European Aviation Safety Agency

Comment-Response Document 2013-04

Rotorcraft AMC revision

CRD TO NPA 2013-04 — RMT.0134 (27&29.029) – 30.11.2016

EXECUTIVE SUMMARY

This CRD contains the comments received on NPA 2013-04 and the responses, or a summary thereof, provided thereto by the Agency.

All comments received on NPA 2013-04 as well as during the FAA public consultation, held in parallel, have been subject to a joint review by EASA and FAA. In response to comments received, some changes have been subsequently made to the final text of individual FAA AC paragraphs in order to improve their clarity.

Applicability	
Affected regulations and decisions:	ED Decision 2003/017/RM (CS-VLR); ED Decision 2003/015/RM (CS-27); ED Decision 2003/016/RM (CS-29).
Affected stakeholders:	Rotorcraft TC/RTC/STC applicants
Driver/origin:	Level playing field
Reference:	N/A

Process map	
Concept Paper:	No
Terms of Reference:	20.10.2010
Rulemaking group: (Subgroups only for flight and external loads)	Yes
RIA type:	Light
Technical consultation during NPA drafting:	No
Publication date of the NPA:	14.3.2013
Duration of NPA consultation:	3 months
Review group:	No
Focussed consultation:	No
Publication date of the Opinion:	N/A
Publication date of the Decision	2016/Q3

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1. Procedural information

1.1. The rule development procedure

The European Aviation Safety Agency (hereinafter referred to as the 'Agency') developed this Comment-Response Document (CRD) in line with Regulation (EC) No 216/2008[1] (hereinafter referred to as the 'Basic Regulation') and the Rulemaking Procedure[2].

This rulemaking activity is included in the Agency's 5-year Rulemaking Programme, under RMT.0134.The scope and timescale of the task were defined in the related Terms of Reference (see 'process map' on the title page).

The draft CS-VLR, CS-27 and CS-29 have been developed by the Agency. Changes to the Federal Aviation Authority (FAA) Advisory Circulars (AC) 27-1B and 29-2C were jointly developed by FAA and the Agency. All interested parties were consulted through NPA 2013-04[3], which was published on 14 March 2013.

33 comments were received from interested parties, including industry and National Aviation Authorities (NAAs).

The text of this CRD has been jointly developed by FAA and the Agency.

The process map on the title page contains the major milestones of this rulemaking activity.

1.2. The structure of this CRD and related documents

This CRD provides a summary of comments and responses as well as the full set of individual comments and responses thereto received on NPA 2013-04.

1.3. The next steps in the procedure

The individual Decisions containing CSs will be published by the Agency for each related CS.

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1 Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (OJ L 79, 19.3.2008, p. 1).

2 The Agency is bound to follow a structured rulemaking process as required by Article 52(1) of the Basic Regulation. Such process has been adopted by the Agency's Management Board and is referred to as the 'Rulemaking Procedure'. See Management Board Decision N° 18-2015 of 15 December 2015 replacing Decision 01/2012 concerning the procedure to be applied by the Agency for the issuing of opinions, certification specifications, acceptable means of compliance and guidance material ('Rulemaking Procedure')

3 http://www.easa.europa.eu/document-library/notices-of-proposed-amendments/npa-2013-04.

2. Summary of comments and responses

33 comments were received on NPA 2013-04 from 6 commentators.

The responses to these comments can be summarised as follows:

	Accepted	Partially Accepted	Noted	Not Accepted	Total
Number of Comments	11	4	6	12	33
%	34 %	12 %	18 %	36 %	100 %

Those 'Noted' were largely supportive of the proposals.

It was noted that the amended AC introduces AC 27/29.1316 on lightning and AC 27/29.1317 on High-Intensity Radiated Fields (HIRF). The associated rules are currently not included in CS-27 and CS-29. However, they are being developed under RMT.0223 and will be incorporated in the same ED Decisions amending CS-27 and CS-29.

