European Union Aviation Safety Agency

Explanatory Note to ED Decision 2024/010/R

in accordance with Article 4(2) of MB Decision 01-2022

CS-26 Issue 5

Helicopter crash-resistant fuel systems

Information on cargo compartment fire protection capabilities

RMT.0710 AND RMT.0740 (SUBTASK 1)

EXECUTIVE SUMMARY

Commission Implementing Regulation (EU) 2024/2954 was adopted on 29 November 2024. This Regulation amends Commission Regulation (EU) 2015/640, on additional airworthiness specifications for a given type of operations, and its Annex I (Part-26) with respect to the following topics that EASA proposed in Opinion No 05/2024:

1. Helicopter crash-resistant fuel systems;
2. Information on cargo compartment fire protection capabilities;
3. Runway overrun awareness and alerting systems;
4. Conversion of Class D compartments;
5. Clarification of existing requirements, including some requirements related to ageing aeroplane structures.

The objective of this Decision is to provide means to show compliance with the new requirements introduced in Part 26 regarding topics 1 and 2 and related guidance material. This Decision also amends some existing means to show compliance with requirements amended in Part-26 regarding topic 5, and some related guidance material for consistency.

To achieve this objective this Decision amends CS-26.

Note: the existing means to show compliance with the amended requirements regarding topics 3 and 4 do not need to be amended.

ED DECISION TO BE AMENDED: ED Decision 2015/013/R 'CS-26 — Issue 1'

AFFECTED STAKEHOLDERS

Design organisation approval (DOA) holders; production organisation approval (POA) holders; aircraft operators; Member States' national competent authorities

WORKING METHODS

Development	Impact assessment(s)	Consultation
By EASA	RMT.0710: Detailed RMT.0740: Light	RMT.0710: NPA – Public RMT.0740: NPA — Focused

RELATED DOCUMENTS / INFORMATION

- ToR RMT.0710, issued on 16.12.2021
- RMT.0710: NPA 2022-10
- Opinion No 05/2024

ToR RMT.0740, issued on 11.4.2023
RMT.0740: NPA 2023-105

PLANNING MILESTONES: Refer to the latest edition of the EPAS Volume II.

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1. About this Decision

The European Union Aviation Safety Agency (EASA) developed the regulatory material in question in line with Regulation (EU) 2018/1139[1] (the Basic Regulation) and the Rulemaking Procedure[2], as well as in accordance with the objectives and working methods described in the Terms of Reference (ToR)[3,4].

The draft regulatory material was consulted in accordance with the ToR for this RMT:

— through NPA 2022-10[5] as regards the crash resistant fuel systems (RMT.0710);

— with the Advisory Bodies (ABs) through NPA 2023-105[6] as regards the information on cargo compartment fire protection capabilities (RMT.0740).

EASA reviewed the comments received and duly considered them for the preparation of the regulatory material presented here.

EASA published Opinion No 05/2024 on 21 June 2024, proposing amendments to Regulation (EU) 2015/640. Based on the Opinion the European Commission adopted Regulation (EU) 2024/2954 on 29 November 2024[7] amending that Regulation.

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) (http://data.europa.eu/eli/reg/2018/1139/oj).

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 01-2022 of 2 May 2022 on the procedure to be applied by EASA for the issuing of opinions, certification specifications and other detailed specifications, acceptable means of compliance and guidance material ('Rulemaking Procedure'), and repealing Management Board Decision No 18-2015 (EASA MB Decision No 01-2022 on the Rulemaking Procedure, repealing MB Decision 18-2015 (by written procedure) | EASA (europa.eu)).

3 ToR RMT.0710 - Improvement in the survivability of rotorcraft occupants in the event of a crash | EASA (europa.eu)

4 ToR RMT.0740 - Regular update of Regulations (EU) 748/2012 and (EU) 2015/640 and associated AMC&GM and CS-26 to transpose ICAO SARPs | EASA (europa.eu)

5 NPA 2022-10 - Improvement in the survivability of rotorcraft occupants in the event of a crash — Phase 1 – Crash resistant fuel systems | EASA (europa.eu)

6 NPA 2023-105 - Regular update of Regulations (EU) 2015/640 and (EU) No 748/2012 and associated AMC & GM, as well as of CS-26, to transpose ICAO SARPs - Information on cargo compartment fire protection capabilities| EASA (europa.eu)

7 Commission Implementing Regulation (EU) 2024/2954 of 29 November 2024 amending Regulation (EU) 2015/640 as regards the introduction of new additional airworthiness requirements (OJ L, 2024/2954, 2.12.2024) Implementing regulation - EU - 2024/2954 - EN - EUR-Lex

2. In summary — why and what

2.1. Why we need to act

2.1.1. RMT.0710 — crash-resistant fuel systems

In 1994, the Federal Aviation Administration (FAA) and the Joint Aviation Authorities (JAA) introduced certification requirements for crash-resistant fuel systems (CRFSs) for all newly certified helicopters.

