European Union Aviation Safety Agency

Explanatory Note to Decision 2021/015/R

'Review of aeroplane performance requirements for air operations' *and* 'Regular update of CS-25'

CS-25 Amendment 27

RELATED NPA/CRD 2016-11 & Opinion 02/2019 (RMT.0296 (OPS.008(a))) & NPA/CRD 2020-11 (RMT.0673)

EXECUTIVE SUMMARY

The objectives of this Decision are to:

(a) reduce the number of large-aeroplane accidents and serious incidents where aeroplane performance is a causal factor, while harmonising the use of reported runway surface conditions in aeroplane performance assessments;

(b) reflect the state of the art in large-aeroplane certification by selecting non-complex, non-controversial, and mature items;

(c) address three safety recommendations (SRs) in the areas of turbopropeller vibrations and windshield systems; and

(d) better harmonise the Certification Specifications and Acceptable Means of Compliance for Large Aeroplanes (CS-25) with the corresponding related International Civil Aviation Organization (ICAO) Standards and Recommended Practices (SARPs) and Federal Aviation Administration (FAA) Advisory Circulars (ACs).

This Decision amends CS-25 to:

(a) upgrade the certification standards for computing take-off and landing performance (including at the time of arrival);

(b) require that turbopropellers on large aeroplanes are equipped with a vibration indication system;

(c) introduce acceptable means of compliance (AMC) on the investigation of propeller vibrations during descent to ensure that certain conditions are addressed;

(d) ensure that applicants fully define and control the material strength and other properties that are used in part fabrication methods, considering the unique, product-specific combinations of materials and/or processes, and/or methods of manufacture and assembly;

(e) ensure that applicants properly address windshield system failure conditions that may have structural effects; and

(f) update a reference table in AMC 25 Subpart H; introduce references to FAA AC 25-17A 'Transport Airplane Cabin Interiors Crashworthiness Handbook', and correct editorial errors.

The amendments are expected to:

— increase the current level of safety by addressing three SRs;

— improve harmonisation with the related FAA standards and ICAO SARPs on aeroplane performance assessment; and

— have some positive economic impacts and no social or environmental impacts.

Domain:	Flight operations — aeroplanes; design and production		
Related rules:	CS-25, Regulation (EU) No 965/2012 (Air OPS); Regulation (EU) No 139/2014 (ADR)		
Affected stakeholders:	Large aeroplane manufacturers; large aeroplane operators		
Driver:	Safety; efficiency/proportionality	**Rulemaking group:**	Yes (RMT.0296); no (RMT.0673)
Impact assessment:	Yes (RMT.0296); no (RMT.0673)	**Rulemaking Procedure:**	Standard

EASA rulemaking procedure milestones

RMT No	Start Terms of Reference	Public Consultation	Proposal to the Commission	Adoption by the Commission	Decision CSs, AMC, GM
RMT.0296	27.4.2015	NPA 2016-11 26.11.2020	Opinion 02/2019 22.2.2019	Regulation (EU) 2019/1387 6.9.2019	2021/Q4
RMT.0673	9.6.2015	NPA 2020-11 30.9.2016	N/a	N/a	2021/Q4

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1. About this Decision

The European Union Aviation Safety Agency (EASA) developed Decision 2021/015/R in line with Regulation (EU) 2018/1139[1] ('Basic Regulation') and the Rulemaking Procedure[2].

This rulemaking activity is included in the European Plan for Aviation Safety (EPAS) 2021-2025 under rulemaking task (RMT).0296 (OPS.008(a)) and RMT.0673. The scope and timescales of the tasks were defined in the related Terms of Reference (ToR) for RMT.0296 and RMT.0673.

EASA developed the *draft* text of this Decision (for RMT.0296 (OPS.008(a)) only, based on the input of Rulemaking Group (RMG) RMT.0296). All the interested parties were consulted through Notice of Proposed Amendment (NPA) and NPA 2016-11 (RMT.0296) and NPA 2020-11 (RMT.0673)[3].