Two commenters proposed a new change to AC 29-2C. This proposal will be kept on record for future consideration at a later update.

3. Individual comments (and responses)

In responding to comments, a standard terminology has been applied to attest the Agency's position. This terminology is as follows:

(a) **Accepted** — The Agency agrees with the comment and any proposed amendment is wholly transferred to the revised text.

(b) **Partially accepted** — The Agency either agrees partially with the comment, or agrees with it but the proposed amendment is only partially transferred to the revised text.

(c) **Noted** — The Agency acknowledges the comment but no change to the existing text is considered necessary.

(d) **Not accepted** — The comment or proposed amendment is not shared by the Agency.

(General Comments)	-

comment	*1* comment by: *Luftfahrt-Bundesamt* The LBA has no comments on NPA 2013-04.
response	*Noted*

comment	*4* comment by: *UK CAA* Please be advised that the UK CAA do not have any comments on NPA 2013-04, Rotorcraft AMC revision (1st group).
response	*Noted*

comment	*5* comment by: *DGAC France* This NPA introduces a reference to FAA AC 1316 & 1317 paragraphs. At the present time there are no specific paragraphs VLR/27/29 1316 and 1317. Nevertheless those matters are usually dealt with through special conditions. Does EASA intent to modify these CS accordingly or is it already planned in another task? Otherwise, DGAC France has no specific comment on this NPA.
response	*Noted*

NOTICE OF PROPOSED AMENDMENT (NPA) 2013-04 — General comments p. 2-3

comment *2* comment by: *Jim Lyons*

Attachment #1

Please find attached a proposal, together with justification, for amendment of AC 29-2C. This proposal has been developed jointly by the EHA and HAI – following discussions with the Rotorcraft Directorate of the FAA - to address a safety hazard discovered during the amendment of Annex 14 Volume II.

response *Noted*

Thank you for your proposal. The intent of an NPA is not to introduce new change proposals at this stage, but to consult on changes proposals that have already been developed. The proposal will, therefore, be put on file for future consideration.

A. Explanatory Note — IV. Content of the draft decision p. 5

comment *33* comment by: *Airbus Helicopters*

Comment / reason for comment

Item 13 states: "*For adoption of FAA AC at Change 3, see point 16 below*". However, this subject is addressed in item 18, not in item 16.

Recommendation / suggested change

Change "*point 16 below*" to "*point 18 below*".

response *Noted*

Editorial errors have no substantive bearing on the proposals.

A. Explanatory Note — IV. Content of the draft decision — Section 27.29 p. 6

comment *6* comment by: *Airbus Helicopters*

Comment / reason for comment

AC 27.29, page 1, § a

Despite the original Eurocopter request (ref. EC 22), there is still no clarification of what is to be included in the certificated empty weight as regards fluids.

The requirement may be interpreted in several ways. Clarification should be provided, in particular, for expendable fluids in non-required equipment (such as windshield washers), or fluids in equipment filled with the use of special tools (such as air conditioning systems).

Recommendation / suggested change

Make it clear whether reservoirs containing fluids required for normal operation (such as engine oil, transmission oil, hydraulic fluid in a required hydraulic system) shall be full or filled to a specified level.

Provide additional guidance as regards specific fluids considering the following proposals:

- Fluids in equipment filled with the use of special tools is included in the empty weight as provided for in the aircraft specifications,
- Fluids not required for normal operation of the aircraft, in particular expendable fluids in non-required equipment, are not considered to be part of the empty weight.

response *Accepted*

This paragraph has been revised.

A. Explanatory Note — IV. Content of the draft decision — Section 27.45 p. 6

comment *7* comment by: *Airbus Helicopters*

Comment / reason for comment

AC 27.45, page 1, § a(4)

"*defined in 14 CFR § 1.1*" : reference to 14 CFR § 1.1 is incorrect.