In 2003, EASA incorporated those occupant protection certification requirements into the Certification Specifications for Small Rotorcraft (CS-27) and the Certification Specifications for Large Rotorcraft (CS-29) for all newly certified helicopters.

Helicopters that had been designed and certified before 1994 (prior to the establishment of EASA) were not required to meet the improved occupant protection requirements. This resulted in a mixed fleet of helicopters with some helicopters being compliant with the CRFS requirements and some not, depending on the certification year. The helicopters that are not compliant with the CRFS requirements have had an adverse effect on the overall safety of the European helicopter fleet due to the higher likelihood of a post-crash fire with associated fatalities. Moreover, derivative helicopter models that were certified after 1994 have not been required to comply with the latest CRFS requirements due to the 'changed product rule' (as described in point 21.A.101 of Annex I (Part 21) to Regulation (EU) No 748/2012[8] (the 'Initial Airworthiness (IAW) Regulation')) and the grandfather rights that were acquired after the initial type certificate (TC) for a design is issued. Currently, 60 % of the helicopter fleet in service in Europe are compliant with the requirements for occupant protection, mainly with regard to CRFSs.

Since 2011, nine safety recommendations (SRs) have been addressed to EASA on the need to improve the incorporation of CRFSs into newly manufactured helicopters and/or as a retroactive modification that can be installed onto the existing helicopter fleet.

In 2018, the FAA established the Aviation Rulemaking Advisory Committee (ARAC) Rotorcraft Occupant Protection Working Group (ROPWG) (with the participation of EASA) and published a set of recommendations for the application of design improvements for occupant protection including CRFSs.

Due to a decision by the US Senate and a law change as of April 2020, newly manufactured helicopters that are operated or registered in the United States (US) must be fully or partially compliant with the CFRS requirements.

Related safety issues

The following SRs, which were issued by designated safety investigation authorities[9], were considered for this RMT (for each of the SRs, the following information is provided: SR number, summary of the

[8] 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 (recast) (OJ L 224, 21.8.2012, p. 1) (http://data.europa.eu/eli/reg/2012/748/oj).

[9] Regulation (EU) No 996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation and repealing Directive 94/56/EC (OJ L 295, 12.11.2010, p. 35) (http://data.europa.eu/eli/reg/2010/996/oj).

SR/SR text, accident/incident aircraft type and registration, date and location of the accident/incident):

— Accident Robinson R44 VH-HWQ, 21 March 2013, Australia, (ASTL-2015-029) ATSB AO-2013-055-SR-029: 'The ATSB recommends that the European Aviation Safety Agency take action to increase the number of existing helicopters that are fitted with a crash-resistant fuel system or have an equivalent level of safety in respect of post-impact fire.'

— (ASTL-2015-030) ATSB AO-2013-055-SR-030: 'The ATSB recommends that the European Aviation Safety Agency take action to increase the number of helicopters manufactured in accordance with the 1994 certification requirements for helicopters to include a crash-resistant fuel system.'

— Accidents EC130B4 (N356AM), 6 March 2015, St. Louis, Missouri, and AS350B3e (N390LG) 3 July 2015, Frisco, Colorado, (UNST-2016-001) NTSB (two survivable accidents with serious injuries because of post-crash fires resulting from an impact-related breach in the fuel tank): 'Once Airbus Helicopters completes development of a retrofit kit to incorporate a crash-resistant fuel system into AS350 B3e and similarly designed variants, prioritize its approval to accelerate its availability to operators (A-16-11).'

— On 15 January 2014, the NTSB released the following recommendation (A-14-001): 'Require owners and operators of existing R44 helicopters to comply with the fuel tank retrofit advised in Robinson Helicopter Company Service Bulletin SB-78B to improve the helicopters' resistance to a post-accident fuel tank leak (A-14-001).'