On NPA 2016-11, 357 comments were received from all interested parties, including industry and national competent authorities (NCAs). 63 out of the 357 comments were related to the proposed amendments to the Certification Specifications and Acceptable Means of Compliance for Large Aeroplanes (CS-25). On NPA 2020-11, 44 comments were received from all interested parties, including industry and NCAs.

EASA reviewed the comments received during the public consultation on NPA 2016-11 with the support of Review Group (RG) RMT.0296. The comments received on NPA 2016-11 and EASA's responses to them were presented in Comment-Response Document (CRD) 2016-11. Based on the input from the consultation, EASA published Opinion No 02/2019 on 22 February 2019. The Opinion was addressed to the European Commission, which adopted Commission Implementing Regulation (EU) 2019/1387 on 6 September 2019[4] based on the Opinion. The comments received on NPA 2020-11 and EASA's responses to them are presented in CRD 2020-11[5].

EASA developed the *final* text of this Decision with the certification specifications (CSs) and acceptable means of compliance (AMC) based on the input of the public consultations, and for RMT.0296, also on the input of the RG. The Decision is published on the Official Publication[6] of EASA.

The major milestones of this rulemaking activity are presented on the cover page.

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1 Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (OJ L 212, 22.8.2018, p. 1) (https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1535612134845&uri=CELEX:32018R1139).

2 EASA is bound to follow a structured rulemaking process as required by Article 115(1) of Regulation (EU) 2018/1139. Such a process has been adopted by the EASA Management Board (MB) and is referred to as the 'Rulemaking Procedure'. See MB Decision No 18-2015 of 15 December 2015 replacing Decision 01/2012 concerning the procedure to be applied by EASA for the issuing of opinions, certification specifications and guidance material (http://www.easa.europa.eu/the-agency/management-board/decisions/easa-mb-decision-18-2015-rulemaking-procedure).

3 In accordance with Article 115 of Regulation (EU) 2018/1139 and Articles 6(3) and 7 of the Rulemaking Procedure.

4 Commission Implementing Regulation (EU) 2019/1387 of 1 August 2019 amending Regulation (EU) No 965/2012 as regards requirements for aeroplane landing performance calculations and the standards for assessing the runway surface conditions, update on certain aircraft safety equipment and requirements and operations without holding an extended range operational approval (OJ L 229, 5.9.2019, p. 1) (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R1387&qid=1633362678577).

5 https://www.easa.europa.eu/document-library/comment-response-documents

6 https://www.easa.europa.eu/official-publication

2. In summary — why and what

2.1. Why we need to change the CS/AMC & GM — issue/rationale

RMT.0296 (OPS.008(a)) 'Review of aeroplane performance requirements for air operations'

Accident investigations indicate that the standards for assessing and reporting on the runway surface condition are not globally harmonised. This is considered as a significant contributing factor to runway excursions, especially when the runway is wet or contaminated.

The standards for aeroplane performance calculations do not adequately cover all possible conditions of wet and contaminated runways, regarding the method used for assessing and reporting on the runway surface condition.

Therefore, the International Civil Aviation Organization (ICAO) amended several Standards and Recommended Practices (SARPs) in its Annexes 6, 8, 14, and 15, and developed extensive guidance material (GM) to introduce the following:

— a globally harmonised reporting format for the runway surface condition;

— airworthiness standards for aeroplane performance data that is necessary for assessing the aeroplane's landing distance at the time of landing; and

— operational provisions for the flight crew on aeroplane landing performance calculations and reporting on the runway condition.

Following the public consultation of NPA 2016-11, EASA issued on 22 February 2019 to the European Commission Opinion No 02/2019 that proposed to amend Regulation (EU) No 965/2012 ('Air OPS Regulation')[7] to introduce standards for:

— reporting on the runway surface condition;

— landing performance at the time of arrival; and

— a reduced required landing distance in commercial air transport (CAT) operations with certain categories of aeroplanes.

Regulation (EU) 2019/1387 of 1 August 2019 was published on 5 September 2019, amending the Air OPS Regulation 'as regards requirements for aeroplane landing performance calculations and the standards for assessing the runway surface conditions'.