Recommendation / suggested change

Replace by correct reference.

response *Not accepted*

Rated 30-second OEI power and rated 2-minute OEI power are defined in Section 1.1 of 14 Code of Federal Regulations (CFR) Part 1.

In the EASA system, they are defined in CS-DEFS.

A. Explanatory Note — IV. Content of the draft decision — Section 27.143 p. 6

comment	*8* comment by: *Airbus Helicopters* **Comment / reason for comment** AC 27.143, page 1, § a(1) The added guidance related to autorotation, referencing § 27.143(a)(2)(v), is only valid since amendment 27-44. In amendment 27-21, § 27.143(a)(2)(v), was related to a glide manoeuver. **Recommendation / suggested change** Move this guidance to a new section AC 27.143A, linked to § 27.143 at amendment 27-44.
response	*Partially accepted* The word 'glide' was replaced at Amendment 27-44 with the traditional rotorcraft term 'autorotation' and the sentence was changed to include '… glide (i.e. autorotation) …'.

comment	*9* comment by: *Airbus Helicopters* **Comment / reason for comment** AC 27.143 Some references to sub-paragraphs of § 27.143 are no more valid since amendment 27-44, e.g.: • AC 27.143 a(2)(iii) refers to § 27.143(d) for controllability in case of engine failure, whereas this is now in § 27.143(e), • AC 27.143 a(2)(iv) refers to § 27.143(e), whereas is should now refer to § 27.143(f). **Recommendation / suggested change** Provide a cross-reference to the new sub-paragraph numbering of § 27.143 in a new section AC 27.143A, linked to § 27.143 at amendment 27-44.
response	*Not accepted* Since AC 27-1B is a historical document, documenting acceptable methods of compliance to older certification bases is valid. Section 27.143(d) was revised at amendment 27-44. AC 27.143A, which is included in amendment 27-44, correctly refers to the appropriate 14 CFR sections.

A. Explanatory Note — IV. Content of the draft decision — Section 27.903B p. 6

comment *10* comment by: *Airbus Helicopters*

Comment / reason for comment

AC 27.903B, page 2, § b(2)

Sentence "*The restart capability should be available without any delay longer than that required to ensure a satisfactory restart*" looks like a recursive definition.

Moreover, "*satisfactory*" is subjective.

Recommendation / suggested change

Concept should be clarified or sentence removed.

response *Accepted*

The paragraph was rewritten to clarify its intent. Furthermore, 'satisfactorily' was replaced with 'successfully'.

A. Explanatory Note — IV. Content of the draft decision — Section 27.939 p. 6

comment *11* comment by: *Airbus Helicopters*

Comment / reason for comment

AC 27.939, page 4, § b(1)(ii)(A) (3)(E)

Expression "*no extreme N2/N_R droop*" is subjective.

What is considered as an extreme droop? Is it linked to a specific threshold?

Recommendation / suggested change

A more objective specification is expected.

response *Accepted*

A. Explanatory Note — IV. Content of the draft decision — Section 27.1093 p. 6

comment *12* comment by: *Airbus Helicopter*

Comment / reason for comment

AC 27.1093, page 7, § c(1)(ii)

In Part 27/CS 27, the requirement that engine air intakes of helicopters forbidden to fly into known icing conditions must cover inadvertent icing encounters is included at Part 27/CS-27 Book 1 level (§ 1093 (b)(1)(i)) while AC 27 clarifies this intent (‘*In showing compliance with § 27.1093(b)(1)(i), the FAA/AUTHORITY has accepted the concept of limited exposure associated with escape from inadvertent ice encounters’*).

Concerning snow, § 27.1093(b)(1)(ii) currently allows the applicant not to demonstrate any snow conditions "*within the limitations established for the rotorcraft*" (in this case the rotorcraft is forbidden to fly in snow conditions) .

