



European Union Aviation Safety Agency  
**Comment-Response Document 2016-11**

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Appendix 4  
to Opinion No 02/2019

RELATED NPA: 2016-11 — RMT.0296 (OPS.008(a)) — 21.2.2019

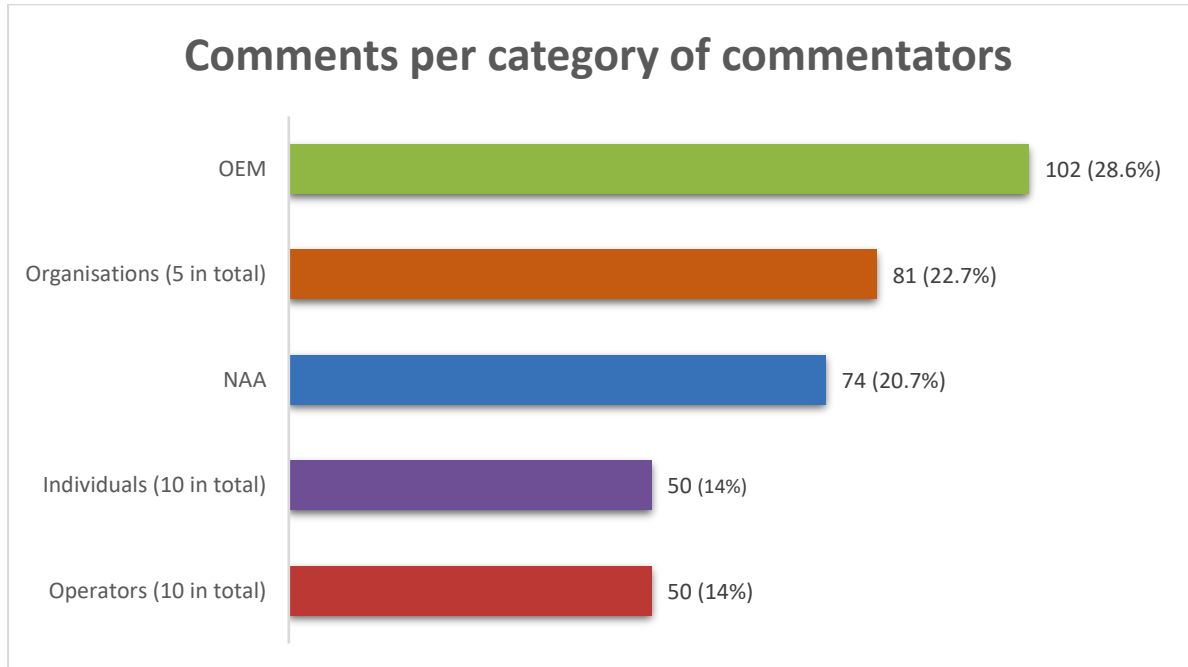
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## 1. Summary of the outcome of the consultation

357 comments were received on NPA 2016-11 from 39 commentators from the following categories of stakeholders:



Several comments were repetitive and in those cases the response is simply referring to the original comment.

Comments were submitted to all parts of the NPA and they were mixed in nature, ranging from support to the proposals, to proposals for changes or improvements and, in some cases, expressing disagreement. The majority of commentators focused on the following topics:

### **Comments of the proposal for a global reporting format of runway surface conditions and in-flight assessment of the landing distance at time of arrival**

On the overall proposal there were some general comments requesting consistency and synchronization with the aerodrome rules, better harmonisation with the ICAO definitions for the terminology in use and extension of the proposal to non-commercial operations.

Those type of comments were generally agreed by EASA and the review group.

On the definitions, it was decided to adopt the exact ICAO definitions for the purpose of global harmonisation. As regards consistency with the relevant aerodrome rules, which are an essential part of this global effort, the review group worked in close coordination with the other EASA rulemaking group of rulemaking task RMT.0704, by having cross-participation to both groups of certain members and constantly updating each other on the respective work. The applicability date of both set of rules will be kept in line with the ICAO target of November 2020. Also the need of extending the proposal to non-commercial operations was acknowledged by EASA and agreed by the review group. The necessary provisions will be added in a proportionate manner to the scope of those operations.

Several stakeholders highlighted the difficulty for certain categories of aircraft to comply with the new proposed standards for landing performance at the time of arrival. Particularly smaller aircraft or older



designs may not have the required performance data and may be too penalised by the use of the generic corrective factors.

This was already envisaged at the level of the NPA by introducing alleviations for Performance Class B and Class C aeroplanes but further to the comments, even within Performance Class A aeroplanes some alleviations were introduced, along with the possibility to use other existing performance data.