As proposed in NPA 2016-11, the Certification Specifications and Acceptable Means of Compliance for Large Aeroplanes (CS-25) is amended to support the implementation of the Air OPS Regulation as amended by Regulation (EU) 2019/1387. This CS-25 amendment incorporates into EU rules the applicable ICAO SARPs on aeroplane performance assessment and is based on ICAO-harmonised descriptions of runway surface conditions.

The following three safety recommendations (SRs) were addressed to EASA on this subject (refer to NPA 2016-11 for more information):

[7] Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1) (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32012R0965&qid=1633418072782).

— European Action Plan for the Prevention of Runway Excursions (EAPPRE), Ref. 3.7.1: 'Establish and implement one consistent method of contaminated runway surface condition assessment and reporting by the aerodrome operator for use by aircraft operators. Ensure the relation of this report to aircraft performance as published by aircraft manufacturers.'

— EAPPRE, Ref. 3.7.3: 'It is recommended that aircraft operators always conduct an in-flight assessment of the landing performance prior to landing. Note: Apply an appropriate margin to the results.'

— Safety Recommendation (SR) UNKG-2008-076: 'The European Aviation Safety Agency should require operators to ensure that flight crews are provided with guidance material on aircraft performance when operating on a runway that is notified as 'may be slippery when wet', or has sections thereof notified as 'may be slippery when wet'.'

RMT.0673 'Regular update of CS-25'

Turbopropeller vibrations

(a) Vibration indication system: CS 25.1305(d)(3) requires 'An indicator to indicate rotor system unbalance' for 'turbojet-engine-powered aeroplanes' only.

The 'Bureau d'Enquêtes et d'Analyses pour la sécurité de l'aviation civil' (BEA), the French Safety Investigation Authority, investigated an incident to the aeroplane model ATR[8] 72-212A, registered as 9Y-TTC, dated 4 May 2014, which involved strong propeller vibrations encountered during descent. The final investigation report (published on 10 September 2019) found that alternative overloads resulted in the rupture of a trunnion pin of one of the blades and damage to the propeller blade actuator forward yoke plate. Six other similar incidents are mentioned in that BEA investigation report, which states the following in its Section 4.3 'Improvement of detection and quantification of propeller vibration':

'Airplanes equipped with turbojets are for the most part equipped with vibration detectors placed on each engine. The information on the levels of certain vibrations is sent to an indicator placed in the cockpit. This system alerts pilots when the vibration level exceeds the design limits and allows them to identify the engine concerned.

The regulations do not require that turboprop aircraft be equipped with them. ATR offers optional installation of accelerometers at both engines for maintenance purposes but the information provided by these sensors is not usable by the crews. In general, the vibrations generated in a turboprop / propeller assembly can sometimes be very different from those that propagate in the cockpit. Relying on what crews feel is not an effective way of identifying the engine or propeller concerned.

Consequently, the BEA recommends that:

EASA assess the benefit of imposing the installation of vibration level indicators for each propeller-engine assembly in the cockpits of commercial air transport aeroplanes equipped with turboprop engines. [Recommendation FRAN 2019-018]'

[8] 'Avions de transport régional' or 'Aerei da Trasporto Regionale': designation of the aircraft manufacturer in French and Italian respectively.

(b) Investigation of propeller vibration behaviour

The aforementioned BEA investigation report also analysed how the ATR 72-212A propeller vibrations were investigated for the certification of the aeroplane. Section 4.4 'Improvement of certification criteria' reads as follows:

'Certain choices and hypotheses meant that the tests carried out during the propeller certification campaign in 1994-1995 did not show certain phenomena observed during the flight tests in 2014 and 2016, in particular the friction at the blade root bearings (ball bunching) and the cyclic loads on the forward yoke plate of the propeller pitch change mechanism when the aeroplane is in descent at a speed close to VMO, with the power levers in the flight idle position.

The FAA circular currently in force and proposing an assessment method for the vibration stresses borne by a propeller during its certification, recommends incorporating descents with flight idle at various speeds in the flight test programme. Its systematic implementation at various speeds around VMO would allow the existence of vibration phenomena, such as that observed during tests in 2014 and 2016, to be checked for.