If a new concept were to be introduced that the engine air intake has to cover inadvertent encounters of snow, by analogy with the current situation in FAR 27/CS-27 Book 1 and in the TCCA CAR Regulations, this new requirement should be written at FAR Part 27 / CS 27 book 1 level, as it is the case:

- for inadvertent ice encounters in 27.1093(b)(1)(i),
- in TCCA CAR 527.1093 (b)(1)(iii) ("*if certification for flight in snow has not been requested, the engine tolerance to snow shall be demonstrated;*").

Recommendation / suggested change

Provided it would be technically relevant, the new concept of "INADVERTENT FALLING & BLOWING SNOW CONDITIONS" should be introduced at airworthiness code level in FAR Part 27 / CS 27 book 1, through a standard rulemaking process.

response *Not accepted*

Past experience has shown that reliance on pilot adherence to Rotorcraft Flight Manual (RFM) limitations alone is not practical to prevent inadvertent snow encounters. If an applicant does not wish to perform flight testing to demonstrate flight in ‘Inadvertent Falling & Blowing Snow Conditions’, they must accept a temperature limitation in the RFM (i.e. no flight below 5 °C/40 °F).

comment *13* comment by: *Airbus Helicopters*

Comment / reason for comment

AC 27.1093, pages 7-8, § c(1)(ii) and c(2)(ii)

To our opinion, the limitation which forbids flight under snow can continue to be inserted in the RFM without any snow demonstration because:

Unlike for icing conditions, snow is immediately visible by the crew. In case the crew inadvertently encounters snow conditions, they can immediately react in order to exit snow

conditions.

In any case, there is no reason to consider in a possible demonstration to inadvertent snow any other operation than level flight, descent and landing. Indeed, ground operations, IGE hover or takeoff in snow conditions should be strictly forbidden for a rotorcraft which is not certified to snow conditions. Guidance should be refined.

Recommendation / suggested change

A Rulemaking Group involving Industry should be established in order to:

- state about the need for any demonstration of robustness of air inlets to inadvertent snow conditions, on the basis of experience or novelties,
- if this need is confirmed, precisely define the corresponding requirements to be added in FAR Part 27 / CS 27 book 1 and in AC 27, and check the compatibility of any new requirement with the whole AC 27.1093 § c.

response *Not accepted*

If an applicant does not wish to perform flight testing to demonstrate flight in 'Inadvertent Falling & Blowing Snow Conditions', they must accept a temperature limitation in the RFM (i.e. no flight below 5 °C/40 °F).

A. Explanatory Note — IV. Content of the draft decision — Section 27.1309 p. 7

comment *14* comment by: *Airbus Helicopters*

Comment / reason for comment

AC 27.1309, pages 17-18, § f

DO-178B is no more the latest software related standard.

Recommendation / suggested change

Replace reference to DO-178B by reference to DO-178C or to the latest issue of AC 20-115.

response *Accepted*

comment *15* comment by: *Airbus Helicopters*

Comment / reason for comment

AC 27.1309

Section 1309 g, related to HIRF, has been removed.

However, HIRF specific § 27.1317 is only valid from amendment 27-42.

Consequently, for amendments prior to 27-42, there is no more consideration for HIRF.

Recommendation / suggested change

The following could be done in order to restore the missing guidance:

- Restore previous section 1309 g, related to HIRF, in AC 27.1309,
- Rename new section 27.1309A (Amendment 27-46) as 27.1309B,
- Insert a new section 27.1309A (Amendment 27-42) to indicate that, starting from amendment 27-42, HIRF considerations have to be taken from § 1317.

response *Not accepted*

Prior to the establishment of CS 29.1317, 'HIRF' was addressed by 'Special Conditions' with the specific method of compliance established therein. Any project subsequent to the establishment of CS 29.1317 must show compliance to that rule, which is also addressed in the proposed AC.

A. Explanatory Note — IV. Content of the draft decision — Section 27.1337 p. 7

comment *16* comment by: *Airbus Helicopters*

Comment / reason for comment

AC 27.1337, page 1, § a

"*When two or more tanks are interconnected so that a failure of the system could cause fuel to become trapped in a fuel tank, the fuel quantity indicating system must indicate the remaining usable fuel to the flight crew*".

