



European Union Aviation Safety Agency
Comment-Response Document 2020-05

RELATED NPA: 2020-05 — RMT.0586 — 22.12.2020

Table of contents

1. Summary of the outcome of the consultation	2
2. Individual comments and responses	3



1. Summary of the outcome of the consultation

104 comments were received from 17 users.

The commentators included representatives from the industry (ATR, Airbus, Airlines for America, Boeing, Bombardier Aerospace, Crane Aerospace, Embraer, FNAM, IATA), national aviation authorities (the CAA (Netherlands), CAA (Sweden), DGAC (France), FAA (USA), FOCA (Switzerland), LBA (Germany)), and one individual.

The comments were distributed as follows:

S	Page	Description	Comments
0	-	(General Comments)	9
1	1	EXECUTIVE SUMMARY	3
2	4	2. In summary why and what	1
3	5	3. Proposed amendments - CS-25 - CS 25.733	17
4	5-6	3. Proposed amendments - CS-25 - AMC 25.733(f)	28
5	7	3. Proposed amendments - Part-26 - 26.201	10
6	7	3. Proposed amendments - CS-26 - contents	2
7	7	Proposed amendments - CS-26 - CS 26.50	2
8	7	Proposed amendments - CS-26 - CS 26.60	1
9	7-8	Proposed amendments - CS-26 - CS 26.100	1
10	8	Proposed amendments - CS-26 - CS 26.105	1
11	8	Proposed amendments - CS-26 - CS 26.110	1
12	8	Proposed amendments - CS-26 - CS 26.120	1
13	8	Proposed amendments - CS-26 - CS 26.150	1
14	8	Proposed amendments - CS-26 - CS 26.155	1
15	8-9	Proposed amendments - CS-26 - CS 26.156	1
16	9	Proposed amendments - CS-26 - CS 26.160	1
17	9	Proposed amendments - CS-26 - CS 26.170	1
18	9	Proposed amendments - CS-26 - CS 26.200	1
19	9-10	Proposed amendments - CS-26 - CS 26.201	12
20	10	Proposed amendments - CS-26 - CS 26.400	1
21	10	Proposed amendments - CS-26 - GM1 26.156(a)	1
22	11-22	4. IA - 4.1 What is the issue	3
23	22-24	4. IA - 4.2. 4.3. How it could be achieved - options	4
24	26-38	4.IA - 4.5.1. Cost-benefit analysis (CBA)	6
25	44	4.6. Conclusion	1
26	47	6. References	2
27	60	8. Quality of the document - technical quality	1

Please refer to the explanatory note to the Decision, which provides a summary of the main comments.



2. Individual comments and responses

In responding to the comments, the following terminology has been applied to attest EASA's position:

- (a) **Accepted** — EASA agrees with the comment and any proposed amendment is wholly transferred to the revised text.
- (b) **Partially accepted** — EASA either partially agrees with the comment, or agrees with it but the proposed amendment is only partially transferred to the revised text.
- (c) **Noted** — EASA acknowledges the comment, but no change to the existing text is considered to be necessary.
- (d) **Not accepted** — The comment or proposed amendment is not agreed by EASA.

(General Comments)	-
---------------------------	---

comment	<div style="display: flex; justify-content: space-between;"> 1 comment by: <i>Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</i> </div> <p>Thank you for the opportunity to comment on NPA 2020-05, Tyre pressure monitoring RMT.0586. Please be advised that there are no comments from the Swedish Transport Agency.</p>
---------	--

response	Noted.
----------	--------

comment	<div style="display: flex; justify-content: space-between;"> 2 comment by: <i>DGAC France</i> </div> <p>Please note that DGAC France has no specific comments on this NPA.</p>
---------	--

response	Noted.
----------	--------

comment	<div style="display: flex; justify-content: space-between;"> 4 comment by: <i>CAA-NL</i> </div> <p>Please be advised that we have no specific comments on this NPA</p>
---------	--

response	Noted.
----------	--------

comment	<div style="display: flex; justify-content: space-between;"> 47 comment by: <i>LBA</i> </div> <p>The LBA has no comments</p>
---------	--

response	Noted.
----------	--------

comment	<div style="display: flex; justify-content: space-between;"> 48 comment by: <i>AIRBUS</i> </div> <p>General comment on Part-26 / CS-26</p>
---------	--

Comments

It is proposed to delete point 26.201 of Part-26.



	<p><u>Rationale</u></p> <p>The CS25.733 intent to make the link between the Initial Type Certificate of an Aircraft and its associated ICA with no intention to mandate the tyre pressure inspection is agreed by Airbus. However, the introduction of point 26.201 with the intention to make a similar link to the already flying aircraft cannot be agreed. Indeed, contrary to FAR26 which applies to the TCH, Part-26 and CS-26 apply to the operators and require them to integrate the tyre pressure inspection in the AMP. By doing so, EASA is making this inspection a mandatory inspection applicable to all flying aircraft including those which will in the future comply with CS25.733. Therefore, Airbus proposes to remove the Point 26.201 and requires EASA to find another means to ensure the tyre inspection is introduced in the ICA of already flying aircraft with no use of the Part-26/CS-26. Otherwise, there is a lack of consistency within the NPA between the CS25.733 and the CS26.201.</p> <p>Therefore, all comments associated with the Part-26/CS-26 content will not be provided to EASA and kept for further discussion (together with additional comments on CS25) in case EASA rejects the proposal to remove the point 26.201.</p>
response	<p>Not accepted.</p> <p>As indicated in the proposed new CS 26.201, compliance with CS 25.733(f) is accepted as a means to demonstrate compliance with point 26.201 of Part-26. Therefore, no concern or inconsistency is created for future products.</p>
comment	<p>79 comment by: <i>Airlines for America</i></p> <p>Attachment #1</p> <p>Subject: EASA NPA 2020-05 - Tyre pressure monitoring – Airlines for America comments</p> <p>Dear Sir or Madam:</p> <p>Airlines for America (A4A) respectfully submits the following details and concerns raised by the A4A Maintenance Programs Industry Group (MPIG) relating to the proposed EASA NPA 2020-05 - Tyre pressure monitoring. Whilst MPIG members may have provided individual comments to EASA, A4A compiled comments that were agreed by the MPIG community. These comments are listed below.</p>
response	<p>Noted.</p> <p>Thank you. Please refer to the responses to your individual comments below.</p>
comment	<p>93 comment by: <i>Airlines for America</i></p> <p>Conclusion</p> <p>The MPIG believes that the current Instructions for Continued Airworthiness process is capable of identifying the required maintenance to ensure the aircraft airworthiness.</p>

	<p>Although the NPA identifies events in which tyre pressure could have contributed to an accident or incident, we believe it would not be correct to override the robust and proven process to identify the minimum maintenance required for airworthiness. However, the NPA provides justification to ensure that the current processes are properly applied to identify all necessary requirements. The use of improved processes to identify ICAs together with new design considerations have contributed to a reduction in both the number of events and the severity of the consequences of tyre failures on more modern designs. It is noted however that much of the justification for the need to take action described in this NPA is based on accidents / incidents on earlier generation aircraft.</p> <p>The MPIG recognizes that tyre pressures need to be checked frequently. However the technology used by the aircraft manufacturers may justify different frequencies as indicated in the proposed NPA and, furthermore, since onboard systems used to provide tyre pressure information are evolving as technology evolves, we would caution against too prescriptive set of rules since this could jeopardize continued design evolution.</p> <p>Industry and regulators work closely together during development of the MRB Report tasks that form part of the Instructions for Continued Airworthiness so the lessons learnt and exposed in this NPA are welcome and shall be taken into account in future maintenance program development activities.</p> <p>The MPIG respectfully requests EASA to consider the comments and proposals detailed above.</p>
response	<p>Noted.</p> <p>The NPA did not propose prescriptive tyre pressure check intervals, and it did not mandate on-board systems to monitor tyres pressures.</p> <p>Regarding the MRB process, we remind you that this is an optional process and that some large aeroplanes have been certified without using this process. Furthermore, EASA cannot impose measures on tyre pressure related tasks if the other MRB members do not agree. EASA is also aware that recent MRBs of non-European aeroplane types decided on tyre pressure check intervals which are beyond what EASA considers to be reasonable. Therefore, EASA does not wish to rely on the MRB process to solve this issue.</p>
comment	<p>109 comment by: <i>Gulfstream Aerospace Corporation</i></p> <p>Attachment #2</p> <p>To Whom it May Concern:</p> <p>Gulfstream appreciates the opportunity to provide comments on EASA NPA 2020-05, <i>Tyre Pressure Monitoring</i> (Ref. 1). Attached to this letter you will find Gulfstream's comments on the NPA.</p>
response	<p>Noted.</p> <p>Thank you. Please refer to the responses to your individual comments below.</p>
comment	<p>110 comment by: <i>FOCA Switzerland</i></p>

	<p>The Federal Office of Civil Aviation (FOCA) in Switzerland (Swiss CAA) recognises that effective tyre pressure monitoring is a measure that contributes to aviation safety. Having said that, we believe that it is not proportionate to ensure this control by means of a modification to the CS-25 and CS-26, and we believe that it would be preferable to act through the MRB process.</p>
response	<p>Not accepted.</p> <p>We remind you that the MRB process is an optional process and that some large aeroplanes have been certified without using this process. Furthermore, EASA cannot impose measures on tyre pressure related tasks if the other MRB members do not agree. EASA is also aware that recent MRBs of non-European aeroplane types decided on tyre pressure check intervals which are beyond what EASA considers to be reasonably safe. Therefore, EASA does not wish to rely on the MRB process to solve this issue.</p>

EXECUTIVE SUMMARY

p. 1

comment	<p>30 comment by: AIRBUS</p> <p>Page 1: Executive Summary Page 4: Para 2.3, 5th line Page 5: Para 3.1. CS 25.733 Tyres. (f)(2) Page 6: Para 3.1 – last line Page 24: Table 1. Option 3, 4 and 5</p> <p><u>Comments</u></p> <p>These pages all refer to a tyre pressure monitoring system that alerts the flight crew in the case of a tyre with an unsafe pressure.</p> <p>It is proposed that the words ‘alerts the flight crew’ are deleted and are replaced by ‘provides an alert’.</p> <p><u>Rationale</u></p> <p>Industry is currently examining the introduction of Integrated Aircraft Health Management concepts in which an Aircraft Health Monitoring capability would permit an alert to be sent to a ground station for action by maintenance engineers. While this may not yet have been approved it is considered wise not to exclude this option by suggesting that the only alternative to the scheduled tyre pressure check is a TPMS that alerts the flight crew.</p>
response	<p>Partially accepted.</p> <p>CS 25.733(f)(2) has been amended to be more performance-based and less restrictive with regard to the options available to the applicant. The amended text requires operators to minimise the risk that a tyre is below its minimum serviceable inflation pressure during operation. The AMC provides acceptable means of</p>



compliance with this objective, in which a system alert is not limited to a flight crew alert only.
Using an Aircraft Health Management system sending alerts to a ground station may be proposed by the industry when the concept is mature. EASA considers that it is premature to recognise this concept in the AMC at this time.

comment 33 comment by: *ATR*

ATR thanks EASA for having the opportunity to review the NPA 2020-05 on which ATR has no comments.

response Noted.

comment 80 comment by: *Airlines for America*

Paragraphs
Executive Summary
2.3, 5th line
3.1. CS 25.733 Tyres. (f)(2)
3.1 – last line
3.2; 26.201 (b)
Table 1 Option 3, 4 and 5

These pages all refer to a tyre pressure monitoring system that alerts the flight crew in the case of a tyre with an unsafe pressure.
Industry is currently examining the introduction of Integrated Aircraft Health Management concepts in which an Aircraft Health Monitoring capability would permit an alert to be sent to a ground station for action by maintenance engineers. While this may not yet have been approved it is considered wise not to exclude this option by suggesting that the only alternative to the scheduled tyre pressure check is a TPMS that alerts the flight crew.
It is proposed that the words ‘alerts the flight crew’ are deleted and are replaced by ‘provides an alert’.

response Please refer to the response to comment 30.

2. In summary why and what

p. 4

comment 30 ❖ comment by: *AIRBUS*

Page 1: Executive Summary
Page 4: Para 2.3, 5th line
Page 5: Para 3.1. CS 25.733 Tyres. (f)(2)
Page 6: Para 3.1 – last line
Page 24: Table 1. Option 3, 4 and 5

Comments

These pages all refer to a tyre pressure monitoring system that alerts the flight crew in the case of a tyre with an unsafe pressure.



It is proposed that the words ‘alerts the flight crew’ are deleted and are replaced by ‘provides an alert’.

Rationale

Industry is currently examining the introduction of Integrated Aircraft Health Management concepts in which an Aircraft Health Monitoring capability would permit an alert to be sent to a ground station for action by maintenance engineers. While this may not yet have been approved it is considered wise not to exclude this option by suggesting that the only alternative to the scheduled tyre pressure check is a TPMS that alerts the flight crew.

response Please refer to the response to comment 30.

3. Proposed amendments - CS-25 - CS 25.733

p. 5

comment 5 comment by: *The Boeing Company*

Paragraph 3.1, CS 25.733(f) and AMC 25.733(f) (page 5)

THE PROPOSED TEXT STATES:

“CS 25.733 Tyres”

...

“AMC 25.733(f) Tyre inflation pressure check”

REQUESTED CHANGE:

“CS ~~25.733~~ Tyres **25.732 Wheel, Tyre, and Brake Monitoring**”

...

“AMC ~~25.733(f)~~ **25.732** Tyre inflation pressure check”

JUSTIFICATION: The tire inflation pressure check and tire pressure monitoring systems are intended to identify leakage in tire/wheel assemblies, not only tires, so creation of a new CS/AMC 25.732 is recommended. CS/AMC 25.732 may also be used to capture potential future requirements for monitoring of wheels, tires, and brakes.

response Not accepted.
The subject deals with tyre inflation pressure, so CS 25.733 is considered to be the appropriate place.

comment 7 comment by: *The Boeing Company*

*Paragraph 3.1, CS 25.733(f)(2) (page 5), and
Paragraph 3.2, Part-26 26.201(b) (page 7)*

The proposed text states:



“installing an on-board tyre pressure monitoring system that alerts the flight crew whenever a tyre inflation pressure is below the minimum serviceable inflation pressure.”

REQUESTED CHANGE:

“installing an on-board tyre pressure monitoring system that alerts the flight crew **of conditions requiring flight crew awareness and response during appropriate phases of flight, and that provides a status message if** whenever a tyre inflation pressure is below the minimum serviceable inflation pressure.”