— Loss of control, Robinson Helicopter Company R44 Astro, VH-HFH, on 4 February 2011, report AO-2011-06: No specific safety recommendation was published by the Australian Transport Safety Bureau (ATSB), but the bladder-type fuel tank retrofit was mentioned. Following the VH-HFH accident, on 9 March 2012, the ATSB issued safety advisory notice AO-2012-021-SAN-001 on R44 helicopter all-aluminium fuel tanks.

— Loss of control involving Robinson R44 helicopter, VH-COK, on 4 February 2012, report AO-2012-021, issued on 3 May 2013. The ATSB published recommendation AO-2012-021-SI-01 'Fitment of rubber, bladder-type fuel tanks to R44 helicopters'.

— Collision with terrain involving Robinson R44 helicopter, VH-HWQ. on 21 March 2013. On 5 April 2013, the ATSB published safety recommendation AO-2013-055-SR-001 towards the Civil Aviation Safety Authority (CASA): 'The ATSB recommends that CASA take further action to ensure that owners and operators of Robinson R44 helicopters are aware of the relevant regulatory requirements and comply with the manufacturer's service bulletin SB-78B to replace all-aluminium fuel tanks with bladder-type tanks on Robinson R44 helicopters.'

— Following an accident involving an AS350 Airbus helicopter (CS-HFT) in Portugal on 5 September 2019, the Portuguese Accident Investigation Authority made the following recommendation to EASA (PORT-2020-001): 'It is recommended that EASA follow its Rotorcraft Safety Roadmap publication principles, producing rulemaking documentation requiring retroactive application of the current improvements in fuel tank crash resistance for helicopters certified before the new certification specification for type design entered into force. Helicopters used for Commercial Operations shall be subject to this additional airworthiness requirement for operations.'

— On Saturday, 31 August 2019, an AS350 B3 Airbus helicopter, registered LN-OFU, crashed in the Skoddevarre mountains near Alta (Norway). The Norwegian Safety Investigation Authority (NSIA) recommends (SR No 2022/01T) that EASA requires that all helicopters, new and used, that are delivered in or imported to Europe be equipped with CRFSs in accordance with CS 27.952 or CS 29.952, regardless of their type certification date. In addition, the NSIA recommends EASA to not permit commercial passenger flights with helicopters that are not equipped with CRFSs in accordance with CS 27.952 or CS 29.952, regardless of their type certification date.

In addition, in 2014, EASA performed an evaluation of the post impact fire unsafe condition as regards Robinson R44. Based on that report, EASA concluded that a potential unsafe condition existed considering:

— the abnormal post-crash fire rate taking into account helicopter generational evolution;

— the abnormal R44 post-crash fire rate compared to other helicopters;

— the potential technical susceptibility of R44 to risk of a leak/ignition source compared to R22; and

— the events causing fatalities.

EASA issued Airworthiness Directive (AD) No 2014-070[10] to address this unsafe condition, which in turn addressed some of the SRs above. The remaining SRs, with regard to:

— the installation of a CRFS onto newly produced helicopters; and

— the retrofit of the existing EU helicopter fleet,

are addressed in point 26.440 of Annex I (Part-26) to Regulation (EU) 2015/640 that is added with the adoption of Regulation (EU) 2024/2954.

2.1.2. RMT.0740 — information on cargo compartment fire protection capabilities

Amendment 109 to Annex 8 to the Chicago Convention on International Civil Aviation ('ICAO Annex 8'), which has been applicable since 3 November 2022, introduced new Standards and Recommended Practices (SARPs) requiring (for large aeroplanes) and recommending (for helicopters and small aeroplanes) that the information on the elements of the aircraft design associated with cargo compartment fire protection, and a summary of the demonstrated standards that were considered in the certification process are made available to the operator.

These SARPs were added to support ICAO Annex 6 Part I Chapter 15 standards for operators to establish policies and procedures for the transport of items in the cargo compartment, including the conduct of a safety risk assessment. One element of the assessment is related to the cargo compartment fire protection capabilities.

10 EASA Safety Publications Tool (europa.eu)

The implementation of the ICAO Annex 6 Part I Chapter 15 SARPs introduced with Amendment 44 is carried out under RMT.0392 'Regular update of air operations rules'[11]. The related NPA (NPA 2022-11[12]) was published on 20 December 2022 and the rulemaking process is in progress.

The implementation of the new SARPs is important to maintain the safety of operations of aircraft that transport goods in the cargo compartment and to avoid the filing of differences with ICAO Annex 8.

These SARPs are incorporated in points 26.175 and 26.405 of Annex I (Part-26) to Regulation (EU) 2015/640 that are added with the adoption of Regulation (EU) 2024/2954.