The objective is that the crew has the information on the effective usable fuel quantity.

However, this sentence may be interpreted as requiring an automatic computation and display of the total amount of usable fuel, considering the status of the transfer system.

Other solutions are feasible, e.g. displaying the amount in each tank and the indication of the status of the transfer systems. Such a solution has the advantage of reminding to the crew the unusable fuel mass as a payload.

Recommendation / suggested change

Suggestion is to rephrase the sentence from an objective oriented point of view, instead of a solution oriented point of view. For example:

	"*When two or more tanks are interconnected so that a failure of the system could cause fuel to become trapped in a fuel tank, the flight crew must have the ability to know the total effective amount of remaining usable fuel*".
response	*Accepted*

A. Explanatory Note — IV. Content of the draft decision — Section 27.1357 p. 7

comment	*17* comment by: *Airbus Helicopters* **Comment / reason for comment** AC 27.1357, page 3, § b(7) New guidance AC 27.1357 b(7) relates (without referencing it) to § 27.1357(d), which has already a specific guidance in AC 27.1357 b(3). It does not bring any complementary information. Even, it fails to include the concept of identification of breakers or fuses essential to safety. Moreover, the given examples are missing clarity and are only examples: the complete list of circuit breakers (or fuses) the accessibility of which is essential to the safety should result from aircraft system safety analyses. **Recommendation / suggested change** Remove AC 27.1357 b(7). If the intent to define a new concept not included in § 27.1357(d), this should be addressed in an adequate Rulemaking Group.
response	*Partially accepted* The information in paragraph b(7) includes more specific criteria that the applicant is expected to satisfy in order to meet the existing requirements of the rule. The contents of paragraph b(7) has been incorporated into paragraph b(3).

A. Explanatory Note — IV. Content of the draft decision — Section 29.29 p. 8

comment	*18* comment by: *Airbus Helicopters* **Comment / reason for comment**

AC 29.29, page 1, § a

Despite the original Eurocopter request (ref. EC 22), there is still no clarification of what is to be included in the certificated empty weight as regards fluids.

The requirement may be interpreted in several ways. Clarification should be provided, in particular, for expendable fluids in non-required equipment (such as windshield washers), or fluids in equipment filled with the use of special tools (such as air conditioning systems).

Recommendation / suggested change

Make it clear whether reservoirs containing fluids required for normal operation (such as engine oil, transmission oil, hydraulic fluid in a required hydraulic system) shall be full or filled to a specified level.

Provide additional guidance as regards specific fluids considering the following proposals:

- Fluids in equipment filled with the use of special tools is included in the empty weight as provided for in the aircraft specifications,
- Fluids not required for normal operation of the aircraft, in particular expendable fluids in non-required equipment, are not considered to be part of the empty weight.

response *Not accepted*

AC 27/29.29 has been amended to clarify that all permanently installed equipment, both required and optional, must include full operating fluids as typically indicated by a 'full' mark as part of the empty weight. Only carry-on equipment (i.e. not permanently installed) can be excluded from the empty weight.

A. Explanatory Note — IV. Content of the draft decision — Section 29.45 p. 8

comment *3* comment by: *Tim Glasspool*

Attachment #2

See attached document.

response *Noted*

Thank you for your proposal. The intent of an NPA is not to introduce new change proposals at this stage, but to consult on change proposals that have already been developed. The proposal will, therefore, be put on file for future consideration along with Comment 2.

comment	*19* comment by: *Airbus Helicopters* **Comment / reason for comment** AC 29.45, page 1, § a(5) "*As defined in 14 CFR § 1.1*": reference to 14 CFR § 1.1 is incorrect. **Recommendation / suggested change** Replace by correct reference.
response	*Not accepted* Rated 30-second OEI power and rated 2-minute OEI power are defined in Section 1.1 of 14 CFR Part 1. In the EASA system, they are defined in CS-DEFS. See Comment 7.