JUSTIFICATION: Alerts related to low tire pressure should be provided to the flight crew only if necessary to avoid a tire failure prior to the next opportunity for maintenance action and should be provided only during phases of flight in which they are actionable and will not result in undesirable flight crew action. Status messages should be provided per AMC 25.1322 to indicate the need for maintenance action prior to dispatch for subsequent flights.

response

Partially accepted.
CS 25.733(f)(2) and point 26.201(b) of Part-26 have been amended to be more performance-based and less restrictive with regard to the options available to the applicant. The amended text requires operators to minimise the risk that a tyre is below its minimum serviceable inflation pressure during operation. The acceptable means of compliance provides several options, including a system that alerts the flight crew. Such a system has to comply with CS 25.1322 and therefore it is not necessary to specify details of how and when the alert should be triggered.

comment

25

comment by: FAA

Page Number	Paragraph Number	Referenced Text	Comment/Rationale or Question	Proposed Resolution
5	3.1	AMC 25.733(f)	The guidance in the AMC states, “Checks should be conducted daily in order to ensure that the elapsed clock time between two consecutive tyre inflation pressure checks does not exceed 48 hours. Time intervals longer than 48 hours may be used if they are substantiated and agreed by EASA.” The guidance in the AMC should explain why 48 hours between two consecutive tyre inflation pressure checks was selected as the limit. The rationale for the 48 hour time interval is	Add an explanation for the basis of the 48 hours interval limit between two consecutive tyre inflation pressure checks.



			necessary to provide guidance to consider when substantiating time intervals longer than 48 hours.	
5	3.1	CS 25.733(f)	The word “on-board” is unnecessarily prescriptive. The rule addresses the safety concern with the word “on-board” removed in 25.733(f)(2) and 26.201(b), and throughout the rule and AMC. The updated rule language would be “installing a tyre pressure monitoring system that alerts the flight crew whenever a tyre inflation pressure is below the minimum serviceable inflation pressure.” This updated language addresses the safety concern of alerting the flightcrew when tire pressures are below the minimum serviceable inflation.	Remove the word “on-board” from CS 25.733(f)(2) and CS 26.201(b).

response

First comment: Not accepted. The background regarding the daily check is explained in the NPA. It is not deemed necessary to repeat it in the AMC. The AMC only provides information on how to demonstrate compliance.
Second comment: Accepted.

comment

27

comment by: *Crane Aerospace*

Crane endorses with our following comments incorporated the EASA approach for more frequent tire pressure checks.

- In amended text 25.733 and 26.201 list an onboard system first as it best minimizes chance of human error, automatically performs continuous tire pressure monitoring, and enables data logging including after the airplane has left the gate and before landing.
- Where ever new amendments say “... system that alerts the flight crew” to add “and the maintenance crew”.
- Advise that when inflate a tyre, do so to the high side of service pressure (so average tire pressure has higher probability of being service pressure or higher) and this should not be any extra burden and likely is current good mechanic practice.

In an associated AMC recommend the following



response	<ul style="list-style-type: none"> • reference both ARP5265 and ARP6137 as recommended practice • a ground based system with accuracy sufficient to satisfy the daily tire check and automatic data logging as it also helps minimize human error • to substantiate compliance require a log of tire pressure vs date and time be kept. <p>Partially accepted. CS 25.733(f)(2) and point 26.201(b) of Part-26 have been amended to be more performance-based and less restrictive with regard to the options available to the applicant. The amended text requires operators to minimise the risk that a tyre is below its minimum serviceable inflation pressure during operation. The acceptable means of compliance includes both systems that alert the flight crew and systems that can be used on ground to alert the maintenance personnel. The aspects of the comment related to maintenance practice standards are not appropriate to the scopes of CS-25 and Part-26/CS-26.</p>
comment	<p>30 ❖ comment by: AIRBUS</p> <p>Page 1: Executive Summary Page 4: Para 2.3, 5th line Page 5: Para 3.1. CS 25.733 Tyres. (f)(2) Page 6: Para 3.1 – last line Page 24: Table 1. Option 3, 4 and 5</p> <p><u>Comments</u></p> <p>These pages all refer to a tyre pressure monitoring system that alerts the flight crew in the case of a tyre with an unsafe pressure.</p> <p>It is proposed that the words ‘alerts the flight crew’ are deleted and are replaced by ‘provides an alert’.</p> <p><u>Rationale</u></p> <p>Industry is currently examining the introduction of Integrated Aircraft Health Management concepts in which an Aircraft Health Monitoring capability would permit an alert to be sent to a ground station for action by maintenance engineers. While this may not yet have been approved it is considered wise not to exclude this option by suggesting that the only alternative to the scheduled tyre pressure check is a TPMS that alerts the flight crew.</p>
response	<p>Please refer to the response to comment No 30.</p>
comment	<p>31 comment by: AIRBUS</p> <p>Page 5: Para 3.1 CS 25.733 Tyres (f) – first sentence</p> <p><u>Comments</u></p>



Please write:

‘A means shall be provided to reduce the risk that a tyre is below its minimum serviceable inflation pressure during operation, by either:’

instead of:

‘A means shall be provided to ensure that no tyre is below its minimum serviceable inflation pressure during operation, by either:’

Rationale

It is not possible for a scheduled maintenance task to ensure that the described scenario never occurs. Whatever the scheduled maintenance task interval, there remains a probability that the tyre pressure falls below the minimum serviceable inflation pressure before the next scheduled check. The word ‘ensure’ is only valid for the option of continuous monitoring though even then a pressure loss caused by FOD during takeoff will require the subsequent landing to be made with known loss of pressure – i.e. it does not ensure a minimum serviceable inflation pressure in operation.

response

Partially accepted.

The sentence has been amended but using the term ‘minimise’ instead of ‘reduce’.

comment

35

comment by: AIRBUS

CS

25.733(f)

AMC 25.733(f)

Comments

CS 25.733(f) and Point 26.201 of Part-26 refer to a “[...] serviceable inflation pressure”. The AMC 25.733(f) and CS 26.201 define this term.

The paragraph (a) of point M.A.201 states that “[...] The owner of the aircraft shall be responsible for the continuing airworthiness of aircraft and shall ensure that no flight takes place unless all of the following requirements are met: (1) the aircraft is maintained in an airworthy condition; (2) any operational and emergency equipment fitted is correctly installed and serviceable or clearly identified as unserviceable. [...]”

The paragraph (c) of point 145.A.75 states that an Approved Maintenance Organisation (AMO) shall be entitled to “[m]aintain any aircraft or any component for which it is approved at any location subject to the need for such maintenance arising either from the unserviceability of the aircraft or from the necessity of supporting occasional line maintenance, subject to the conditions specified in the [maintenance organisation] exposition.”

It is recommended to contemplate wordings using the ‘serviceable’ terminology with due attention to the ‘airworthiness’ terminology (problems of consistency, no need for two terms with the same meaning, etc...).



	<p><u>Rationale</u></p> <p>The term ‘airworthy’ is defined in the Annexes 6 and 8 of the Chicago Convention as “[t]he status of an aircraft, engine, propeller or part when it conforms to its approved design and is in a condition for safe operation”. What is the difference between ‘serviceable’ and ‘airworthy’? What does it imply in the present case? Should reference be made to a “[...] inflation pressure for continuing airworthiness”?</p>
response	<p>Noted.</p> <p>The term ‘minimum serviceable inflation pressure’ is defined in the proposed AMCs. As such, the use of the word ‘serviceable’ is consistent with the use made in the maintenance regulations mentioned in the comment.</p> <p>The term ‘airworthy’ would be adequate to describe the status of a tyre being inflated at a serviceable pressure level.</p>
comment	<p>36 comment by: AIRBUS</p> <p>CS 25.733(f) AMC 25.733(f)</p> <p><u>Comments</u></p> <p>Airbus suggest to replace "during operation" by "during <u>air</u> operation".</p> <p><u>Rationale</u></p> <p>The term ‘operation’ is ambiguous (air operation, aircraft operation, maintenance operation, etc...). This issue can be found at multiple locations in this NPA. The term “air operation” is proposed in line with the title of Regulation (EU) No. 965/2012.</p>
response	<p>Not accepted.</p> <p>The term ‘operation’ is used with its general meaning that can be found in the dictionary, for instance ‘the fact of operating or being active’.</p> <p>Introducing the word ‘air’ may be interpreted as restricting the applicability of the requirement to when the aeroplane is airborne.</p>
comment	<p>38 comment by: AIRBUS</p> <p>CS 25.733(f) AMC 25.733(f)1.</p> <p><u>Comments</u></p> <p>Airbus suggest to replace "below its minimum serviceable inflation pressure" by "below its minimum or above its maximum serviceable inflation pressures".</p> <p><u>Rationale</u></p>

response	<p>According to the explanations given in this NPA, an over-pressure is also a problem. Similarly to under-pressure condition, over-pressure conditions should be considered.</p> <p>Not accepted.</p> <p>The rulemaking group discussed about the merit to also address the over-pressure condition. But in view of the very limited number of occurrences and the protection already provided by compliance with CS 25.731(d), it was decided to address the under-pressure condition only. Please refer to the explanations in the impact assessment of the NPA.</p>
comment	<p>40 comment by: AIRBUS</p> <p>CS 25.733(f)</p> <p><u>Comments</u></p> <p>GTPIS should be authorized as means to achieve the objective of CS 25.733(f). A dedicated point should be added:</p> <p>(f) A means shall be provided [...], by either:</p> <p>(1) providing a task in the instructions for continued airworthiness [...], or (2) installing a ground tyre pressure indicating system that provides tyre inflation pressure condition before dispatch of the aeroplane and providing pre-flight inspection procedure, or (23) installing an on-board tyre pressure monitoring system [...].</p> <p><u>Rationale</u></p> <p>The paragraph 4. “Impact assessment (IA)” of this NPA 2020-05 refers to two categories of systems: — an on-board integrated tyre pressure monitoring system (OBTPMS), or — a ground tyre pressure indication system (GTPIS). Despite the fact that an OBTPMS has the advantage of constantly monitoring the tyre pressure, a GTPIS provides the possibility to check the tyre pressures before the dispatch of the aeroplane. The flight crew should be provided with inspection procedure associated to the GTPIS. Is there a need of a dedicated point in the related CS26?</p>
response	<p>Accepted.</p> <p>CS 25.733(f)(2) and point 26.201(b) of Part-26 have been amended to be more performance-based and less restrictive with regard to the options available to the applicant. The amended text requires operators to minimise the risk that a tyre is below its minimum serviceable inflation pressure during operation. The acceptable means of compliance provides options that include ground tyre pressure indication systems.</p>
comment	<p>43 comment by: AIRBUS</p>

	CS AMC 25.733(f)	25.733(f)
	<p><u>Comments</u></p> <p>The point 1. in AMC 25.733(f) reads:</p> <p>“1. ‘Minimum serviceable inflation pressure’ means a tyre inflation pressure specified by the aeroplane type certificate holder below which damage to the tyre, potentially leading to a tyre failure, may occur.”</p> <p>It is recommended to clarify why the impact of a tyre failure at aircraft level in CS 25.733(f) and in the AMC is ignored.</p> <p><u>Rationale</u></p> <p>One may develop some new design features aiming at reducing the criticality level of a tyre failure at aircraft level. The inflation pressure could no longer be an issue and the regulation should be more performance based as clearly stated in the RMT.0731 on New Air Mobility: “<i>The purpose of the RMT is to develop rules or amend existing ones, where necessary, to address new technologies and operational air transport concepts, with the objective of adapting the regulatory framework in line with PBR principles. A general principle that will govern this RMT is that future requirements should be technology neutral where possible, while ensuring legal certainty.</i>”</p>	
response	<p>Not accepted.</p> <p>If an applicant can demonstrate that a tyre failure, including multiple simultaneous tyres failures, does not represent a hazard to the aeroplane, then Special Conditions or Equivalent Safety Level could be discussed with EASA.</p>	
comment	51	comment by: <i>FNAM</i>
	<p>FNAM comments:</p> <p>"This point adds the establishment of a frequent tire pressure control system for the Airworthiness Management teams and proposes the establishment of an on-board system which allows the technical crew to have access to " precise information (alerts, etc.) concerning the tire pressure of the aircraft.</p> <p>Position: Positive impact: The addition of this point brings a European standard that all operators must respect. This standard will therefore improve flight safety. "</p>	
response	<p>Noted.</p>	
comment	68	comment by: <i>Bombardier Aerospace</i>
	<p>1) The regulation proposed is, or seems to be, overly specific in how it mandates compliance. It could just say:</p> <p><i>(f) A means shall be provided to ensure that no tyre is below its minimum serviceable inflation pressure during operation.</i></p>	

response	<p>Rationale: The regulation should leave the means by which this is to be done to the OEM/applicant at that time. As it stands, it restricts the applicant to only two options, when other ones could possibly exist in the near future.</p> <p>Partially accepted. CS 25.733(f)(2) and point 26.201(b) of Part-26 have been amended to be more performance-based and less restrictive with regard to the options available to the applicant. The amended text requires operators to minimise the risk that a tyre is below its minimum serviceable inflation pressure during operation.</p>
comment	<p>74 comment by: IATA</p> <p>IATA Comment:</p> <p>CS 25.733 Tyres (f)</p> <p>The NPA proposed wording in point (f) is "...to ensure that no tyre is below..." is not capturing the reality/feasibility of such system since the system would provide an indication of the actual pressure and, thus, reduce the risk of operation with an unserviceable pressure but can't "ensure" that such operation does not occur. We propose rewording to state: "A means shall be provided to minimize the risk of aircraft dispatch with any tyre below its minimum serviceable inflation pressure during operation, by either..."</p>
response	<p>Accepted.</p>
comment	<p>75 comment by: IATA</p> <p>IATA Comment</p> <p>CS 25.733 Tyres (f) (2)</p> <p>The NPA proposed wording in point (f) (2) is leading to a higher standard than point (f) (1). While in case (1) there is maintenance task generated by the respective ICA which would lead to a tyre pressure check at a certain periodicity, the case (2) would lead to a FDE for the pilot (e.g. through a CAS message) which would ensure a continuous "in operations" monitoring of the minimum pressure of the tyre. If the intent is to have an equivalent level of safety by complying with either (1) or (2), we propose the rewording of (f) (2) to state: " installing an on-board tyre pressure monitoring system that enables the flight crew to check the tyre inflation pressure status or pressure level before flight".</p>
response	<p>Partially accepted. CS 25.733(f)(2) and point 26.201(b) of Part-26 have been amended to be more performance-based and less restrictive with regard to the options available to the applicant. The amended text requires operators to minimise the risk that a tyre is below its minimum serviceable inflation pressure during operation. The acceptable means of compliance provides options that include systems allowing operators to check the tyre inflation pressures prior to the dispatch of the aeroplane.</p>

comment 81 comment by: Airlines for America

Paragraphs

3.1 CS 25.733 Tyres (f) – first sentence

It is not possible for a scheduled maintenance task to ensure that the described scenario never occurs. Whatever the scheduled maintenance task interval, there remains a probability that the tyre pressure falls below the minimum serviceable inflation pressure before the next scheduled check. The word 'ensure' is only valid for the option of continuous monitoring though even then a pressure loss caused by FOD during takeoff will require the subsequent landing to be made with known loss of pressure – i.e. it does not ensure a minimum serviceable inflation pressure in operation.