2.1.3. Clarification on existing certification specifications and guidance material of CS-26

Due to the amendments for clarification of some ageing aeroplane structures requirements in Part-26 under Regulation (EU) 2024/2954, the related certification specifications and guidance material need to be amended for consistency.

2.2. What we want to achieve — objectives

The overall objectives of the EASA system are defined in Article 1 of the Basic Regulation. The regulatory material of this Decision is expected to contribute to achieving these overall objectives by supporting the application of the amendments to Regulation (EU) 2015/640, the detailed objectives of which are explained in Section 2.2 of EASA Opinion No 05/2024.

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

2.3.1. RMT.0710 — crash-resistant fuel systems

CS 26.440 is added in CS-26 to provide means to show compliance with the new point 26.440 of Part-26.

CS 26.440 refers to the certification specifications for fuel system crash resistance in CS-27 and CS-29, which can be used to demonstrate compliance with this requirement. Alternatively, it provides a list of criteria by which compliance can also be demonstrated.

GM1 26.440(a)(2)(iii) provides guidance on installations that use a fuel line slack or stretch.

GM1 26.440(a)(4) provides guidance on the applicability of CS 26.440(d) to fuel tanks.

2.3.2. RMT.0740 — information on cargo compartment fire protection capabilities

CS 26.175 and CS 26.405 are added in CS-26 to provide means to show compliance with the new points 26.175 and 26.405 of Part-26. They specify the kind of information that the design approval holders should provide, i.e. the reference to the cargo compartment classification (if applicable), the information on the aircraft design characteristics associated with the cargo compartment fire

[11] ToR RMT.0392 - Regular update of air operations rules | EASA (europa.eu)

[12] NPA 2022-11 'Regular update of the Air Operations rules: lessons learnt from standardisation inspections, helicopter operation issues, and transposition of several ICAO SARPs' (NPA 2022-11 - Regular update of the Air Operations rules: lessons learnt from standardisation inspections, helicopter operation issues, and transposition of several ICAO SARPs | EASA (europa.eu)).

protection capabilities with which compliance was demonstrated, and the reference to the demonstrated specifications established in the certification basis.

Compared to NPA 2023-105 the reference to the design change approval holders is added in CS 26.175 and CS 26.405 for consistency with this addition in points 26.175 and 26.405 of Part-26.

GM1 26.175 and GM1 26.405 provide examples of information that may be provided to the operator for a valid risk assessment.

2.3.3. Clarification on existing certification specifications and guidance material of CS-26

The tables below provide a detailed rationale for the amendments to existing certification specifications and guidance material on ageing aeroplane structures.

Amendments related to ageing aeroplane structures	
CS 26.304(a)	Point (a) of CS 26.304(a) is amended to deleted 'the operator' because the action is carried out by persons/organisations responsible for the maintenance of the aeroplane.
GM1 26.332(c)(ii) and 26.334	In Part-26 points 26.332(c)(ii) and 26.234 relate to point 26.370(a)(ii). GM1 26.332(c)(ii) and 26.334 is amended for consistency with point 26.370 of Part-26 and GM1 26.370(a)(ii) In the first paragraph of GM1 26.332(c)(ii) and 26.334, the deadline is specified for clarity. The last part of the first sentence (starting with 'within 13 months …' is deleted since the date is now specified (in addition the reference to CS 26.370(b)(ii) was not correct).
CS 26.370	CS 26.370 is amended for consistency with point 26.370 of Part-26. The reference to continuing airworthiness management organisations that establish the aircraft maintenance programme in accordance with Annex I (Part-M) to Regulation (EU) No 1321/2014 is deleted because the reference to Part-M, which does not cover all aircraft operated by the operators that are within the scope of Regulation (EU) 2015/640, is deleted from point 26.370 of Part-26 . Therefore, CS 26.370 refers non-specifically to maintenance programmes and to organisations responsible for the management of continuing airworthiness. The content of CS 26.370 is also amended to improve the wording and referencing.
GM1 26.370(a)(ii)	GM1 26.370(a)(ii) is amended for consistency with CS 26.370.

Editorial correction (added compared to NPA 2023-105)	
GM2 26.1	A period is added at the end of the sentence 'See also Article 5 of the Commission Regulation (EU) 2015/640'
CS 26.303(a) and (c)	In point (b) the reference to point 26.303(e) of Part-26 is deleted because points 26.303(d) and 26.303(e) have been merged into point 26.303(d) following the adoption of the amending regulation.