Consequently, the BEA recommends that:

EASA and the FAA impose that the initial certification of propellers includes the carrying out of an in-depth study of the actual vibration behaviour of each propeller in flight idle with speeds around VMO.

[EASA: Recommendation FRAN 2019-019]

[FAA: Recommendation 2019-034]'

Fabrication methods

Historically, the fabrication methods that were used to produce complex aviation products typically consisted in the mechanical assembly of parts with simple forms (e.g. complex structures were produced using mechanically fastened and formed metal sheets).

At present, the term 'fabrication method' means the manufacturing and assembly methods, taking into consideration materials and material processes. Integrated materials, processes, as well as manufacturing and assembly technologies have evolved, enabling the production of complex products with unique material properties and engineering properties. These properties, which are used to substantiate the design of a product and its compliance with the certification specifications (CSs), are determined by a specific combination of materials, processes, and manufacturing (or repair) methods. The CS-25 certification specifications and the related acceptable means of compliance (AMC) were not consistently amended to address the evolution of some technologies (e.g. castings and composites). However, EASA considers that the recent proliferation of new materials and new technologies for integrated material processes (e.g. advanced bonding, advanced alloys, new composite materials and processes, additive manufacturing) requires applicants to formally address, during certification, a potentially wider range of properties than those addressed through more conventional methods. Therefore, this was reflected in CS-25 to support the development of performance-based CSs and to

ensure compliance with point 21.A.31(a)(2) of Annex I (Part 21) to Regulation (EU) No 748/2012 ('Rules for Airworthiness and Environmental Certification')[9].

Windshield — Failure conditions that may have structural effects

On 14 May 2018, a serious incident occurred to an Airbus A319-133, registered as B-6419, in the vicinity of Chengdu in China. The right-hand windshield ruptured and was detached from the aeroplane, leading to rapid depressurisation. Fortunately, the two pilots had their safety belts fastened. Nevertheless, the co-pilot was instantly pulled away from his seat by the strong airflow caused by the opening in the fuselage, and then pushed himself back to his seat, suffering from minor injuries.

The investigation report (SWCAAC-SIR-2018-1) that was issued by the Chinese Civil Accident Investigation Authority (CAAC) concluded that the most probable cause of that serious incident was:

'the possible damaged sealants (weather seal or silicon seal) of B-6419 RH windshield and existing cavities inside the windshield lead to external moisture ingress and retention in the windshield lower periphery. Due to long-term immersion in wet condition, the insulation of the braid degraded, causing a continuous arc discharge in humid environment (located in the corner at the bottom left of the windshield), generating local overheating, which caused the windshield double layer structure glass plies to rupture. The windshield was unable to withstand the internal and external differential pressure of the cockpit after the rupture of the double layer structure glass plies, resulting in the RH windshield departing from the fuselage.'

The CAAC issued the following SR to EASA:

CHIN-2020-001: 'SWCAAC-ASR-2018-1-6 Recommends that EASA consider revision of AMC 25.775(d) [particularly section 7.c (6)] to require the relevant FHA/SSA, and their documentation, in order to evaluate the consequences of windshield heating system failures in terms of the structural integrity of the windshield and the potential subsequent effect(s) at aircraft level, including, as needed, the necessary testing to support and validate these evaluations. This recommendation also includes considering the practicality of updating AMC 25.775(d) Section 7.c (6) to extend the notion of transparency among the effects associated with loss of the windshield, rather than only to the loss of the heating function.'

Cabin safety — References to FAA AC 25-17A 'Transport Airplane Cabin Interiors Crashworthiness Handbook'

For harmonisation purposes and to reflect EASA certification practices, references to FAA AC 25-17A are introduced into the AMC to CS 25.801 'Ditching' and CS 25.1541 'General' (MARKINGS AND PLACARDS).

AMC 25 Subpart H 'Correlation with previous amendment of CS-25'

EASA identified and corrected errors in the references of the table that provides the correlation between CS-25 Subpart H and CS-25 Amendment 4.

[9] Commission Regulation (EU) No 748/2012 of 3 August 2012 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations (OJ L 224, 21.8.2012, p. 1) (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32012R0748&qid=1633425174469).