Suggest - 'A means shall be provided to reduce the risk that a tyre is below its minimum serviceable inflation pressure during operation, by either:'

instead of . . . 'A means shall be provided to ensure that no tyre is below its minimum serviceable inflation pressure during operation, by either:'

response Partially accepted.
The term 'minimise' has been used instead of 'reduce'.

comment 94 comment by: Embraer S.A.

□

Comment:

Introduce the alternative solution using inflation valves with integrated dial gauges.

Reason(s) for Comment:

Aeroplanes used in business aviation eventually may be operated in aerodromes where ground service support (personnel and equipment) is not available. To provide a means to ensure that no tyre is below its minimum serviceable inflation pressure during operation in this scenario, it is required the installation of inflation valves with integrated dial gauges in the wheels and tyre pressure checks can be performed by crew, according Operations Manual.

Current Embraer Executive Jets fleet has accumulated more than 1.1 million of flight hours and 600 thousand of flight cycles with no reported case of tire burst associated to tires under inflating issue.

Embraer understands that the fact that Embraer Executive Jets fleet has the inflation valves with integrated dial gauges installed and the pressure check is effectively accomplished significantly contributes to achieving this level of performance with no significant cases associated with tires under inflation.

Proposed Change/Text (where applicable):

CS 25.733 Tyres

(...)

(f) A means shall be provided to ensure that no tyre is below its minimum serviceable inflation pressure during operation, by either:



(1) providing a task in the instructions for continued airworthiness that requires tyre inflation pressure checks to be performed at a suitable time interval; ~~or~~
 (2) installing an on-board tyre pressure monitoring system that alerts the flight crew whenever a tyre inflation pressure is below the minimum serviceable inflation pressure; ~~or~~
 (3) installing inflation valves with integrated dial gauges and incorporating a task in the Operations Manual requiring crew to perform tyre inflation pressure checks at a suitable time interval.

response

Partially accepted.
 CS 25.733(f)(2) and point 26.201(b) of Part-26 have been amended to be more performance-based and less restrictive with regard to the options available to the applicant. The amended text requires operators to minimise the risk that a tyre is below its minimum serviceable inflation pressure during operation. The acceptable means of compliance provides options that include systems allowing operators to check the tyre inflation pressures prior to the dispatch of the aeroplane.

3. Proposed amendments - CS-25 - AMC 25.733(f)

p. 5-6

comment

6

comment by: *The Boeing Company*

Paragraph 3.1, CS 25.733(f) and AMC 25.733(f) (page 5)

THE PROPOSED TEXT STATES:

“CS 25.733 Tyres”

...

“AMC 25.733(f) Tyre inflation pressure check”

REQUESTED CHANGE:

“CS ~~25.733 Tyres~~ **25.732 Wheel, Tyre, and Brake Monitoring**”

...

“AMC ~~25.733(f)~~ **25.732** Tyre inflation pressure check”

JUSTIFICATION: The tire inflation pressure check and tire pressure monitoring systems are intended to identify leakage in tire/wheel assemblies, not only tires, so creation of a new CS/AMC 25.732 is recommended. CS/AMC 25.732 may also be used to capture potential future requirements for monitoring of wheels, tires, and brakes.

response

Not accepted.
 The subject deals with tyre inflation pressures, so CS 25.733 is considered to be the appropriate place.

comment

9

comment by: *The Boeing Company*



Paragraph 3.1, AMC 25.733(f) (page 5), and
Paragraph 3.3, CS 26.201 (page 9)

The proposed text states:

(None)

REQUESTED CHANGE:

We suggest adding these statements.

“ ‘Conditions requiring flight crew awareness and response’ are non-normal tyre inflation pressure conditions in which one or more tyre failures could be reasonably expected to occur during the current flight cycle.

‘Appropriate phases of flight’ for flight crew alerting should include those when the airplane is on the ground and either stopped or moving at a speed not exceeding that above which the recommended flight crew procedure is to continue takeoff in the event of tyre failure. Flight crew alerting may also be provided when the airplane is in the air if specific flight crew procedures are provided for landing with low tyre pressure.

Tyre pressure monitoring system alerts should comply with the requirements of CS 25.1322.”

JUSTIFICATION: Non-normal tire inflation pressure conditions requiring flight crew awareness and response are those in which the inflation pressure of one or more tires is sufficiently low that those tire(s) and/or tire(s) installed on the same axle could be reasonably expected to fail within the current flight cycle.

Alerts requiring flight crew awareness and response should be provided to the flight crew only when they are actionable (i.e., the airplane is on the ground, or in air if specific flight crew procedures are provided for landing with low tire pressure) and will not result in undesirable flight crew action (i.e., rejected takeoff at high speed when the appropriate flight crew response to tire failure is continued takeoff).

Conditions that would not be expected to result in tire failure during the current flight cycle, e.g., tire inflation pressure slightly below the minimum serviceable inflation pressure that may initiate long-term fatigue damage to the tire and which, if the tire is left installed for a number of subsequent flight cycles, may result in eventual tire failure, should be communicated via status message for subsequent maintenance action. Such conditions do not require flight crew response. Requiring alerting for such conditions would be expected to result in nuisance alerts and schedule interruptions, e.g., due to decreases in tire inflation pressure with ambient temperature when flying from a hot to a cold location. CS 25.1322 should be referenced to ensure that alerts provided by tire pressure monitoring systems are consistent with other flight crew alerts and meet the requirements of CS 25.1322.



response First proposal on 'Conditions requiring flight crew awareness and response': Not accepted. This aspect is already encompassed in the definition of 'minimum serviceable inflation pressure'.
Second proposal on 'Appropriate phases of flight for flight crew alerting': Not accepted. CS 25.1322 applies and it is not necessary to discuss the details of the alert in this AMC.
Third proposal on referencing CS 25.13122: Accepted. The reference has been added in AMC 25.733(f)(2) within the option for a system that alerts the flight crew.

comment 11 comment by: *The Boeing Company*

Paragraph 3.1, AMC 25.733(f) item 1 (page 5)

THE PROPOSED TEXT STATES:

"'Minimum serviceable inflation pressure' means a tyre inflation pressure specified by the aeroplane type certificate holder below which damage to the tyre, potentially leading to a tyre failure, may occur."

REQUESTED CHANGE:

"'Minimum serviceable inflation pressure' **is defined as** means a tyre inflation pressure specified by the aeroplane type certificate holder below which **the tyre/wheel assembly must be replaced because** damage to the tyre, ~~potentially leading to a tyre failure,~~ may occur."

JUSTIFICATION: This change is recommend to more clearly define the minimum serviceable inflation pressure. The proposed definition will provide consistency with the tire pressure specified in the ICA below which tire/wheel assembly replacement is required because of damage to the tire that could occur due to operation in an overdeflected state.

response Not accepted.
The maintenance action to be taken depends on how far from the minimum serviceable inflation pressure the actual tyre pressure is. This should be addressed in the instructions for continued airworthiness.

comment 12 comment by: *The Boeing Company*

Paragraph 3.1, AMC 25.733(f) item 2 (page 5), and Paragraph 3.3, CS 26.201(b) (page 9)

THE PROPOSED TEXT STATES:

"This substantiation should at least include an analysis of the expected loss of tyre pressure during operation, taking into account the environmental and operational factors."

REQUESTED CHANGE:



“This substantiation should at least include an analysis of the expected loss of tyre pressure during operation, taking into account the environmental and operational factors, including the potential for pressure loss at a rate that exceeds normal diffusion resulting from damage to or degradation of the tyre/wheel assembly.”

JUSTIFICATION: While statistical service data have historically been presented by operators in an attempt to justify an extended tire pressure check interval, such datasets have often been limited to populations of undamaged tire/wheel assemblies losing pressure at normal diffusion rates. The survey data in paragraph 4.1.2.5 of the NPA shows that tire and wheel defects account for a substantial portion of tire under-inflation cases. The rate of pressure loss of a damaged or degraded tire/wheel assembly in which pressure retention integrity is compromised will exceed the normal rate of diffusion. Substantiating service data used to extend the tire pressure check interval beyond 48 elapsed clock hours should account for tire/wheel assemblies that are losing pressure at higher than normal rates.

response Accepted.

comment 14

comment by: *The Boeing Company*

Paragraph 3.1, AMC 25.733(f) item 3 (page 5), and Paragraph 3.3, CS 26.201(c) (page 9)

The proposed text states:

“If an on-board tyre pressure monitoring system is installed, its development assurance level should be commensurate with the potential consequences of an alert not being provided, as well as with the consequences of false alerts. If the system includes the indication of tyre pressure levels, the consequence of a false indication should also be taken into account. The assessment of these consequences should include the effects of the failure of one or more tyres (including simultaneous tyre failures) that may be caused by the operation of the aeroplane with under-inflated tyres.”

REQUESTED CHANGE:

“If an on-board tyre pressure monitoring system is installed and compliance is shown with [CS 25.733(f)(2) / Part-26 26.201(b)] then the system should be shown to provide equivalent or greater likelihood of indicating a low tyre pressure condition as a manual tyre pressure check performed at a suitable time interval, its development assurance level should be commensurate with the potential consequences of an alert not being provided, as well as with the consequences of false alerts. If the system includes the indication of tyre pressure levels, the consequence of a false indication should also be taken into account. The assessment of these consequences should include the effects of the failure of one or more tyres (including simultaneous tyre failures) that may be caused by the operation of the aeroplane with under-inflated tyres.”



JUSTIFICATION: The requirement to assess the severity of failure conditions to which a system contributes, and the assignment of development assurance level (DAL) to system functions commensurate with that severity, is addressed by CS/AMC 25.1309(b). Additionally, the hazard level related to tire failure in particular is addressed by CS/AMC 25.734.

DAL assignment is performed under the safety analysis process for evaluating functions. DAL assignment to system functions (FDAL) and items (IDAL) is a top-down process. The safety analysis process includes validation of the appropriate IDALs for the lower-level items that contribute to the top-level FDAL, per AMC 25.1309 references ARP4754A para. 5.2 and ARP4761 Appendices B and D.

Consideration should be given to creation of an ETSO for tire pressure monitoring systems that classifies the failure conditions for the ETSO applicant, facilitating DAL assignment. Presence of failure condition classification in the ETSO would limit how the type certificate holder installs the equipment and shows compliance to CS 25.1309, using data from the ETSOA. An example of this approach can be found in ETSO-C145.

Inclusion of the proposed paragraphs, and in particular their broad applicability even when compliance is shown with [CS 25.733(f)(1) / Part-26 26.201(a)] (i.e., even when the ICA/AMP require that tire inflation pressure checks be performed at a suitable time interval), may have the unintended consequence of reducing the number of airplanes on which an on-board TPMS is installed if a high DAL becomes a prerequisite for such installation. An on-board TPMS that provides equivalent or greater likelihood of indicating a low tire pressure condition as a manual tire pressure check performed at a suitable time interval should satisfy the stated objectives of this NPA.

If the requested change is not incorporated, then at a minimum the proposed paragraphs should be clearly shown as applicable only when compliance is shown to the proposed [CS 25.733(f)(2) / Part-26 26.201(b)]. This will allow installation of existing tire pressure monitoring systems as long as compliance is shown with [CS 25.733(f)(1) / Part-26 26.201(a)], i.e., the ICA/AMP require that tire inflation pressure checks be performed at a suitable time interval.

response

Noted.

CS 25.733(f)(2) and point 26.201(b) of Part-26 have been amended to be more performance-based and less restrictive with regard to the options available to the applicant. The amended text requires operators to minimise the risk that a tyre is below its minimum serviceable inflation pressure during operation. The acceptable means of compliance provides options that include tyre pressure monitoring systems alerting the flight crew.

A general statement on the DAL is maintained and is applicable to any system used to show compliance. It is not EASA's intent to specify a certain DAL level. The DAL level will be agreed as a function of the characteristics of the system proposed, and how it is used when demonstrating compliance with the objective of CS 25.733(f)(2) or point 26.201(b) of Part-26.

comment 16

comment by: *The Boeing Company*

	<p><i>Paragraph 3.1 (page 6)</i></p> <p>THE PROPOSED TEXT STATES: “..owing to the possible loss of tyre pressure during operation. The inflation retention standard of (European) Technical Standard Order (E)TSO-C62e (‘Aircraft Tyres’) allows a loss of tyre pressure of up to 5% of the initial pressure after 24 hours.”</p> <p>REQUESTED CHANGE: “..owing to the possible loss of tyre pressure at a rate that exceeds normal diffusion resulting from damage to or degradation of the tyre/wheel assembly during operation. For reference, t The inflation retention standard of (European) Technical Standard Order (E)TSO-C62e (‘Aircraft Tyres’) allows a loss of tyre pressure of up to 5% of the initial pressure after 24 hours. Although the normal diffusion rate of a typical undamaged tyre/wheel assembly is appreciably lower than the (E)TSO limit, a frequent tyre pressure check allows identification of a tyre/wheel assembly that is losing pressure at a higher than normal rate.”</p> <p>JUSTIFICATION: This change is recommended to clarify the primary reason for recommendation of a daily tire pressure check interval, i.e., to identify those tire/wheel assemblies with a higher than normal rate of pressure loss, which may lead to tire failure.</p>
response	<p>Noted.</p> <p>Please note that EASA cannot know if the in-service tyres continually diffuses at a lower rate. The ETSO threshold is the minimum standard.</p>
comment	<p>17 comment by: <i>The Boeing Company</i></p> <p><i>Paragraph 3.1 (page 6)</i></p> <p>THE PROPOSED TEXT STATES: “Therefore, this interval should be considered as a baseline.”</p> <p>REQUESTED CHANGE: “Therefore, a daily, not to exceed 48 elapsed clock hours, this interval should be considered as a baseline.”</p> <p>JUSTIFICATION: This change is recommended to provide consistency with the proposed AMC 25.733(f) definition of 'Suitable time interval', beyond which the interval must be substantiated and agreed by EASA.</p>
response	<p>Accepted.</p> <p>The content of the comment is agreed, but please note that the NPA will not be re-published.</p>

comment

30 ❖

comment by: AIRBUS

Page 1: Executive Summary
 Page 4: Para 2.3, 5th line
 Page 5: Para 3.1. CS 25.733 Tyres. (f)(2)
 Page 6: Para 3.1 – last line
 Page 24: Table 1. Option 3, 4 and 5

Comments

These pages all refer to a tyre pressure monitoring system that alerts the flight crew in the case of a tyre with an unsafe pressure.