comment	*20* comment by: *Airbus Helicopters* **Comment / reason for comment** AC 29.45, page 1, § a(5) Typo error: "*2-minunte OEI*" **Recommendation / suggested change** "*2-minute OEI*"
response	*Accepted*

A. Explanatory Note — IV. Content of the draft decision — Section 29.143 p. 8

comment	*21* comment by: *Airbus Helicopters* **Comment / reason for comment** AC 29.143, page 1, § a(1) The added guidance related to autorotation, referencing § 29.143(a)(2)(v), is only valid since amendment 29-51. In amendment 29-24, § 29.143(a)(2)(v), was related to a glide manoeuver. **Recommendation / suggested change**

Move this guidance to a new section AC 29.143A, linked to § 29.143 at amendment 29-51.

response *Partially accepted*

Partially adopted. The word 'glide' was replaced at Amendment 29-51 with the traditional rotorcraft term 'autorotation' and the sentence was changed to include '… glide (i.e. autorotation) …'.

comment *22* comment by: *Airbus Helicopters*

Comment / reason for comment

AC 29.143

Some references to sub-paragraphs of § 29.143 are no more valid since amendment 29-51, e.g.:

- AC 29.143 a(2)(iii) refers to § 29.143(d) for controllability in case of engine failure, whereas this is now in § 29.143(e),
- AC 29.143 a(2)(iv) refers to § 29.143(e), whereas is should now refer to § 29.143(f).

Recommendation / suggested change

Provide a cross-reference to the new sub-paragraph numbering of § 29.143 in a new section AC 29.143A, linked to § 29.143 at amendment 29-51.

response *Not accepted*

Since AC 29-2C is a historical document, documenting acceptable methods of compliance to older certification bases is valid. Section 29.143(d) was revised at amendment 29-51. AC 29.143A, which is included in amendment 29-51, correctly refers to the appropriate 14 CFR sections.

A. Explanatory Note — IV. Content of the draft decision — Section 29.903B p. 8

comment *23* comment by: *Airbus Helicopters*

Comment / reason for comment

AC 29.903B, page 1, § b

Sentence "*The restart capability should be available without any delay longer than that required to ensure a satisfactory restart*" looks like a recursive definition.

	Moreover, "*satisfactory*" is totally subjective. **Recommendation / suggested change** Concept should be clarified or sentence removed.
response	*Accepted* Revised paragraph to clarify intent. Additionally, replaced “satisfactorily” with “successfully”. See Comment 10.

A. Explanatory Note — IV. Content of the draft decision — Section 29.939 p. 9

comment	*24* comment by: *Airbus Helicopters* **Comment / reason for comment** AC 29.939, page 4, § b(1)(ii)(A)(3)(i)(E) Expression “*no extreme N2/N_R droop*” is subjective. What is considered as an extreme droop? Is it linked to a specific threshold? **Recommendation / suggested change** A more objective specification is expected.
response	*Accepted*

A. Explanatory Note — IV. Content of the draft decision — Section 29.1093 p. 9

comment	*25* comment by: *Airbus Helicopters* **Comment / reason for comment** AC 29.1093, page 6, § c(1)(ii) In Part 29/CS 29, the requirement that engine air intakes of helicopters forbidden to fly into known icing conditions must cover inadvertent icing encounters is included at Part 29/CS-29 Book 1 level (§ 1093 (b)(1)(i)) while AC 29 clarifies this intent (‘*In showing compliance with § 29.1093(b)(1)(i), the FAA/AUTHORITY has accepted the concept of limited exposure associated with escape from inadvertent ice encounters’*). Concerning snow, § 29.1093(b)(1)(ii) currently allows the applicant not to demonstrate any

snow conditions "*within the limitations established for the rotorcraft*" (in this case the rotorcraft is forbidden to fly in snow conditions) .