In addition, the preamble is updated and amended to correct some editorial mistakes, and the history of amendments below some points is updated to reflect the amendments affecting the points since Issue 2 of CS-26.

2.3.4. Targeted applicability date of the regulatory material

The regulatory material is intended to become applicable on the same date as the applicability date of Regulation (EU) 2024/2954, or shortly after that date.

2.4. What are the stakeholders' views

2.4.1. RMT.0710 — crash-resistant fuel systems

During the public consultation of NPA 2022-10, EASA received 117 comments from 31 different stakeholders. 6 specific comments concern CS-26. 4 comments requested clarification and 2 comments requested to specify how to test the flexible liner. These 6 comments are addressed in CS 26.440, and a revised text has been proposed.

2.4.2. RMT.0740 — information on cargo compartment fire protection capabilities

Stakeholders were involved in the development of the new SARPs within the AIRP of the ICAO ANC. The manufacturers involved were mainly those of large aeroplanes. They indicated that the inclusion of the information in the aircraft flight manual would be too stringent, and that they would prefer having the choice of the appropriate documentation.

During the focused consultation of NPA 2023-105, EASA received two comments related to points CS 26.175 and CS 26.405.

The table below provides the responses to these comments..

Comment summary	**Response**
The level of detail requested goes beyond what is required in ICAO Annex 8. Some data may be proprietary.	The details are provided in the GM as examples; they are not required. In Part-26, the required information is related to what is necessary for the risk assessment. CS-26 relates to what has been certified. This is in line with the SARPs in ICAO Annex 8. The DAHs are not supposed to make available proprietary data.
Confusing applicability between CS 26.175(a) and point 26.175(a) of Part-26	To avoid any confusion, the following references have been added: — in CS 26.175(a), the reference to point 26.175(a) of Part-26; and — in CS 26.175(b), the reference to points 26.175(a) and (b) of Part-26).

2.4.3. Clarification on existing certification specifications and guidance material of CS-26

In addition to the comments related to RMT.0740, EASA considered one comment on the clarification of the applicability of the aircraft maintenance programme requirements in point 26.370 of Part-26. The resulting amendments to Part-26 triggered, for consistency, some amendments to existing certification specifications and guidance material on ageing aeroplane structures (see Section 2.3.3)

3. What are the expected benefits and drawbacks of the regulatory material

The added certification specifications and related guidance material support the application of the new requirements 26.175, 26.405 and 26.440 added in Part-26. The benefits and drawbacks of these requirements are provided in Section 3 of EASA Opinion No 05/2024. These new certification specifications and related guidance material are beneficial since they provide detailed means to comply with the requirements and useful information.

The amendments to some existing certification specifications and guidance material provide clarity and consistency with some amended requirements on ageing aeroplane structures in Part-26.

EASA has not identified any drawback related to the regulatory material developed under this Decision.

4. Monitoring and evaluation

The regulatory material of this Decision supports the application of the amendments to Regulation (EU) 2015/640 adopted through Regulation (EU) 2024/2954. EASA will monitor whether the objectives of it will be achieved as part of the monitoring and evaluation actions described in Chapter 5 of EASA Opinion No 05/2024.

5. Proposed actions to support implementation

The regulatory material of this Decision supports the application of the amendments to Regulation (EU) 2015/640 adopted through Regulation (EU) 2024/2954. No specific action to support its implementation is foreseen.

6. References

6.1. RMT.0710 — crash-resistant fuel systems

— ARAC Rotorcraft Occupant Protection Working Group (ROPWG) Task 5 ‘Crash Resistant Fuel Systems (CRFS) Final analysis report to the ARAC’, submitted on 15 March 2018

— ARAC Rotorcraft Occupant Protection Working Group (ROPWG) Task 6 ‘Final Analysis Report to the ARAC’, revised on 27 September 2018

— ARAC Rotorcraft Occupant Protection Working Group (ROPWG) Task 5 ‘Crash Resistant Seats and Structure (CRSS) Final Analysis Report to the ARAC’, submitted on 29 January 2018

6.2. RMT.0740 — information on cargo compartment fire protection capabilities

— Annex 8 to the Chicago Convention on International Civil Aviation, Airworthiness of Aircraft, Thirteenth Edition, July 2022

— ICAO Doc 10102, Guidance for Safe Operations Involving Aeroplane Cargo Compartments, First Edition, 2020