It is proposed that the words 'alerts the flight crew' are deleted and are replaced by 'provides an alert'.

Rationale

Industry is currently examining the introduction of Integrated Aircraft Health Management concepts in which an Aircraft Health Monitoring capability would permit an alert to be sent to a ground station for action by maintenance engineers. While this may not yet have been approved it is considered wise not to exclude this option by suggesting that the only alternative to the scheduled tyre pressure check is a TPMS that alerts the flight crew.

response

Please refer to the response to comment 30.

comment

32

comment by: AIRBUS

Page 5: Para 3.1. AMC 25.733(f). Para 2, Second sentence

Comments

Add the words 'For aircraft in daily operation' at the beginning of the second sentence. At the end of Para 2, add a new sentence 'For aircraft not in daily operation, the check should be conducted no more than 48 hours before flight unless a longer period is substantiated and agreed by EASA'.

Rationale

It is not necessary to require operators to perform daily checks (including tyre pressure checks) if the aircraft is held in flight ready condition but does not fly regularly. This is particularly the case for business aircraft operations.

response

Not accepted.

The recommended pressure check interval should only be established in order to ensure the airworthy condition of the tyre. Whether an aeroplane flies regularly or not is an operational factor. If the aeroplane does not fly regularly, the operator must decide between either servicing the tyres regularly (to ensure that the pressure remains above the minimum serviceable pressure), or taking appropriate actions to



return the tyres to an airworthy condition after the pressure level has dropped below the minimum serviceable pressure.

comment

34

comment by: AIRBUS

Page 5: Para 3.1. AMC 25.733(f). Para 2, last sentence

Comments

It is proposed to delete the sentence 'The substantiation should be made in cooperation with the tyre manufacturer'

Rationale

ICAs for compliance with CS 25.1529 are developed by the TCH taking into account scheduled maintenance recommendations from equipment suppliers. Suppliers quote their recommendations to assure not only an appropriate level of safety but also to ensure that MBTF/MTBUR guarantees can be maintained and, possibly, that commercial interests are protected. The TCH is responsible for determining the ICAs and may deviate from the equipment supplier's recommendations with appropriate substantiation (as described earlier in paragraph 2). Inclusion of the final sentence in the proposed paragraph could effectively enforce the daily (i.e. 48 hours) check simply because tyre manufacturers would not support a longer interval. TCHs that use MSG-3 logic to identify applicable and effective tasks and intervals follow MSG-3 section 2-3-2 which states 'All available Vendor Recommendations (VR) should be fully considered, discussed in the MWG meetings, and accepted only if they are applicable and effective according to MSG-3 criteria'. The equipment supplier should not be granted a means to override this EASA agreed logic through lack of 'cooperation'.

If the deletion is not agreed by EASA then Airbus would propose to replace the sentence by:

'The tyre manufacturer should be made aware of the substantiation for intervals greater than 48 hours'.

response

Not accepted.

The commented sentence does not require the adoption of a value to be provided by the tyre manufacturer. It only requires cooperation to establish a reasonable value. The aeroplane manufacturer can steer the discussion to focus on airworthiness, not on commercial considerations.

comment

35 ❖

comment by: AIRBUS

CS
AMC 25.733(f)

25.733(f)

Comments

CS 25.733(f) and Point 26.201 of Part-26 refer to a "[...] serviceable inflation pressure". The AMC 25.733(f) and CS 26.201 define this term.



The paragraph (a) of point M.A.201 states that “[...] The owner of the aircraft shall be responsible for the continuing airworthiness of aircraft and shall ensure that no flight takes place unless all of the following requirements are met: (1) the aircraft is maintained in an airworthy condition; (2) any operational and emergency equipment fitted is correctly installed and serviceable or clearly identified as unserviceable. [...]”

The paragraph (c) of point 145.A.75 states that an Approved Maintenance Organisation (AMO) shall be entitled to “[m]aintain any aircraft or any component for which it is approved at any location subject to the need for such maintenance arising either from the unserviceability of the aircraft or from the necessity of supporting occasional line maintenance, subject to the conditions specified in the [maintenance organisation] exposition.”

It is recommended to contemplate wordings using the ‘serviceable’ terminology with due attention to the ‘airworthiness’ terminology (problems of consistency, no need for two terms with the same meaning, etc...).

Rationale

The term ‘airworthy’ is defined in the Annexes 6 and 8 of the Chicago Convention as “[t]he status of an aircraft, engine, propeller or part when it conforms to its approved design and is in a condition for safe operation”. What is the difference between ‘serviceable’ and ‘airworthy’? What does it imply in the present case? Should reference be made to a “[...] inflation pressure for continuing airworthiness”?

response Please refer to the response to comment 35.

comment

36 ❖ comment by: AIRBUS
 CS 25.733(f)
 AMC 25.733(f)

Comments

Airbus suggest to replace "during operation" by "during air operation".

Rationale

The term ‘operation’ is ambiguous (air operation, aircraft operation, maintenance operation, etc...). This issue can be found at multiple locations in this NPA. The term “air operation” is proposed in line with the title of Regulation (EU) No. 965/2012.

response Please refer to the response to comment 36.

comment

38 ❖ comment by: AIRBUS
 CS 25.733(f)
 AMC 25.733(f)1.



	<p><u>Comments</u></p> <p>Airbus suggest to replace "below its minimum serviceable inflation pressure" by "below its minimum or above its maximum serviceable inflation pressures".</p> <p><u>Rationale</u></p> <p>According to the explanations given in this NPA, an over-pressure is also a problem. Similarly to under-pressure condition, over-pressure conditions should be considered.</p>	
response	Please refer to the response to comment 38.	
comment	<p>39</p> <p>comment by: <i>AIRBUS</i></p> <p>AMC 25.733(f)3.</p> <p><u>Comments</u></p> <p>Airbus suggest to replace "aeroplane with under-inflated tyres" by "aeroplane with under-inflated or over-inflated tyres"</p> <p><u>Rationale</u></p> <p>According to the explanations given in this NPA, an over pressure is also a problem. Similarly to under-pressure condition, over-pressure conditions should be considered.</p>	
response	Please refer to comment 38.	
comment	<p>42</p> <p>comment by: <i>AIRBUS</i></p> <p>AMC 25.733(f)</p> <p><u>Comments</u></p> <p>A paragraph dedicated to GTPIS should be added (similarly to the one dedicated to OBTPMS).</p> <p><u>Rationale</u></p> <p>As identified in the paragraph 4. of NPA 2020-05, GTPIS should be authorized as a means to achieve the objective of CS 25.733(f) and point 26.201 of Part-26.</p>	
response	Accepted. Such a system has been included as an acceptable means of compliance.	
comment	<p>43 ❖</p> <p>comment by: <i>AIRBUS</i></p>	

	<p>CS 25.733(f) AMC 25.733(f)</p> <p><u>Comments</u></p> <p>The point 1. in AMC 25.733(f) reads:</p> <p>“1. ‘Minimum serviceable inflation pressure’ means a tyre inflation pressure specified by the aeroplane type certificate holder below which damage to the tyre, potentially leading to a tyre failure, may occur.”</p> <p>It is recommended to clarify why the impact of a tyre failure at aircraft level in CS 25.733(f) and in the AMC is ignored.</p> <p><u>Rationale</u></p> <p>One may develop some new design features aiming at reducing the criticality level of a tyre failure at aircraft level. The inflation pressure could no longer be an issue and the regulation should be more performance based as clearly stated in the RMT.0731 on New Air Mobility: “The purpose of the RMT is to develop rules or amend existing ones, where necessary, to address new technologies and operational air transport concepts, with the objective of adapting the regulatory framework in line with PBR principles. A general principle that will govern this RMT is that future requirements should be technology neutral where possible, while ensuring legal certainty.”</p>
response	Please refer to the response to comment 43.

comment	<p>49 comment by: AIRBUS</p> <p>AMC 25.733(f)</p> <p><u>Comment and rationale</u></p> <p>Airbus suggest to state in AMC 25.733 that the assessment of the consequences of a tyre failure is part of the 25.1309(b) assessment and to only consider the direct functional consequence of the failure. The resulting impacts of tyre debris on the system and structure is covered through PRA in accordance with CS 25.734.</p>
response	<p>Not accepted.</p> <p>Such a consideration is not needed in the AMC of this paragraph.</p>

comment	<p>71 comment by: Bombardier Aerospace</p> <p>1) It must be made clear that a mandatory tyre pressure check would not stem from engineering 25.1309 safety analysis in the form of a CMR, as the CMR mechanism would prove highly impractical for a ‘daily’ check. Therefore, the input to the ICA, and ultimately to the Maintenance Program Document, would come from MSG-3 analysis and be subject to Maintenance Review Board (MRB) and Industry Steering Committee (ISC) approval. However, a ‘daily’ check is highly objectionable to</p>
---------	--



	<p>business jets operators due to the nature of their operations. The operator's voice is heard as part of the MRB process, which also includes the regulators. An interval that is agreed to by the MRB and the ISC, may exceed a 'daily' interval to allow for operations at airfields with limited maintenance services. It should be noted that irrespective of the MRB specified interval, most OEMs include targeted safety wording in the Aircraft Maintenance Manual to increase the awareness about the importance of performing a daily tyre pressure check.</p>
response	<p>Noted.</p> <p>The proposed AMC 25.733(f) allows the applicant to substantiate an interval different from the daily check. Some guidance is provided on how the substantiation may be done.</p> <p>Regarding the MRB process, we remind you that this is an optional process and that some large aeroplanes have been certified without using this process. Furthermore, EASA cannot impose measures on tyre pressure related tasks if the other MRB members do not agree. EASA is also aware that recent MRBs of non-European aeroplane types decided on tyre pressure check intervals which are beyond what EASA considers to be reasonable. Therefore, EASA does not wish to rely on the MRB process to solve this issue.</p>
comment	<p>76 comment by: IATA</p> <p>IATA Comment</p> <p>AMC 25.733(f)(3)</p> <p>The requirement specified in this point, including the ICA for calibration, would be a solid basis for enabling the AHM activity on the operator side related to installed tyre pressure. It is a welcome step from the operator's perspective.</p>
response	<p>Noted.</p>
comment	<p>82 comment by: Airlines for America</p> <p>Paragraphs</p> <p>3.1</p> <p>Ref to CS 25.733 (f)(2):</p> <p>The proposed regulation text as written may not accommodate systems that provide the inflation pressure prior to dispatch without an alert. Means that allow the flight crew to be aware of underinflated tyres on a regular basis are equivalent to a maintenance task at a given interval, and shall be considered. MPIG proposes the following change to CS 25.733(f)(2):</p> <p><i>(2) installing an on-board tyre pressure monitoring system that:</i></p> <p><i>(a) provides an alert whenever a tyre inflation pressure is below the minimum serviceable inflation pressure; OR</i></p> <p><i>(b) allows the flight crew to check the tyre inflation pressure prior to dispatch and the pressure check is part of the pre-flight check procedures.</i></p>
response	<p>Partially accepted.</p>

CS 25.733(f)(2) and point 26.201(b) of Part-26 have been amended to be more performance-based and less restrictive with regard to the options available to the applicant. The amended text requires operators to minimise the risk that a tyre is below its minimum serviceable inflation pressure during operation. The acceptable means of compliance provides options that include the suggested kind of systems.

comment

83

comment by: *Airlines for America***Paragraphs**

3.1

Ref to CS 25.733 (f), para 2 ('Suitable time interval')

The paragraph with reference to daily tyre pressure checks may apply to airliners that are constantly in operation, but may not apply to business jets, for example. Although the next paragraph would allow substantiation for intervals longer than 48h, the ICA development process is not recognized.

Suggest the paragraph to read: 'For aircraft in daily operation Tyre inflation pressure checks are recommended to be performed every day of operation. The Type certificate Holder instructions for continued airworthiness process shall identify the most effective interval for the tyre pressure check taking into account environmental and operational factors. For aircraft not in daily operation, the check should be conducted no more than 48 hours before flight unless a longer period is substantiated and agreed by EASA.

Time intervals longer than 48 hours may be used if they are substantiated and agreed by EASA. This substantiation should at least include an analysis of the expected loss of tyre pressure during operation, taking into account the environmental and operational factors. If available, statistical data related to pressure losses gathered from the service experience of aeroplanes equipped with equivalent wheel designs should also be used.'

response

Not accepted.