If a new concept were to be introduced that the engine air intake has to cover inadvertent encounters of snow, by analogy with the current situation in FAR 29/CS-29 Book 1 and in the TCCA CAR Regulations, this new requirement should be written at FAR Part 29 / CS 29 book 1 level, as it is the case:

- for inadvertent ice encounters in 29.1093(b)(1)(i),
- in TCCA CAR 529.1093 (b)(1)(iii) ("*if certification for flight in snow has not been requested, the engine tolerance to snow shall be demonstrated;*").

Recommendation / suggested change

Provided it would be technically relevant, the new concept of "INADVERTENT FALLING & BLOWING SNOW CONDITIONS" should be introduced at airworthiness code level in FAR Part 29 / CS 29 book 1, through a standard rulemaking process.

response *Not accepted*

Past experience has shown that reliance on pilot adherence to RFM limitations alone is not practical to prevent inadvertent snow encounters. If an applicant does not wish to perform flight testing to demonstrate flight in Inadvertent Falling & Blowing snow conditions, they must accept a temperature limitation in the RFM (i.e. no flight below 5C/40F). See Comment 12.

comment *26* comment by: *Airbus Helicopters*

Comment / reason for comment

AC 29.1093, pages 6-8, § c(1)(ii) and c(2)(ii)

To our opinion, the limitation which forbids flight under snow can continue to be inserted in the RFM without any snow demonstration because:

Unlike for icing conditions, snow is immediately visible by the crew. In case the crew inadvertently encounters snow conditions, they can immediately react in order to exit snow conditions.

In any case, there is no reason to consider in a possible demonstration to inadvertent snow any other operation than level flight, descent and landing. Indeed, ground operations, IGE hover or takeoff in snow conditions should be strictly forbidden for a rotorcraft which is not certified to snow conditions. Guidance should be refined.

Recommendation / suggested change

A Rulemaking Group involving Industry should be established in order to:

- state about the need for any demonstration of robustness of air inlets to inadvertent

snow conditions, on the basis of experience or novelties,

- if this need is confirmed, precisely define the corresponding requirements to be added in FAR Part 29 / CS 29 book 1 and in AC 29, and check the compatibility of any new requirement with the whole AC 29.1093 § c.

response | *Not accepted*

If an applicant does not wish to perform flight testing to demonstrate flight in Inadvertent Falling & Blowing snow conditions, they must accept a temperature limitation in the RFM (i.e. no flight below 5C/40F). See Comment 13.

A. Explanatory Note — IV. Content of the draft decision — Section 29.1309 p. 9

comment | *27* comment by: *Airbus Helicopters*

Comment / reason for comment

AC 29.1309, page 16, § b(7) (+ figure AC 29.1309-2 page 6)

DO-178B is no more the latest software related standard.

Recommendation / suggested change

Replace reference to DO-178B by reference to DO-178C or to the latest issue of AC 20-115.

response | *Accepted*

comment | *28* comment by: *Airbus Helicopters*

Comment / reason for comment

AC 29.1309

Section 1309 b(9), related to HIRF, has been removed.

However, HIRF specific § 29.1317 is only valid from amendment 29-49.

Consequently, for amendments prior to 29-49, there is no more consideration for HIRF.

Recommendation / suggested change

The following could be done in order to restore the missing guidance:

- Restore previous section 1309 b(9), related to HIRF, in AC 29.1309,
- Rename new section 29.1309A (Amendment 29-53) as 29.1309B,

- Insert a new section 29.1309A (Amendment 29-49) to indicate that, starting from amendment 29-49, HIRF considerations have to be taken from § 1317.

response *Not accepted*

Prior to the establishment of CS 29.1317, HIRF was addressed via Special Condition with the specific method of compliance established therein. Any project subsequent to the establishment of CS 29.1317 must show compliance to that rule, which is addressed in the proposed AC. See Comment 15.

comment *29* comment by: *Airbus Helicopters*

Comment / reason for comment

AC 29.1309, page 13, figure AC 29.1309-5

Considering Part / CS 29.1309, a qualitative probability is expected and no quantitative level is clearly stated. This should be reflected in Figure AC29.1309-5, which does not anymore allow a qualitative assessment only for simple or conventional systems when involved in HAZ or CAT failure conditions.