Editorial corrections

AMC 25.671 'Control Systems — General':

— a paragraph numbering error is rectified in paragraph 4; the last subparagraph is renumbered as 'q' instead of 'p'; and

— the duplicated word 'that' is removed from the first sentence of paragraph 6.

AMC 25.1309 'System Design and Analysis':

— in Appendix 3, subparagraph (b)(2), the correct quoting convention (single quotes '') is applied; and

— In Appendix 5, Table A5.1, the value of the probability in column 2 'Probability (per flight hour)', row '5' is corrected to read '5.000E-11' instead of '2.000E-11'.

2.2. What we want to achieve — objectives

The overall objectives of the EASA system are defined in Article 1 of the Basic Regulation. This Decision will contribute to achieving the overall objectives by addressing the issues outlined in Section 2.1.

The specific objectives of this Decision are, therefore, to:

(a) reduce the number of large-aeroplane accidents and serious incidents where aeroplane performance is a causal factor, while harmonising the use of reported runway surface conditions in aeroplane performance assessments;

(b) reflect the state of the art in large-aeroplane certification by selecting non-complex, non-controversial, and mature items;

(c) address three SRs in the areas of propeller vibrations and of windshield systems; and

(d) better harmonise CS-25 with the corresponding ICAO SARPs and FAA ACs.

2.3. How we want to achieve it — overview of the amendments

CS-25 is amended as follows:

(a) certification standards for the computation of take-off and landing performance, including at the time of arrival, are harmonised with ICAO SARPs and FAA AC 25-31 and AC 25-32) (note: FAA did not amend FAR 25 to introduce certification provisions equivalent to EASA certification specifications CS 25.1591 and CS 25.1592):

  — CS 25.1591 'Performance Information for Operations with Contaminated Runway Surface Conditions' is amended to limit its scope to 'take-off' performance; the 'slippery wet' condition is specified in addition to the other runway surface conditions;

  — AMC 25.1591 'The derivation and methodology of performance information for use when taking-off and landing with contaminated runway surface conditions' is amended to:

    — be harmonised in scope with the amended CS 25.1591;

    — update the definitions of the runway surface conditions, and harmonise the table of contaminant properties with ICAO SARPs and FAA ACs;

— introduce guidance on the use of contaminant depths during performance computations;

— introduce a factor to the aquaplaning speed when estimating the effect of aquaplaning on wheel-to-ground friction; and

— harmonise the wheel braking coefficient section with ICAO SARPs and FAA ACs;

— CS 25.1592 'Performance information for assessing the landing distance' is created to provide a standard on the performance information for assessing the landing distance, including for the landing performance assessment at the time of arrival, as required by Regulation (EU) 2019/1387 amending the Air OPS Regulation;

— AMC 25.1592 'The derivation and methodology of performance information for use when landing on slippery wet and contaminated runways to support the dispatch of a flight, and landing assessment performance at the time of arrival in all runway surface conditions', which is harmonised with ICAO SARPs and FAA ACs, is created to support applicants in determining the aeroplane performance information for landing:

— on slippery wet and contaminated runways, to be used by operators to support the dispatch of the aeroplane, and

— under all runway conditions, to be used for landing performance assessment at the time of arrival;

— AMC 25.1581 'Aeroplane Flight Manual' is amended to improve the aeroplane flight manual (AFM) landing distance information and introduce the concept of landing distance at the time of arrival; and

— AMC 25-13 'Reduced And Derated Take-Off Thrust (Power) Procedures' is amended to ensure that the definitions of runway surface conditions are consistent;

(b) CS 25.1305 'Powerplant instruments' is amended to require that not only turbojet but also turboprop large aeroplanes are equipped with a vibration indication system;

(c) AMC 25.907 'Propeller vibration' is created to incorporate FAA AC 20-66B 'Propeller Vibration and Fatigue' as an AMC, and recommend that the investigation of the actual vibration behaviour of each propeller should include operating conditions for descent, with the power levers at flight idle position and with speeds around maximum operating speed (V_{MO});

(d) it is ensured that the applicants fully define and control the material strength and other properties that are used in part fabrication methods, considering the unique, product-specific combinations of materials, and/or processes, and/or methods of manufacture and assembly:

— AMC 25.603 'Suitability and durability of materials' and AMC No 1 to CS 25.603(a) 'Suitability and durability of materials — Experience or tests' are created; AMC 25.603(b) 'Suitability and durability of materials — Approved material specifications' is amended; and AMC No 2 to CS 25.603(a) 'Suitability and durability of materials — Large glass items' is created (its content stems from the former AMC 25.603(a) 'Large glass items');

— CS 25.605 'Fabrication methods' is amended; AMC 25.605(a) 'Fabrication methods — Approved process specifications' and AMC 25.605(b) 'New fabrication methods — Test programme' are created; and

— AMC 25.613 'Material Strength Properties and Material Design Values' is amended;

(e) it is ensured that applicants properly address windshield system failure conditions that may have structural effects; AMC 25.775(d) 'Windshields and Windows' is therefore amended accordingly; and

(f) a reference table of AMC 25 Subpart H 'Correlation with previous amendment of CS-25' is corrected; references to FAA AC 25-17A 'Transport Airplane Cabin Interiors Crashworthiness Handbook' are introduced into AMC 25.801 'Ditching' and AMC 25.1541 'Markings and Placards — General', and editorial errors are corrected in AMC 25.671 'Control Systems — General' and AMC 25.1309 'System Design and Analysis'.

2.4. What are the stakeholders' views — outcome of the consultation

RMT.0296 (OPS.008(a)) 'Review of aeroplane performance requirements for air operations'

The proposed amendment to CS-25 was generally well received by stakeholders.

Some commenters highlighted slight differences between the definitions used by the FAA and the ones introduced into CS-25. However, EASA decided to harmonise those definitions with the ICAO SARPs.

Some commenters highlighted the need to include assumptions for deriving the landing distance in case of a steep approach. This proposal was incorporated into the final text of this Decision.

Other comments requested to include provisions to take credit of the airport operator's ability to improve the runway friction characteristics by means of special runway treatments. This aspect was addressed in the Regulation (EU) No 139/2014 (the 'Aerodromes (ADR) Regulation')[10] by introducing the concept of 'specially prepared winter runways'.

One commenter proposed to discard the -15 °C temperature criterion that is used to define the default value for compacted snow. This comment was not accepted and the temperature limit was kept as a conservative value until research or supporting data justifies an alternative solution.

Another commenter proposed to use the methodology of ESDU document 05011 'for performance of an aircraft tyre rolling or braking on dry or precipitate contaminated runways'. EASA considered the proposal but decided to wait for further testing to validate the methodology. However, outdated references to other ESDU documents in AMC 25.1591 'The derivation and methodology of performance information for use when taking-off and landing with contaminated runway surface conditions' were corrected.

Some commenters expressed their concern about the use of reverse credit for determining the landing distance at the time of arrival. These concerns were addressed during a specific consultation with certain manufacturers. An engine failure is considered during the landing flare for the computation of landing distance data for the dispatch of the aeroplane.

[10] Commission Regulation (EU) No 139/2014 of 12 February 2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 44, 14.2.2014, p. 1) (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014R0139&qid=1633444597710).

RMT.0673 'Regular update of CS-25'

The majority of the comments received on NPA 2020-11 (28 out of 44) concentrated on Item 3 'Fabrication methods'. 8 comments focused on Item 4 'Windshield — Failure conditions with structural effects', and 1 comment on Item 2 'Turbo-propeller vibrations'.

Overall, the comments requested to clarify or improve the proposed amendments and adjust some dedicated terminologies in 'Fabrication methods'.

The remainder of the comments were either neutral or supportive.

2.5. What are the benefits and drawbacks of the amendments

RMT.0296 (OPS.008(a)) 'Review of aeroplane performance requirements for air operations'

This CS-25 amendment will incorporate into EU rules ICAO SARPs, i.e. standards for the assessment of and reporting on the runway surface condition, airworthiness standards for landing performance computation at the time of arrival, in-flight assessment of landing performance at the time of arrival. The regulatory impact assessment (RIA) of NPA 2016-11 concluded that, overall, the proposed regulatory changes will:

— have a positive safety impact: over a 10-year period, the amendments are expected to prevent or mitigate 6.7 accidents and 15.6 serious incidents;

— incorporate into EU rules the adopted ICAO SARPs; and

— improve harmonisation between EU and US best practices (promoted in FAA ACs).