The recommended pressure check interval should only be established in order to ensure the airworthy condition of the tyre. Whether an aeroplane flies regularly or not is an operational factor. If the aeroplane does not fly regularly, the operator must decide between either servicing the tyres regularly (to ensure that the pressure remains above the minimum serviceable pressure), or taking appropriate actions to return the tyres to an airworthy condition after the pressure level has dropped below the minimum serviceable pressure.

comment

84

comment by: *Airlines for America***Paragraphs**

Para 3.1. AMC 25.733(f). Para 2, last sentence

It is proposed to delete the sentence 'The substantiation should be made in cooperation with the tyre manufacturer'



	<p>The TCH ICA process will consider the tyre manufacturer recommendations when developing the ICAs, however, the ICA process is designed to identify the maintenance tasks for safety end economical purposes, and may come to different tasks that those recommended by the tyre manufacturer which may include commercial and warranties considerations. The MSG-3 methodology states that 'All available Vendor Recommendations (VR) should be fully considered, dis-cussed in the MWG meetings, and accepted only if they are applicable and effective according to MSG-3 criteria'.</p> <p>If the deletion is not agreed by EASA then A4A MPIG would propose to replace the sentence by: 'The tyre manufacturer should be made aware of the substantiation for intervals greater than 48 hours'</p>
response	<p>Not accepted.</p> <p>The commented sentence does not require the adoption of a value to be provided by the tyre manufacturer. It only requires cooperation when establishing the value. The aeroplane manufacturer can steer the discussion to focus on airworthiness, not on commercial considerations.</p>
comment	<p>85 comment by: <i>Airlines for America</i></p> <p>Paragraphs 3.1</p> <p>Ref to CS 25.733 (f), last sentence on the page.</p> <p>The text as written implies that a maintenance task must be created to ensure the OBTMPS calibration.</p> <p>The need for a task is technological and architectural-dependent and the normal TCH ICA development process shall be used to identify the most effective task, if needed. Other processes, such as the System Safety process will also evaluate the criticality and the eventual need of an airworthiness limitation such as a Certification Maintenance Requirement (CMR).</p> <p>Propose to change the sentence to: 'The Type certificate Holder instructions for continued airworthiness development process shall consider the operating environment, OBTMPS technology and architecture to evaluate the most effective instructions for continued airworthiness to maintain the OBTMPS calibration.'</p>
response	<p>Partially accepted.</p> <p>The wording has been revised to state that ICA should be provided to ensure that the system calibration is maintained.</p>
comment	<p>86 comment by: <i>Airlines for America</i></p> <p>Paragraphs 3.1</p>

response	<p>Rationale, 2nd paragraph</p> <p>Change last sentence of 2nd paragraph by adding ‘via the type certificate holder instructions for continued airworthiness process.’ after ‘If an applicant wishes to provide a longer interval, this must be properly substantiated and agreed with EASA.’</p> <p>Not accepted. The proposed change does not clarify the explanatory note.</p>
comment	<p>96 comment by: <i>Gulfstream Aerospace Corporation</i></p> <p>Section, Page Section 3.1, CS 25.733(f)(2), page 5</p> <p>Comment The proposed regulation text for CS 25.733(f)(2) as shown in the NPA may not accommodate systems that provide the inflation pressure prior to dispatch without an alert. Means that allow the flight crew to check the tyre pressure prior to dispatch are equivalent to a maintenance task at a given interval, and should be considered.</p> <p>Suggested Changes Propose the following change to CS 25.733(f)(2): (2) installing an on-board tyre pressure monitoring system that: (i) alerts the flight crew whenever a tyre inflation pressure is below the minimum serviceable inflation pressure; or (ii) allows the flight crew to check the tyre inflation pressure in the flight deck prior to dispatch and the pressure check is part of the pre-flight check procedures.</p>
response	<p>Partially accepted. CS 25.733(f)(2) and point 26.201(b) of Part-26 have been amended to be more performance-based and less restrictive with regard to the options available to the applicant. The amended text requires operators to minimise the risk that a tyre is below its minimum serviceable inflation pressure during operation. The acceptable means of compliance provides options that include the suggested kind of systems</p>
comment	<p>97 comment by: <i>Gulfstream Aerospace Corporation</i></p> <p>Section, Page Section 3.1, AMC 25.733(f), page 5</p> <p>Highlighted text: “Checks should be conducted daily in order to ensure that the elapsed clock time between two consecutive tyre inflation pressure checks does not exceed 48 hours. Time intervals longer than 48 hours may be used if they are substantiated and agreed by EASA. This substantiation should at least include an analysis of the expected loss of tyre pressure during operation, taking into account the environmental and operational factors. If available, statistical data related to pressure losses gathered from the service experience of aeroplanes equipped with equivalent wheel designs</p>

should also be used. The substantiation should be made in cooperation with the tyre manufacturer(s).”

Comment

This paragraph may apply to airliners that are constantly in operation, but may not apply to business jets, for example. Although the next paragraph would allow substantiation for intervals longer than 48h, the ICA development process is not recognized.

Suggested Changes

Suggest revising the paragraph to read:

“Tyre inflation pressure checks are recommended to be performed every day of operation. The Type Certificate Holder Instructions for Continued Airworthiness process shall identify the most effective interval for the tyre pressure check taking into account environmental and operational factors.”

response

Not accepted.

The recommended pressure check interval should only be established in order to ensure an airworthy condition of the tyre. Whether an aeroplane flies regularly or not is an operational factor. If the aeroplane does not fly regularly, the operator must decide between either servicing the tyres regularly (to ensure that the pressure remains above the minimum serviceable pressure), or taking appropriate actions to return the tyres to an airworthy condition after the pressure level has dropped below the minimum serviceable pressure.

comment

98

comment by: *Gulfstream Aerospace Corporation*

Section, Page

Section 3.1, AMC 25.733(f), page 5

Highlighted text: “Instructions for continued airworthiness should be provided to ensure that the tyre pressure monitoring system is calibrated at an appropriate time interval.”

Comment

The text as written implies that a maintenance task must be created to ensure the OBTMPS calibration. The need for a task is technological and architectural-dependent and the normal TCH ICA development process shall be used to identify the most effective task, if needed. Other processes, such as the System Safety process will also evaluate the criticality and the eventual need of an airworthiness limitation such as a Certification Maintenance Requirement (CMR).

Suggested Changes

Suggest revising the paragraph to read:

“The Type Certificate Holder Instructions for Continued Airworthiness process shall consider the operating environment, OBTMPS technology and architecture to evaluate the most effective instructions to continued airworthiness to maintain the OBTMPS airworthy throughout the life of the aircraft.”

response

Partially accepted.

The wording has been revised to state that ICA should be provided to ensure that the system calibration is maintained.



comment	<p>99</p> <p style="text-align: right;">comment by: <i>Gulfstream Aerospace Corporation</i></p> <p>Section, Page Section 3.1, AMC 25.733(f), page 6</p> <p>Highlighted text: “If an applicant wishes to provide a longer interval, this must be properly substantiated and agreed with EASA.”</p> <p>Suggested Changes Suggest revising the sentence to read: “If an applicant wishes to provide a longer interval, this must be properly substantiated and agreed with EASA via the type certificate holder instruction for continued airworthiness process.”</p>
response	<p>Not accepted. The proposed change does not clarify the explanatory note.</p>

3. Proposed amendments - Part-26 - 26.201

p. 7

comment	<p>8</p> <p style="text-align: right;">comment by: <i>The Boeing Company</i></p> <p><i>Paragraph 3.1, CS 25.733(f)(2) (page 5), and Paragraph 3.2, Part-26 26.201(b) (page 7)</i></p> <p>The proposed text states: “installing an on-board tyre pressure monitoring system that alerts the flight crew whenever a tyre inflation pressure is below the minimum serviceable inflation pressure.”</p> <p>REQUESTED CHANGE: “installing an on-board tyre pressure monitoring system that alerts the flight crew <u>of conditions requiring flight crew awareness and response during appropriate phases of flight, and that provides a status message if</u> whenever a tyre inflation pressure is below the minimum serviceable inflation pressure.”</p> <p>JUSTIFICATION: Alerts related to low tire pressure should be provided to the flight crew only if necessary to avoid a tire failure prior to the next opportunity for maintenance action and should be provided only during phases of flight in which they are actionable and will not result in undesirable flight crew action. Status messages should be provided per AMC 25.1322 to indicate the need for maintenance action prior to dispatch for subsequent flights.</p>
response	<p>Partially accepted. CS 25.733(f)(2) and point 26.201(b) of Part-26 have been amended to be more performance-based and less restrictive with regard to the options available to the applicant. The amended text requires operators to minimise the risk that a tyre is below its minimum serviceable inflation pressure during operation. The acceptable means of compliance provide several options, including a system that alerts the</p>



flight crew. Such a system has to comply with CS 25.1322 and therefore it is not necessary to specify details of how and when the alert should be triggered.

comment

28

comment by: *Crane Aerospace*

Crane endorses with our following comments incorporated the EASA approach for more frequent tire pressure checks.

- In amended text 25.733 and 26.201 list an onboard system first as it best minimizes chance of human error, automatically performs continuous tire pressure monitoring, and enables data logging including after the airplane has left the gate and before landing.
- Where ever new amendments say "... system that alerts the flight crew" to add "and the maintenance crew".
- Advise that when inflate a tyre, do so to the high side of service pressure (so average tire pressure has higher probability of being service pressure or higher) and this should not be any extra burden and likely is current good mechanic practice.

In an associated AMC recommend the following

- reference both ARP5265 and ARP6137 as recommended practice
- a ground based system with accuracy sufficient to satisfy the daily tire check and automatic data logging as it also helps minimize human error

to substantiate compliance require a log of tire pressure vs date and time be kept.

response

Partially accepted.

CS 25.733(f)(2) and point 26.201(b) of Part-26 have been amended to be more performance-based and less restrictive with regard to the options available to the applicant. The amended text requires operators to minimise the risk that a tyre is below its minimum serviceable inflation pressure during operation. The acceptable means of compliance includes both systems that alert the flight crew and systems that can be used on ground to alert the maintenance personnel.

The aspects of the comment related to maintenance practice standards are not appropriate to the scope of CS-25 and Part-26/CS-26.

comment

44

comment by: *AIRBUS*

Point 26.201 of Part-26

Comments

It is proposed to delete point 26.201 of Part-26: this point creates an unnecessary regulatory burden for CAMO.

Rationale



In accordance with the EPAS 2020-2024, the EASA must ensure that its regulatory proposals deliver maximum safety, economic, social and environmental benefits at minimum cost to citizens, businesses and workers, without creating unnecessary regulatory burden for Member States, the industry and EASA itself (in order to meet the Better Regulation Agenda of the European Commission).

An unnecessary burden is created for the CAMO community by:

- The dissemination of requirements in the EU Regulation (Part-M, Part-CAMO, Part-21 sub-parts H and I, Part-26 and tomorrow Part-AIS), and
- The creation of unnecessary regulatory requirements: the introduction of a tyre inflation pressure check at a suitable time interval may easily be introduced at the opportunity of a regular revision of the Aircraft Maintenance Programme (AMP), following the publication of mandatory ICAs developed by the Type Certificate Holder.

The EASA AD tool contains hundreds of ADs issued or adopted by the Agency that require CAMO to revise the AMPs to demonstrate compliance with new or revised airworthiness limitations.

The current status of compliance with the AMP (refer to GM M.A.305) means the last and next accomplishment data for the tasks specified in the maintenance schedule of the AMP. This status will in any case include the accomplishment data for the subject tyre inflation pressure check (for aircraft not equipped with a TPMS). But with the current proposal, an extra compliance status will be needed forever to demonstrate the compliance with this Part-26 additional airworthiness specification and this for all aircraft, including those equipped with a TPMS just to declare that the requirement is not applicable. This is a double penalty found unnecessary.

In any case, the TC holder will have to update the aircraft instructions for continued airworthiness to enable the demonstration of compliance on aircraft operator side. In other words, the TC holder will have to publish the 'minimum serviceable inflation pressure' referred to in CS 26.201 (a tyre inflation pressure specified by the aeroplane type certificate holder).

It is believed that the burden on aircraft operators and CAMOs the current proposal generates can be significantly reduced without increasing the burden on the TC holders and the Agency.

response

Not accepted.

Issuing an AD would be appropriate to act on one large aeroplane type, or on a group of large aeroplane types, but not for issuing a general rule applicable to all large aeroplanes (current and future).

comment

45

comment by: AIRBUS

Point 26.201 of Part-26

Comments



It is proposed to delete point 26.201 of Part-26: this point creates potential safety concerns at some interfaces between organizations.

Rationale

This regulatory proposal will probably not deliver the systematic safety benefits that are expected and necessary.

Point M.A.201 establishes 3 different setups in terms of responsibilities for the aircraft continuing airworthiness and for the management of the aircraft continuing airworthiness, in the case of large aeroplanes:

1. aircraft used by air carriers licensed in accordance with Regulation (EC) No 1008/2008:

The (aircraft) operator is approved as a CAMO (i.e. responsible for the management of the aircraft continuing airworthiness), as part of its AOC, and is responsible for the continuing air-worthiness of the aircraft it operates.

2. aircraft used for commercial specialised operations, for CAT operations other than those per-formed by licensed air carriers or by commercial ATO and DTO:

The operator is required to ensure that the continuing airworthiness management tasks are performed by a CAMO (the operator is not responsible for the continuing airworthiness of the aircraft it operates, the owner is).

3. other aircraft:

The owner is required to ensure that the continuing airworthiness management tasks are per-formed by a CAMO (the owner is responsible for the continuing airworthiness of the aircraft, as stated in point M.A.201(a)).

According to the Article 3 of Regulation (EU) 2015/640, the responsibility to manage the additional airworthiness specifications introduced by Part-26 is assigned to the aircraft operator, regardless the applicable setup.

The setup 1 shows an integrated organization covering the responsibilities for the aircraft airworthiness, the continuing airworthiness management operations, and for the air operations. This integration makes the setup compatible with the applicability of the Part-26.

For the setups 2 and 3, the responsibilities for the aircraft continuing airworthiness, the continuing airworthiness management operations, and for the air operations may be scattered between three independent entities (owner, CAMO, and aircraft operator, respectively). The distribution of responsibilities makes these setups not compatible with the applicability of the Part-26.

Sometimes, there is even an ambiguity on which organization takes the aircraft operator role. The definition given in the Basic Regulation (Article 3, item (13)) states: “‘aircraft operator’ means any legal or natural person operating or proposing to operate one or more aircraft”.

In the setup 3, an owner (e.g. a lessor) may propose to operate an aircraft (during off-lease periods), while the organisation actually conducting the air operations (e.g. under Part-NCC or para. 3.(b) of Article 6 in Regulation (EU) No 965/2012) flies this



aircraft. Who should be considered as the aircraft operator (the one proposing to operate the aircraft or the one flying the aircraft)? It is one or the other, but should not be both at the same time.

The absence for the CAMO of a direct responsibility in the management of such an isolated airworthiness specification (i.e. the tyre inflation pressure check at a suitable time interval, for aircraft without a TPMS) creates a serious hazard. This may create a precedent.

Although the regulatory system may be found suitable on paper, in practice some owners/operators and some CAMO will probably be unaware of the Part-26 airworthiness specifications, in particular for the setup 3. The responsibility to contract a CAMO in the setups 2 and 3 is the confirmation that owners/operators are not considered having the necessary knowledge and competences to manage airworthiness requirements (when they are not approved as a CAMO themselves). It can also be expected that, as CAMOs have no responsibility with respect to Part-26, they may be tempted to adopt a standby mode.

In the end, one may have the impression that the responsibility to manage the subject airworthiness specifications has been allocated with due consideration for one case, but with poor consideration for the others and to the detriment of the principal objective of the Basic Regulation

response

Not accepted.

This comment puts into question the overall status of Regulation (EU) 2015/640 and its enforceability.

Article 3 of this Regulation reads as follows:

‘Operators for which a Member State ensures oversight shall, when operating the aircraft referred to in Article 1, comply with the provisions of Annex I.’

Therefore, whatever the type of operation used for the aircraft mentioned in Article 1, the operator is responsible for ensuring compliance with Regulation (EU) 2015/640.

The operator may task a CAMO to ensure compliance of the aircraft it operates, however, it remains responsible for checking that the CAMO has accomplished this task.