It shall be considered that quantification is difficult for some items, like mechanical items involved in 29.1309 analyses. Usually, redundancy is used, which leads to large margins versus extremely improbable level, despite an accurate figure cannot be established.

In a same manner, simple electromechanical items such as relays can be easily quantified; nevertheless it seems more realistic to state “extremely improbable” than $1E^{-14}$/FH (i.e. $(1E^{-7})^2$). Such situations can correspond to emergency devices such as: hoist squib activation (anticipating future 29.865 which will require 1309 approach), emergency floatation activation, old fashion fire detection/extinguishing systems, …

Recommendation / suggested change

Qualitative assessment should not be precluded, provided necessary precautions and substantiation (installation precautions, precautions against dormant failures, independence …).

This could be done either through a modification of figure AC 29.1309-5 or through an added footnote.

response *Accepted*

A. Explanatory Note — IV. Content of the draft decision — Section 29.1337 p. 9

comment	*30* comment by: *Airbus Helicopters* **Comment / reason for comment** AC 29.1337, page 1, § a "*When two or more tanks are interconnected so that a failure of the system could cause fuel to become trapped in a fuel tank, the fuel quantity indicating system must indicate the remaining usable fuel to the flight crew*". The objective is that the crew has the information on the effective usable fuel quantity. However, this sentence may be interpreted as requiring an automatic computation and display of the total amount of usable fuel, considering the status of the transfer system. Other solutions are feasible, e.g. displaying the amount in each tank and the indication of the status of the transfer systems. Such a solution has the advantage of reminding to the crew the unusable fuel mass as a payload. **Recommendation / suggested change** Suggestion is to rephrase the sentence from an objective oriented point of view, instead of a solution oriented point of view. For example: "*When two or more tanks are interconnected so that a failure of the system could cause fuel to become trapped in a fuel tank, the flight crew must have the ability to know the total effective amount of remaining usable fuel*".
response	*Accepted*

comment	*31* comment by: *Airbus Helicopters* **Comment / reason for comment** AC 29.1337, page 2, § b(3)(iii) "*Consistent with the requirements of § 27.1337(b)(2)*": reference to Part 27 is not appropriate. **Recommendation / suggested change** Reference § 29.1337(b)(2).
response	*Accepted*

A. Explanatory Note — IV. Content of the draft decision — Section 29.1357 p. 9

comment	*32* comment by: *Airbus Helicopters* **Comment / reason for comment** AC 29.1357, pages 2-3, § b(9) New guidance AC 29.1357 b(9) relates (without referencing it) to § 29.1357(d), which has already a specific guidance in AC 29.1357 b(5). It does not bring any complementary information. Even, it fails to include the concept of identification of breakers or fuses essential to safety. Moreover, the given examples are missing clarity and are only examples: the complete list of circuit breakers (or fuses) the accessibility of which is essential to the safety should result from aircraft system safety analyses. **Recommendation / suggested change** Remove AC 29.1357 b(9). If the intent to define a new concept not included in § 29.1357(d), this should be addressed in an adequate Rulemaking Group.
response	*Partially accepted* The information in paragraph b(9) includes more specific criteria that the applicant is expected to satisfy in order to meet the existing requirements of the rule. The content of paragraph b(9) has been incorporated into paragraph b(4).

4. Appendix A — Attachments

Comment to AC 29-2C NPA-NPRM.pdf

Attachment #1 to Comment #2

Comment to AC 29-2C NPA-NPRM.pdf

Attachment #2 to Comment #3