, inspection date, type of findings etc.

- Can you please provide justification on the reporting of no findings contributes to flight safety in this case?

- Can the mandatory reporting requirements be removed from this AD?

EASA response:

The reporting is not necessary in case no findings are made. The Final AD has been amended accordingly – see answer to Comment 4 above, point 2.