In order to ensure that operators fulfil their responsibility, point 26.10 of Annex I to Regulation (EU) 2015/640, entitled ‘Competent authority’ provides that ‘the competent authority to which compliance with the specifications needs to be demonstrated by operators shall be the authority designated by the Member State in which the operator has its principal place of business.’

comment

48 ❖

comment by: AIRBUS

General comment on Part-26 / CS-26

Comments

It is proposed to delete point 26.201 of Part-26.

Rationale



The CS25.733 intent to make the link between the Initial Type Certificate of an Aircraft and its associated ICA with no intention to mandate the tyre pressure inspection is agreed by Airbus. However, the introduction of point 26.201 with the intention to make a similar link to the already flying aircraft cannot be agreed. Indeed, contrary to FAR26 which applies to the TCH, Part-26 and CS-26 apply to the operators and require them to integrate the tyre pressure inspection in the AMP. By doing so, EASA is making this inspection a mandatory inspection applicable to all flying aircraft including those which will in the future comply with CS25.733. Therefore, Airbus proposes to remove the Point 26.201 and requires EASA to find another means to ensure the tyre inspection is introduced in the ICA of already flying aircraft with no use of the Part-26/CS-26. Otherwise, there is a lack of consistency within the NPA between the CS25.733 and the CS26.201.

Therefore, all comments associated with the Part-26/CS-26 content will not be provided to EASA and kept for further discussion (together with additional comments on CS25) in case EASA rejects the proposal to remove the point 26.201.

response Please refer to the response to comment No 48.

comment 52 comment by: *FNAM*

FNAM comments:

"This point adds the establishment of a frequent tire pressure control system for the Airworthiness Management teams and proposes the establishment of an on-board system which allows the technical crew to have access to " precise information (alerts, etc.) concerning the tire pressure of the aircraft.

Position: Positive impact: The addition of this point brings a European standard that all operators must respect. This standard will therefore improve flight safety. "

response Noted.

comment 77 comment by: *IATA*

IATA Comment

26.201

The wording used is not considered realistically accurate and should be revised based on a similar rationale to the one presented for CS 25.733 Tyres (f). We propose the following rewording: "Operators of large aeroplanes shall ensure that they minimize the risk of aircraft dispatch with any tyre below its minimum serviceable inflation pressure during operation, by either: (a) incorporating a task in the aeroplane maintenance programme (AMP) requiring operators to perform tyre inflation pressure checks at a suitable time interval, or (b) installing an on-board tyre pressure monitoring system that enables the flight crew to check the tyre inflation pressure status or pressure level before flight."

response Partially accepted.



CS 25.733(f)(2) and point 26.201(b) of Part-26 have been amended to be more performance-based and less restrictive with regard to the options available to the applicant. The amended text requires operators to minimise the risk that a tyre is below its minimum serviceable inflation pressure during operation. The acceptable means of compliance provides options that include systems allowing operators to check the tyre inflation pressures prior to the dispatch of the aeroplane.

comment

87

comment by: *Airlines for America***Paragraphs**

3.2

26.201 (b)

The proposed regulation text as written does not recognize aircraft with OBTPMS already installed. MPIG proposes the following change to CS 26.201(b):

(b) if not already installed, installing an on-board tyre pressure monitoring system that:

(i) alerts the flight crew whenever a tyre inflation pressure is below the minimum serviceable inflation pressure; OR

(ii) allows the flight crew to check the tyre inflation pressure prior to dispatch and the pressure check is part of the pre-flight check procedures.

response

Partially accepted.

The proposed point 26.201 of Part-26 has been revised to provide a performance-based rule. CS 26.201 provides a list of means which can be used to show compliance with point 26.201; this includes tyre pressure monitoring systems that can alert the flight crew. The wording used for the introduction sentence should address the concern of this comment; it states that the operator should ensure that one, or a combination, of the provided means is(are) used.

comment

95

comment by: *Embraer S.A.***Comment:**

Introduce the alternative solution using inflation valves with integrated dial gauges.

Reason(s) for Comment:

Aeroplanes used in business aviation eventually may be operated in aerodromes where ground service support (personnel and equipment) is not available. To provide a means to ensure that no tyre is below its minimum serviceable inflation pressure during operation in this scenario, it is required the installation of inflation valves with integrated dial gauges in the wheels and tyre pressure checks can be performed by crew, according Operations Manual.

Current Embraer Executive Jets fleet has accumulated more than 1.1 million of flight hours and 600 thousand of flight cycles with no reported case of tire burst associated to tires under inflating issue.



Embraer understands that the fact that Embraer Executive Jets fleet has the inflation valves with integrated dial gauges installed and the pressure check is effectively accomplished significantly contributes to achieving this level of performance with no significant cases associated with tires under inflation.

Proposed Change/Text (where applicable):

26.201 Tyre inflation pressure

Operators of large aeroplanes shall ensure that no tyre is below its minimum serviceable inflation pressure during operation by either:

(a) incorporating a task in the aeroplane maintenance programme (AMP) requiring operators to perform tyre inflation pressure checks at a suitable time interval; ~~or~~

(b) installing an on-board tyre pressure monitoring system that alerts the flight crew whenever a tyre inflation pressure is below the minimum serviceable inflation pressure; ~~or~~

(c) installing inflation valves with integrated dial gauges and incorporating a task in the Operations Manual requiring crew to perform tyre inflation pressure checks at a suitable time interval.

response

Partially accepted.

CS 25.733(f)(2) and point 26.201(b) of Part-26 have been amended to be more performance-based and less restrictive with regard to the options available to the applicant. The amended text requires operators to minimise the risk that a tyre is below its minimum serviceable inflation pressure during operation. The acceptable means of compliance provides options that include systems allowing operators to check the tyre inflation pressures prior to the dispatch of the aeroplane.

comment

100

comment by: *Gulfstream Aerospace Corporation*

Section, Page

Section 3.2, Subpart B, 26.201(b), page 7

Comment

The proposed regulation text as written does not recognize aircraft with OBTPMS already installed.

Suggested Changes

Propose the following changes to CS 26.201(b):

(b) if not already installed, installing an on-board tyre pressure monitoring system that:

(i) alerts the flight crew whenever a tyre inflation pressure is below the minimum serviceable inflation pressure; or

(ii) allows the flight crew to check the tyre inflation pressure in the flight deck prior to dispatch and the pressure check is part of the pre-flight check procedures.

response

Partially accepted.



The proposed point 26.201 of Part-26 has been revised to provide a performance-based rule. CS 26.201 provides a list of means which can be used to show compliance with point 26.201; this includes tyre pressure monitoring systems that can alert the flight crew. The wording used for the introduction sentence should address the concern of this comment; it states that the operator should ensure that one, or a combination, of the provided means is(are) used.

3. Proposed amendments - CS-26 - contents

p. 7

comment	88	comment by: <i>Airlines for America</i>
	<p>Paragraphs 3.3</p> <p>General comment to section 3.3: some changes proposed in this section are not related to the scope of the NPA, as identified in Section 2 of the NPA.</p>	
response	<p>Noted. An editorial change has been incorporated. It is indeed not related to the issue at stake in Chapter 2. A note explained this change at the bottom of page 10 of the NPA.</p>	

comment	101	comment by: <i>Gulfstream Aerospace Corporation</i>
	<p>Section, Page Section 3.3, page 7</p> <p>Comment Some changes are being proposed in this section that are not related to the scope of the NPA.</p>	
response	<p>Noted. An editorial change has been incorporated. It is indeed not related to the issue at stake in chapter 2. A note explained this change at the bottom of page 10 of the NPA.</p>	

Proposed amendments - CS-26 - CS 26.50

p. 7

comment	53	comment by: <i>FNAM</i>
	<p>FNAM comments:</p> <p>"Terminology correction and modification of points.</p> <p>Position: Neutral impact "</p>	
response	<p>Noted.</p>	
comment	78	comment by: <i>IATA</i>



	<p>IATA Comment</p> <p>Pages 7 to 9</p> <p>The addition of the word "point" in front of various numbering sequences referring to provisions in Part-26 is not considered as bringing any significant increase in clarity. The reference by using only the numbering sequence is sufficient and we propose to withdraw the addition of the word "point" as envisaged by this NPA.</p>
response	<p>Not accepted.</p> <p>This term has been added for consistency within Regulation (EU) 2015/640 and the regulations amending it, and with other regulations.</p>

Proposed amendments - CS-26 - CS 26.60

p. 7

comment	<p>54</p> <p>comment by: <i>FNAM</i></p> <p>FNAM comments:</p> <p>"Terminology correction and modification of points.</p> <p>Position: Neutral impact "</p>
response	<p>Noted.</p>

Proposed amendments - CS-26 - CS 26.100

p. 7-8

comment	<p>55</p> <p>comment by: <i>FNAM</i></p> <p>FNAM comments:</p> <p>"Terminology correction and modification of points.</p> <p>Position: Neutral impact "</p>
response	<p>Noted.</p>

Proposed amendments - CS-26 - CS 26.105

p. 8

comment	<p>56</p> <p>comment by: <i>FNAM</i></p> <p>FNAM comments:</p> <p>"Terminology correction and modification of points.</p> <p>Position: Neutral impact "</p>
response	<p>Noted.</p>



Proposed amendments - CS-26 - CS 26.110

p. 8

comment	57	comment by: <i>FNAM</i>
	FNAM comments: "Terminology correction and modification of points. Position: Neutral impact "	
response	Noted.	

Proposed amendments - CS-26 - CS 26.120

p. 8

comment	58	comment by: <i>FNAM</i>
	FNAM comments: "Terminology correction and modification of points. Position: Neutral impact "	
response	Noted.	

Proposed amendments - CS-26 - CS 26.150

p. 8

comment	59	comment by: <i>FNAM</i>
	FNAM comments: "Terminology correction and modification of points. Position: Neutral impact "	
response	Noted.	

Proposed amendments - CS-26 - CS 26.155

p. 8

comment	60	comment by: <i>FNAM</i>
	FNAM comments: "Terminology correction and modification of points. Position: Neutral impact "	
response	Noted.	



Proposed amendments - CS-26 - CS 26.156

p. 8-9

comment	61	comment by: <i>FNAM</i>
	FNAM comments:	
	"Terminology correction and modification of points.	
	Position: Neutral impact "	
response	Noted.	

Proposed amendments - CS-26 - CS 26.160

p. 9

comment	62	comment by: <i>FNAM</i>
	FNAM comments:	
	"Terminology correction and modification of points.	
	Position: Neutral impact "	
response	Noted.	

Proposed amendments - CS-26 - CS 26.170

p. 9

comment	63	comment by: <i>FNAM</i>
	FNAM comments:	
	"Terminology correction and modification of points.	
	Position: Neutral impact "	
response	Noted.	

Proposed amendments - CS-26 - CS 26.200

p. 9

comment	64	comment by: <i>FNAM</i>
	FNAM comments:	
	"Terminology correction and modification of points.	
	Position: Neutral impact "	
response	Noted.	



Proposed amendments - CS-26 - CS 26.201

p. 9-10

comment

3

comment by: PP

48 hours hard to realize in "on-demand-charter" operations. There are lots of operators even in NCC operations that don't operate from base-2-base (with mx-techs available).

What if there's no certified systems (no STC) and schedule doesn't permit (no pilot-action, needs certified maintenance personnel).

response

Noted.

An interval greater than 48 hours may be used if it can be substantiated and agreed by the competent authority. If this interval is exceeded, the operator shall ensure that the airworthiness of the tyres is restored in compliance with the ICAs before the next flight.

comment

10

comment by: The Boeing Company

Paragraph 3.1, AMC 25.733(f) (page 5), and Paragraph 3.3, CS 26.201 (page 9)

The proposed text states:

(None)

REQUESTED CHANGE:

We suggest adding these statements.

“ ‘Conditions requiring flight crew awareness and response’ are non-normal tyre inflation pressure conditions in which one or more tyre failures could be reasonably expected to occur during the current flight cycle.

‘Appropriate phases of flight’ for flight crew alerting should include those when the airplane is on the ground and either stopped or moving at a speed not exceeding that above which the recommended flight crew procedure is to continue takeoff in the event of tyre failure. Flight crew alerting may also be provided when the airplane is in the air if specific flight crew procedures are provided for landing with low tyre pressure.

Tyre pressure monitoring system alerts should comply with the requirements of CS 25.1322.”

JUSTIFICATION: Non-normal tire inflation pressure conditions requiring flight crew awareness and response are those in which the inflation pressure of one or more tires is sufficiently low that those tire(s) and/or tire(s) installed on the same axle could be reasonably expected to fail within the current flight cycle.

Alerts requiring flight crew awareness and response should be provided to the flight crew only when they are actionable (i.e., the airplane is on the ground, or in air if specific flight crew procedures are provided for landing with low tire pressure) and will not result in undesirable flight crew action (i.e., rejected



takeoff at high speed when the appropriate flight crew response to tire failure is continued takeoff).

Conditions that would not be expected to result in tire failure during the current flight cycle, e.g., tire inflation pressure slightly below the minimum serviceable inflation pressure that may initiate long-term fatigue damage to the tire and which, if the tire is left installed for a number of subsequent flight cycles, may result in eventual tire failure, should be communicated via status message for subsequent maintenance action. Such conditions do not require flight crew response. Requiring alerting for such conditions would be expected to result in nuisance alerts and schedule interruptions, e.g., due to decreases in tire inflation pressure with ambient temperature when flying from a hot to a cold location. CS 25.1322 should be referenced to ensure that alerts provided by tire pressure monitoring systems are consistent with other flight crew alerts and meet the requirements of CS 25.1322.

response First proposal on 'Conditions requiring flight crew awareness and response': Not accepted. This aspect is already encompassed in the definition of 'minimum serviceable inflation pressure'.

Second proposal on 'Appropriate phases of flight for flight crew alerting': Not accepted. CS 25.1322 applies, and it is not necessary to discuss the details of the alert in this AMC.

Third proposal on referencing CS 25.1322: Accepted. The reference has been added in AMC 25.733(f)(2) within the option for a system that alerts the flight crew.

comment 13

comment by: *The Boeing Company*

Paragraph 3.1, AMC 25.733(f) item 2 (page 5), and Paragraph 3.3, CS 26.201(b) (page 9)

THE PROPOSED TEXT STATES:

"This substantiation should at least include an analysis of the expected loss of tyre pressure during operation, taking into account the environmental and operational factors."

REQUESTED CHANGE:

"This substantiation should at least include an analysis of the expected loss of tyre pressure during operation, taking into account the environmental and operational factors, including the potential for pressure loss at a rate that exceeds normal diffusion resulting from damage to or degradation of the tyre/wheel assembly."