This CS-25 amendment will have no direct economic impact on large-aeroplane manufacturers, since providing aeroplane performance data to operators to comply with the CSs and AMC is either optional or required by the Air OPS Regulation. Furthermore, several large-aeroplane manufacturers already provide such aeroplane performance data to operators (as a standard or as an option) as they follow the Takeoff and Landing Performance Assessment Aviation Rulemaking Committee (TALPA ARC) recommendations.

The amendments are not expected to have any environmental or social impacts.

For more details, please refer to Chapter 4 'RIA' of NPA 2016-11.

RMT.0673 'Regular update of CS-25'

The amendments will update CS-25 to reflect the state of the art in large-aeroplane certification. Overall, this is expected to improve safety, have no social or environmental impacts, and bring economic benefits by streamlining the certification process.

3. How we monitor and evaluate the amended CSs

EASA will assess the implementation of this CS-25 amendment through the following:

— the experience gathered during CS-25 certification projects carried out after this amendment;

— the monitoring of the rules under the normal continuing-airworthiness process that is followed by EASA and type certificate holders (TCHs); and

— the investigation of occurrences and the analysis of SRs from designated safety investigation authorities.

In addition, for RMT.0296, the related Air OPS rules will also be monitored as provided for in Opinion No 02/2019 (see p. 27). In this monitoring, EASA may also consider data related to the operators' use of aeroplane performance data.

4. References

4.1. Related EU regulations

— Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1)

— Commission Regulation (EU) No 139/2014 of 12 February 2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 44, 14.2.2014, p. 1)

— Commission Regulation (EU) No 748/2012 of 3 August 2012 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations (OJ L 224, 21.8.2012, p. 1)

4.2. Related EASA decisions

Decision No. 2003/2/RM of the Executive Director of the Agency of 17 October 2003 on certification specifications, including airworthiness codes and acceptable means of compliance, for large aeroplanes ('CS-25')

4.3. Other reference documents

— European Action Plan for the Prevention of Runway Excursions (EAPPRE), Released Edition 1.0, January 2013

— FAA AC 25-32 — Landing Performance Data for Time of Arrival Landing Performance Assessments, 22 December 2015

— FAA AC 25-31— Takeoff Performance Data for Operations on Contaminated Runways, 22 December 2015

— ICAO Annex 6 to the Chicago Convention on International Civil Aviation, Operation of Aircraft, Part I — International Commercial Air Transport — Aeroplanes, 9th Edition, July 2010

— ICAO Annex 8 to the Chicago Convention on International Civil Aviation, Airworthiness of Aircraft, 11th Edition, July 2010.

— ICAO Annex 14 to the Chicago Convention on International Civil Aviation, Aerodromes, Volume I — Aerodrome Design and Operations, 6th Edition, July 2013

— SR CHIN-2020-001 — CAAC investigation report of a serious incident to Airbus A319-133, registered as B-6419, China, 14 May 2018

— SR FRAN-2019-018 and 019 — BEA investigation report of an incident to ATR 72-212A, registered as 9Y-TTC, operated by the Caribbean Airlines on 4 May 2014 at the top of descent to Piarco airport (Republic of Trinidad and Tobago)

— SR UNKG-2008-076 — Aircraft Accident Report 1/2009, Air Accidents Investigation Branch (AAIB), UK Department for Transport, 9 January 2009

5. Related documents

— Opinion No 02/2019 ‘Amendments to Regulation (EU) No 965/2012 as regards requirements for aeroplane performance, alternate power supply for cockpit voice recorders, in-flight recording for light aircraft, and non-ETOPS operations with performance class A aeroplanes that have a maximum operational passenger seating configuration of 19 or less’

— CRD 2016-11 ‘Review of aeroplane performance requirements for commercial air transport operations’, Appendix 4 to Opinion No 02/2019

— CRD 2020-11 ‘Regular update of CS-25’