JUSTIFICATION: While statistical service data have historically been presented by operators in an attempt to justify an extended tire pressure check interval, such datasets have often been limited to populations of undamaged tire/wheel assemblies losing pressure at normal diffusion rates. The survey data in paragraph 4.1.2.5 of the NPA shows that tire and wheel defects account for a substantial portion of tire under-inflation cases. The rate of pressure loss of a damaged or degraded tire/wheel assembly in which pressure retention integrity



is compromised will exceed the normal rate of diffusion. Substantiating service data used to extend the tire pressure check interval beyond 48 elapsed clock hours should account for tire/wheel assemblies that are losing pressure at higher than normal rates.

response Accepted.

comment 15

comment by: *The Boeing Company*

Paragraph 3.1, AMC 25.733(f) item 3 (page 5), and Paragraph 3.3, CS 26.201(c) (page 9)

The proposed text states:

“If an on-board tyre pressure monitoring system is installed, its development assurance level should be commensurate with the potential consequences of an alert not being provided, as well as with the consequences of false alerts. If the system includes the indication of tyre pressure levels, the consequence of a false indication should also be taken into account. The assessment of these consequences should include the effects of the failure of one or more tyres (including simultaneous tyre failures) that may be caused by the operation of the aeroplane with under-inflated tyres.”

REQUESTED CHANGE:

“If an on-board tyre pressure monitoring system is installed and compliance is shown with [CS 25.733(f)(2) / Part-26 26.201(b)] then the system should be shown to provide equivalent or greater likelihood of indicating a low tyre pressure condition as a manual tyre pressure check performed at a suitable time interval, its development assurance level should be commensurate with the potential consequences of an alert not being provided, as well as with the consequences of false alerts. If the system includes the indication of tyre pressure levels, the consequence of a false indication should also be taken into account. The assessment of these consequences should include the effects of the failure of one or more tyres (including simultaneous tyre failures) that may be caused by the operation of the aeroplane with under-inflated tyres.”

JUSTIFICATION: The requirement to assess the severity of failure conditions to which a system contributes, and the assignment of development assurance level (DAL) to system functions commensurate with that severity, is addressed by CS/AMC 25.1309(b). Additionally, the hazard level related to tire failure in particular is addressed by CS/AMC 25.734.

DAL assignment is performed under the safety analysis process for evaluating functions. DAL assignment to system functions (FDAL) and items (IDAL) is a top-down process. The safety analysis process includes validation of the appropriate IDALs for the lower-level items that contribute to the top-level FDAL, per AMC 25.1309 references ARP4754A para. 5.2 and ARP4761 Appendices B and D. Consideration should be given to creation of an ETSO for tire pressure monitoring systems that classifies the failure conditions for the ETSO applicant, facilitating DAL assignment. Presence of failure condition classification in the ETSO would



limit how the type certificate holder installs the equipment and shows compliance to CS 25.1309, using data from the ETSOA. An example of this approach can be found in ETSO-C145.

Inclusion of the proposed paragraphs, and in particular their broad applicability even when compliance is shown with [CS 25.733(f)(1) / Part-26 26.201(a)] (i.e., even when the ICA/AMP require that tire inflation pressure checks be performed at a suitable time interval), may have the unintended consequence of reducing the number of airplanes on which an on-board TPMS is installed if a high DAL becomes a prerequisite for such installation. An on-board TPMS that provides equivalent or greater likelihood of indicating a low tire pressure condition as a manual tire pressure check performed at a suitable time interval should satisfy the stated objectives of this NPA.

If the requested change is not incorporated, then at a minimum the proposed paragraphs should be clearly shown as applicable only when compliance is shown to the proposed [CS 25.733(f)(2) / Part-26 26.201(b)]. This will allow installation of existing tire pressure monitoring systems as long as compliance is shown with [CS 25.733(f)(1) / Part-26 26.201(a)], i.e., the ICA/AMP require that tire inflation pressure checks be performed at a suitable time interval.

response

Noted.

CS 25.733(f)(2) and point 26.201(b) of Part-26 have been amended to be more performance-based and less restrictive with regard to the options available to the applicant. The amended text requires operators to minimise the risk that a tyre is below its minimum serviceable inflation pressure during operation. The acceptable means of compliance provides options that include tyre pressure monitoring systems alerting the flight crew.

A general statement on the DAL is maintained and is applicable to any system used to show compliance. It is not EASA's intent to specify a certain DAL level. The DAL level will be agreed as a function of the characteristics of the system proposed, and how it is used when demonstrating compliance with the objective of CS 25.733(f)(2) or point 26.201(b) of Part-26.

comment

18

comment by: *The Boeing Company*

Paragraph 3.3, CS 26.201(b) (page 9)

THE PROPOSED TEXT STATES:

"The time interval does not exceed the value provided by the type certificate holder in the instructions for continued airworthiness."

REQUESTED CHANGE:

~~"The time interval does not exceed the value provided by the type certificate holder in the instructions for continued airworthiness."~~

JUSTIFICATION: CS 26.201(b) provides guidance for an operator to substantiate a tire pressure check interval longer than 48 elapsed clock hours. When specified by the type certificate holder's ICA, a tire pressure check interval that does not exceed 48 elapsed clock hours provides a baseline for safe tire operation across a



diverse base of operators with varied maintenance programs. However, some operators may be able to substantiate a longer interval based on their specific maintenance program and service experience. Removing this sentence would facilitate improved operational flexibility for such operators.

response Not accepted.
EASA considers that the ICA interval should not be exceeded. The purpose of this rulemaking task is to prevent unreasonable intervals being used.

comment 26 comment by: FAA

Page Number	Paragraph Number	Referenced Text	Comment/Rationale or Question	Proposed Resolution
9		26.601(b)	The guidance in the AMC states, "Checks should be conducted daily in order to ensure that the elapsed clock time between two consecutive tyre inflation pressure checks does not exceed 48 hours. Time intervals longer than 48 hours may be used if they are substantiated and agreed by EASA." The guidance in the AMC should explain why 48 hours between two consecutive tyre inflation pressure checks was selected as the limit. The rationale for the 48 hour time interval is necessary to provide guidance to consider when substantiating time intervals longer than 48 hours.	Add an explanation for the basis of the 48 hours interval limit between two consecutive tyre inflation pressure checks.
9		26.201(b)	The word "on-board" is unnecessarily prescriptive. The rule addresses the safety concern with the word "on-board" removed in 25.733(f)(2) and	Remove the word "on-board" from CS 25.733(f)(2) and CS 26.201(b).



			26.201(b), and throughout the rule and AMC. The updated rule language would be "installing a tyre pressure monitoring system that alerts the flight crew whenever a tyre inflation pressure is below the minimum serviceable inflation. pressure." This updated language addresses the safety concern of alerting the flightcrew when tire pressures are below the minimum serviceable inflation.	
9		CS 26.201 Tyre inflation pressure	CS 26.201, states: "Compliance with point 26.201 of Part-26 is demonstrated by complying with CS 25.733(f) or its equivalent, or with the following:..." but the items that follow are not a separate means to comply.	Based on the information currently included in the parts that follow the statement [(a), (b), and (c)], recommend change statement to: "Compliance with point 26.201 of Part-26 is demonstrated by complying with CS 25.733(f) or its equivalent, accounting for the following..." or "...considering the following..."
	9 Book 1	CS 26.201(c)	The development assurance level (DAL) of on-board tire pressure monitoring systems currently installed on transport airplanes may not account for the failure of one or more tires (including simultaneous tire failures) that may be caused by the operation of the airplane with under-inflated tires. We agree that the standards	We recommend EASA add the statement "Tyre pressure monitoring systems installed prior to issuance of CS 25.733(f) may be used without reevaluation of the design provided that the system alerts the flight crew whenever a tyre inflation pressure is below the minimum serviceable



			<p>in new CS 25.733(f) are acceptable for future design approvals; however, we consider that existing airplane designs that have previously approved TPMS systems installed should continue to be considered acceptable, provided that the installed TPMS alerts the flight crew whenever a tire inflation pressure is below the minimum serviceable inflation pressure and the monitoring system has a proven in-service reliability.</p>	<p>inflation pressure and the monitoring system has a reliable in-service history" immediately following the statement "The assessment of these consequences includes the effects of the failure of one or more tyres (including simultaneous tyre failures) that may be caused by the operation of the aeroplane with under-inflated tyres."</p>
--	--	--	--	---

response Items 1 and 2: please refer to response to comment 25.
 Item 3: Partially accepted. Point 26.201 of Part-26 has been revised to provide a performance-based rule, and CS 26.201 has been revised to provide acceptable means of compliance. The way CS 26.201 has been revised should address this comment.
 Item 4: Partially accepted. The credit taken from a tyre pressure monitoring system should be commensurate with its design assurance level.

comment

48 ❖ comment by: AIRBUS

General comment on Part-26 / CS-26

Comments

It is proposed to delete point 26.201 of Part-26.

Rationale

The CS25.733 intent to make the link between the Initial Type Certificate of an Aircraft and its associated ICA with no intention to mandate the tyre pressure inspection is agreed by Airbus. However, the introduction of point 26.201 with the intention to make a similar link to the already flying aircraft cannot be agreed. Indeed, contrary to FAR26 which applies to the TCH, Part-26 and CS-26 apply to the operators and require them to integrate the tyre pressure inspection in the AMP. By doing so, EASA is making this inspection a mandatory inspection applicable to all flying aircraft including those which will in the future comply with CS25.733.



	<p>Therefore, Airbus proposes to remove the Point 26.201 and requires EASA to find another means to ensure the tyre inspection is introduced in the ICA of already flying aircraft with no use of the Part-26/CS-26. Otherwise, there is a lack of consistency within the NPA between the CS25.733 and the CS26.201.</p> <p>Therefore, all comments associated with the Part-26/CS-26 content will not be provided to EASA and kept for further discussion (together with additional comments on CS25) in case EASA rejects the proposal to remove the point 26.201.</p>	
response	Please refer to the response to comment 48.	
comment	65	comment by: <i>FNAM</i>
	<p>FNAM comments:</p> <p>"Terminology correction and modification of points.</p> <p>Position: Neutral impact "</p>	
response	Noted.	
comment	89	comment by: <i>Airlines for America</i>
	<p>Paragraphs</p> <p>3.3</p> <p>Ref to CS 26.201 (b), para 2 ('Suitable time interval')</p> <p>The paragraph with reference to daily tyre pressure checks may apply to airliners that are constantly in operation, but may not apply to business jets, for example. Although the next paragraph would allow substantiation for intervals longer than 48h, the ICA development process is not recognized. Suggest the paragraph to read: 'For aircraft in daily operation Tyre inflation pressure checks are recommended to be performed every day of operation. The Type certificate Holder instructions for continued airworthiness process shall identify the most effective interval for the tyre pressure check taking into account environmental and operational factors. For aircraft not in daily operation, the check should be conducted no more than 48 hours before flight unless a longer period is substantiated and agreed by EASA.</p> <p>Time intervals longer than 48 hours may be used if they are substantiated and agreed by EASA. This substantiation should at least include an analysis of the expected loss of tyre pressure during operation, taking into account the environmental and operational factors. If available, statistical data related to pressure losses gathered from the service experience of aeroplanes equipped with equivalent wheel designs should also be used.'</p>	
response	<p>Not accepted.</p> <p>The recommended pressure check interval should only be established in order to ensure the airworthy condition of the tyre. Whether an aeroplane flies regularly or not is an operational factor. If the aeroplane does not fly regularly, the operator must decide between either servicing the tyres regularly (to ensure that the pressure</p>	

remains above the minimum serviceable pressure), or taking appropriate actions to return the tyres to an airworthy condition after the pressure level has dropped below the minimum serviceable pressure.

comment

90

comment by: *Airlines for America***Paragraphs**

3.3

26.201, last paragraph

The text as written implies that a maintenance task must be created to ensure the OBTMPS calibration. The need for a task is technological and architectural-dependent and the normal TCH ICA development process shall be used to identify the most effective task, if needed. Other processes that may be conducted as a design change for in-service aircraft, such as the System Safety process will also evaluate the criticality and the eventual need of an airworthiness limitation such as a Certification Maintenance Requirement (CMR).

'The Type certificate Holder instructions for continued process shall consider the operating environment, OBTMPS technology and architecture to evaluate the most effective instructions to continued airworthiness to maintain the OBTMPS airworthy throughout the life of the aircraft.'

response

Partially accepted.

The wording has been revised to state that ICA should be provided to ensure that the system calibration is maintained.

comment

102

comment by: *Gulfstream Aerospace Corporation***Section, Page**

Section 3.3, Book 1, Subpart B, CS 26.201(b), page 9

Highlighted text:

"These checks should be conducted daily in order to ensure that the elapsed clock time between two consecutive tyre inflation pressure checks does not exceed 48 hours. Time intervals longer than 48 hours may be used if they are substantiated and agreed by the competent authority. This substantiation at least includes an analysis of the expected loss of tyre pressure during operation, taking into account environmental and operational factors. If available, statistical data related to pressure losses gathered from the service experience of aeroplanes equipped with equivalent wheel designs is also used. The substantiation is made in cooperation with the tyre manufacturer(s). The time interval does not exceed the value provided by the type certificate holder in the instructions for continued airworthiness."

Comment

This paragraph may apply to airliners that are constantly in operation, but may not apply to business jets, for example. Although the next paragraph would allow substantiation for intervals longer than 48h, the ICA development process is not recognized.



response	<p>Suggested Changes Suggest revising the paragraph to read: “Tyre inflation pressure checks are recommended to be performed every day of operation. The Type Certificate Holder Instructions for Continued Airworthiness process shall identify the most effective interval for the tyre pressure check taking into account environmental and operational factors.”</p> <p>Not accepted. The recommended pressure check interval should only be established in order to ensure the airworthy condition of the tyre. Whether an aeroplane flies regularly or not is an operational factor. If the aeroplane does not fly regularly, the operator must decide between either servicing the tyres regularly (to ensure that the pressure remains above the minimum serviceable pressure), or taking appropriate actions to return the tyres to an airworthy condition after the pressure level has dropped below the minimum serviceable pressure.</p>
comment	<p>103 comment by: <i>Gulfstream Aerospace Corporation</i></p> <p>Section, Page Section 3.3, Book 1, Subpart B, CS 26.201, last paragraph, page 10</p> <p>Highlighted text: “Tasks are included in the aeroplane maintenance programme (taking into account the instructions for continued airworthiness provided by the design approval holder) to ensure that the tyre pressure monitoring system is calibrated at an appropriate time interval.”</p> <p>Comment The text as written implies that a maintenance task must be created to ensure the OBTMPS calibration. The need for a task is technological and architectural-dependent and the normal TCH ICA development process shall be used to identify the most effective task, if needed. Other processes, such as the System Safety process will also evaluate the criticality and the eventual need of an airworthiness limitation such as a Certification Maintenance Requirement (CMR).</p> <p>Suggested Changes Suggest revising the paragraph to read: “The Type Certificate Holder Instructions for Continued Airworthiness process shall consider the operating environment, OBTMPS technology and architecture to evaluate the most effective instructions to continued airworthiness to maintain the OBTMPS airworthy throughout the life of the aircraft.”</p>
response	<p>Partially accepted. The wording has been revised to state that ICA should be provided to ensure that the system calibration is maintained.</p>

Proposed amendments - CS-26 - CS 26.400	p. 10
--	-------

comment	<p>66 comment by: <i>FNAM</i></p>
---------	--



response	FNAM comments: "Terminology correction and modification of points. Position: Neutral impact "
	Noted.

Proposed amendments - CS-26 - GM1 26.156(a) p. 10

comment	67	comment by: <i>FNAM</i>
response	FNAM comments: "Terminology correction and modification of points. Position: Neutral impact "	
	Noted.	

4. IA - 4.1 What is the issue p. 11-22

comment	19	comment by: <i>The Boeing Company</i>
response	Paragraph 4.1.1.3.iii)(1) (page 15) THE PROPOSED TEXT STATES: "...multiple tyre bursts, on different axles, which can be a consequence of operation with an under-inflated tyre." REQUESTED CHANGE: "...multiple tyre bursts, on different axles, which can be a consequence of operation with an multiple under-inflated tyres." JUSTIFICATION: This change is recommended to clarify that multiple tire failures on different axles resulting from tire under-inflation is a potential result of operation with multiple under-inflated tires rather than with a single under-inflated tire.	
	Noted. This correction is acceptable and will be taken into account for the explanatory note of the ED Decision, but the NPA will not be re-published. Please note that AMC25.734 also assumes that the companion axle fails as a cascading consequence of the first tyre failure, implying more than one tyre failure from a single under-inflation.	

comment	69	comment by: <i>Bombardier Aerospace</i>
---------	----	---



	<p>1) Bombardier agrees with the general guidelines around tyre good practices of regular maintenance and pressure checks. However, it is not clear from the data gathered by EASA that there is enough statistical evidence of under-inflated tyre-related accidents to justify regulating further in this area. It is to be noted that the airplanes involved in such severe accidents, as reported by EASA, may 'not be in compliance' with the equivalent of JAA TGM/25/8 or the most recent CS25.734, which in Bombardier's belief, have significantly enhanced aircraft safety with respect to the threat of tyre failures.</p>
response	<p>Noted.</p> <p>The impact assessment concluded that mandating a system such as a TPMS may indeed not be supported by the review of accidents and serious incidents. However, occurrences involving tyre failures concern all generations of aeroplanes, and their number justifies acting to improve the situation. The proposal is considered balanced and proportional to the risk at stake.</p>
comment	<p>91 comment by: <i>Airlines for America</i></p> <p>Paragraphs Impact assessment</p> <p>No changes proposed</p> <p>General Comments:</p> <p>The text provides the basis on which EASA decided to introduce the changes to CS 25 and CS 26. It serves little value to comment if the conclusion meets with the approval of large aircraft manufacturers and operators. However, it does seem that too much importance is placed on in-service experience from small aircraft that might well lead to changes to CS 23 but do not in themselves justify a change to CS 25. Para 4.1.2.6 highlights accidents to a NA.265 Sabreliner and a Learjet 60, both being aircraft types outside the scope of the proposed rule change.</p> <p>Furthermore, the severity of the consequences of tyre failure appear to have reduced on more modern designs since much of the justification for the need to take action is based on accidents / incidents on aircraft types that are either no longer in service (DC-8, 1-11, B707) or that are approaching the end of their commercial service (B757, B767, MD88). A stronger case would have been made if data had been analysed after 2010 (date of last occurrence mentioned in Appendix 7.1 and 7.2.). For the validity of the EASA requirement, the reader must assume that the rate of tyre failures due to under-inflation has not improved during the past decade.</p>
response	<p>Not accepted.</p> <p>No credit has been taken in the impact assessment from the fatal accident to N/A-265 (XA-TFL) in Culiacán (Mexico), as it belongs to the list of accidents where the root cause for the tyre failure is unknown.</p> <p>On the other hand, the accident to the Learjet 60, N999LJ, has been fully taken into account in the impact assessment, and this aeroplane falls into the CS-25 category.</p>

The following types are included in the list of accidents and serious incidents where an inadequate tyre inflation pressure was found to be a root cause: A319, A340, B737, B747.

Other contemporary types have been involved in tyre failures where no data was available to conclude on the reason of the tyre failure; however inadequate inflation is probably involved in a portion of these events.

4. IA - 4.2. 4.3. How it could be achieved - options

p. 22-24

comment

30 ❖

comment by: AIRBUS

Page 1: Executive Summary
 Page 4: Para 2.3, 5th line
 Page 5: Para 3.1. CS 25.733 Tyres. (f)(2)
 Page 6: Para 3.1 – last line
 Page 24: Table 1. Option 3, 4 and 5

Comments

These pages all refer to a tyre pressure monitoring system that alerts the flight crew in the case of a tyre with an unsafe pressure.

It is proposed that the words ‘alerts the flight crew’ are deleted and are replaced by ‘provides an alert’.

Rationale

Industry is currently examining the introduction of Integrated Aircraft Health Management concepts in which an Aircraft Health Monitoring capability would permit an alert to be sent to a ground station for action by maintenance engineers. While this may not yet have been approved it is considered wise not to exclude this option by suggesting that the only alternative to the scheduled tyre pressure check is a TPMS that alerts the flight crew.

response

Please refer to the response to comment No 30.

comment

92

comment by: Airlines for America

Paragraphs 4.3

On page 23, there is a statement ‘It would also be mandatory for operators to comply with this maximum time interval value’.

This seems incorrect unless either EASA issue an AD or the task is identified by the TCH/DAH as an Airworthiness Limitation in compliance with Appendix H25.4.

response

Noted.

Although the ICA may not be mandatory on their own, the aeroplane maintenance programme shall comply with the ICA, as required under point M.A.302(d) of Part-M



of Regulation (EU) No 1321/2014, unless alternative instructions are approved by the competent authority.

comment

104

comment by: *Gulfstream Aerospace Corporation***Section, Page**

Section 4.3, Table 1, Option No 1,
Description column, page 24

Highlighted text:

“Amend CS-25 to require new applicants to provide in the ICA a tyre pressure check procedure that is scheduled at a suitable time interval (i.e. daily, or at another substantiated interval).”

Comment

This proposal does not reflect the possibility to use an OBTPMS.

Suggested Changes

Proposes the following changes:

“Amend CS-25 to require new applicants to provide in the ICA a tyre pressure check procedure that is scheduled at a suitable time interval (i.e. daily, or at another substantiated interval) to be performed by the maintenance crew, or a system that provides tyre inflation pressure in the flight deck to be checked prior to dispatch.”

response

Not accepted.

The pressure check may indeed be performed either by a certified system informing the flight crew or by maintenance staff. But this does not change the purpose of this option, which is to ensure that a check is performed at a certain time interval.

comment

105

comment by: *Gulfstream Aerospace Corporation***Section, Page**

Section 4.3, Table 1, Option No 2,
Description column, page 24

Highlighted text:

“Option 1 + amend the Part-26/CS-26 rule to require all existing operators of large aeroplanes to implement in the aeroplane maintenance programme (AMP) a tyre pressure check task at a suitable time interval (i.e. daily, or at another substantiated interval).”

Suggested Changes

Suggest revising the sentence to read:

“Option 1 + amend the Part-26/CS-26 rule to require all existing operators of large aeroplanes to implement in the aeroplane maintenance programme (AMP) a tyre pressure check task at a suitable time interval (i.e. daily, or at another substantiated interval) *to be performed by the maintenance crew, or a system that provides tyre inflation pressure in the flight deck to be checked prior to dispatch.*”

response

Not accepted.



The pressure check may indeed be performed either by a certified system informing the flight crew or by maintenance staff. But this does not change the purpose of this option, which is to ensure that a check is performed at a certain time interval.

4.IA - 4.5.1. Cost-benefit analysis (CBA)

p. 26-38

comment 20 comment by: *The Boeing Company*

Paragraph 4.5.1.2 (page 36)

THE PROPOSED TEXT STATES:

"...it is also visible from Figure 9 that only two cases..."

REQUESTED CHANGE:

"...it is also visible from Figure 9 [11](#) that only two cases ..."

JUSTIFICATION: The relevant figure should be referenced.

response Accepted.

comment 21 comment by: *The Boeing Company*

Paragraph 4.5.1.2 (page 36)

THE PROPOSED TEXT STATES:

"Furthermore, Figure 9 shows that requiring the installation..."

REQUESTED CHANGE:

"Furthermore, Figure 9 [11](#) shows that requiring the installation ..."

JUSTIFICATION: The relevant figure should be referenced.

response Accepted.

comment 22 comment by: *The Boeing Company*

Paragraph 4.5.2 (page 38)

THE PROPOSED TEXT STATES:

"Figure 12 shows the variation of the non-discounted prevented fatalities..."

REQUESTED CHANGE:

"Figure ~~12~~ [14](#) shows the variation of the non-discounted prevented fatalities..."

JUSTIFICATION: The relevant figure should be referenced.



response Accepted.

comment 70

comment by: *Bombardier Aerospace*

1) The CBA seems to significantly underestimate the cost of either option, which may have biased the intent for retrofit, for example. For basic CS25, the development and certification costs of any new system with cockpit indication is expected to far exceed those compiled in the CBA. As for the costs incurred by operators in performing a 'daily' tyre pressure check, while they may already be embedded in existing maintenance costs of large commercial operators - likely supported by overall cost benefits of good tyre maintenance - they would prove prohibitive to single privately-owned business jet operators, who operate under a completely different business model.

response

Noted.
The cost-benefit analysis was based on the responses received to the questionnaires sent to the industry.
Furthermore, the NPA proposal does not mandate a daily pressure check.

comment

106

comment by: *Gulfstream Aerospace Corporation*

Section, Page

Section 4.5.1.2, Table 4, Option No 1,
Description column, page 31

Highlighted text:

"Amend CS-25 to require new applicants to provide in the ICA a tyre pressure check procedure that is scheduled at a suitable time interval (i.e. daily, or at another substantiated interval)."

Comment

This proposal does not reflect the possibility to use an OBTPMS.

Suggested Changes

Proposes the following changes:

"Amend CS-25 to require new applicants to provide in the ICA a tyre pressure check procedure that is scheduled at a suitable time interval (i.e. daily, or at another substantiated interval) to be performed by the maintenance crew, or a system that provides tyre inflation pressure in the flight deck to be checked prior to dispatch."

response

Not accepted.
The pressure check may indeed be performed either by a certified system informing the flight crew or by maintenance staff. But this does not change the purpose of this option, which is to ensure that a check is performed at a certain time interval.

comment

107

comment by: *Gulfstream Aerospace Corporation*



Section, Page

Section 4.5.1.2, Table 4, Option No 2,
Description column, page 31

Highlighted text:

“Option 1 + amend Part-26/CS-26 rule to require all existing operators of large aeroplanes to implement in the aeroplane maintenance programme (AMP) a tyre pressure check task at a suitable time interval (i.e. daily, or at another substantiated interval).”

Suggested Changes

Suggest revising the sentence to read:

“Option 1 + amend the Part-26/CS-26 rule to require all existing operators of large aeroplanes to implement in the aeroplane maintenance programme (AMP) a tyre pressure check task at a suitable time interval (i.e. daily, or at another substantiated interval) *to be performed by the maintenance crew, or a system that provides tyre inflation pressure in the flight deck to be checked prior to dispatch.*”

response

Not accepted.

The pressure check may indeed be performed either by a certified system informing the flight crew or by maintenance staff. But this does not change the purpose of this option, which is to ensure that a check is performed at a certain time interval.

4.6. Conclusion

p. 44

comment

50

comment by: AIRBUS

Page 44, 4.6.1 Comparison of options

Comments

The overall conclusion to proceed with option 2 still seems to contradict the recommendations from both CAA & SAE A-5 committee to fit either onboard or off-board TPMS.

Could you please justify this contradiction beyond stating that the associated economic impact may be considered disproportionate regarding the magnitude of the safety risk?

response

Noted.

This paragraph reflects the outcome of the EASA analysis leading to the final NPA proposal after considering all the data and opinions available.

6. References

p. 47

comment

23

comment by: The Boeing Company



response	<p><i>Paragraph 6.3 (page 47)</i></p> <p>THE PROPOSED TEXT STATES: “FAA Advisory Circular (AC) 20-97B, issued on 18 April 2005 (‘Aircraft Tire Maintenance and Operational Practices’)”</p> <p>REQUESTED CHANGE: “FAA Advisory Circular (AC) 20-97B, Change 1, issued on 18 April 2005 11 September 2018 (‘Aircraft Tire Maintenance and Operational Practices’)”</p> <p>JUSTIFICATION: The latest issue of the Advisory Circular should be referenced.</p> <p>Accepted.</p>
comment	<p>24 comment by: <i>The Boeing Company</i></p> <p><i>Paragraph 6.3 (page 47)</i></p> <p>THE PROPOSED TEXT STATES: “FAA AC 145-4A, issued on 10 July 2006 (‘Inspection, Retread, Repair, and Alterations of Aircraft Tires’)”</p> <p>REQUESTED CHANGE: “FAA AC 145-4A, Change 2, issued on 10 July 2006 29 November 2018 (‘Inspection, Retread, Repair, and Alterations of Aircraft Tires’)”</p> <p>JUSTIFICATION: The latest issue of the Advisory Circular should be referenced.</p> <p>response Accepted.</p>

8. Quality of the document - technical quality

p. 60


comment	<p>108 comment by: <i>Gulfstream Aerospace Corporation</i></p> <p>Section, Page Section 8, page 60</p> <p>Comment This document presents many data points where tyre burst caused problems for the aircraft and claims under-inflation is "highly probably" as a causal factor. The fact remains that no data points are presented that link a measured low pressure as the actual cause. Most everyone reading this would agree that ensuring appropriate tyre pressure should be required, but it would make sense to have a study using dyno</p>
---------	--




	tested underinflated tyres to show actual data points where under-inflated tyres tend to burst more frequently.
response	Noted.



Appendix A - Attachments

 [FINAL MPIG EASA-NPA 2020-05 Comments \(Mr Mark LOPEZ\).pdf](#)
Attachment #1 to comment [#79](#)

 [G-CAO-20-100590 Gulfstream Comments on EASA NPA 2020-05 - signed \(L. ANDERSON\).pdf](#)
Attachment #2 to comment [#109](#)