As regards the generic factors they were developed by the TALPA ARC and endorsed in the ICAO Doc 10064 – Aeroplane Performance Manual, therefore they will be kept as a baseline option.

Another issue that was raised by certain stakeholders, namely from those countries systematically exposed to cold weather and heavy contamination of the runways, is the difficulty to comply with the proposal in challenging environments (short runways, heavy runway contamination, steep approaches, etc.) which may lead in some cases, with the use of the new runway condition codes (RCC), to stop operations. Those commenters are proposing to introduce the possibility, for those aerodromes having sufficient capabilities, to upgrade the runway code under given conditions.

Such proposal is more suitable for inclusion in the aerodrome rules, where the concept of “specially prepared winter runways” will be developed and then referenced to in the rules for air operations.

Furthermore steep approaches will be included in the airworthiness standards for landing performance at the time of arrival.

#### **Comments on the proposal for the use of a reduced required landing distance (80% landing factor)**

This proposal, while supported by a good number of stakeholders, attracted the most controversial comments.

Particularly some stakeholders opposed the justification for the proposal and questioned the mass threshold that defines its applicability.

The reasons for the proposal on reduced required landing distances are clearly explained in the RIA with regards to business aviation operations and the need for harmonisation with the corresponding US rules. Such operations have been conducted in the US over the last 10 years with a satisfactory safety record. Considering that the conditions proposed by EASA to conduct the said operations are more restrictive than those in the US, the safety level is expected to remain at the same level or to improve.

As regards the aircraft eligibility for the said operations, the mass threshold will be changed to an AFM eligibility statement.

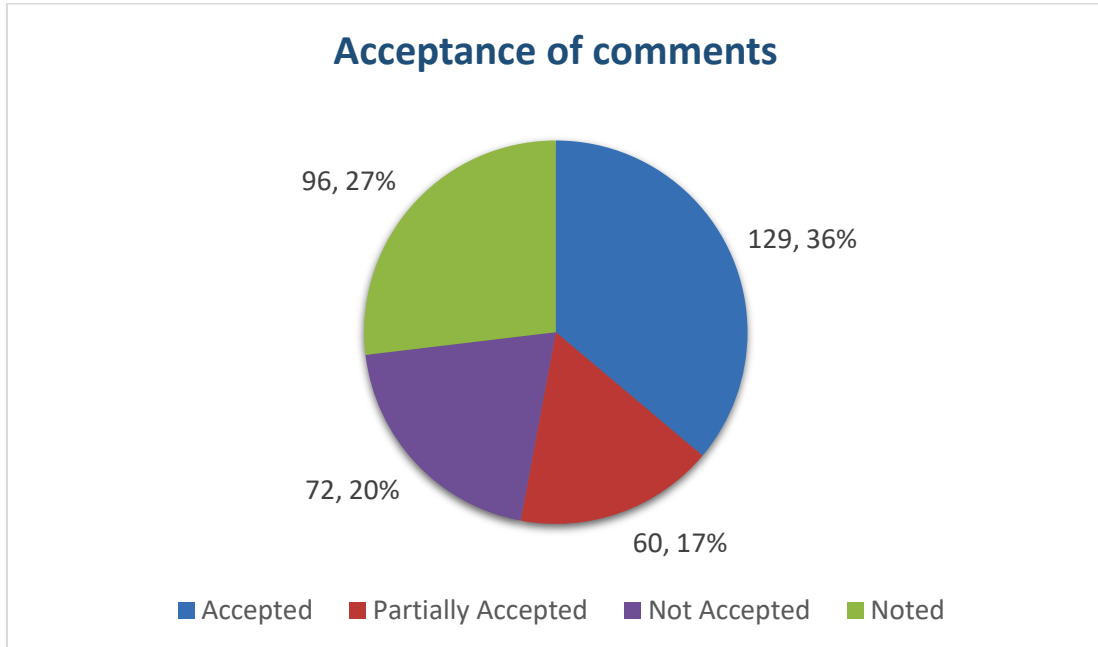
Other comments requested to make mandatory the use of Flight Data Monitoring (FDM) in order to obtain the approval for such operations.

The aircraft categories for which FDM is mandatory are established in ORO.AOC.130 on the basis of general criteria which are not meant to be revised by this proposal. When FDM is available, it is recommended to be used also for the purposes of reduced required landing distance operations. Moreover it is recommended to be used on a voluntary basis also when it is not required by ORO.AOC.130. However, when FDM is not available, alternative means for data collection will be considered.



### Statistics on the comments received

In summary, of the 357 comments received, 129 were accepted, 60 were partially accepted, 96 were noted and 72 were not accepted. The acceptance of comments in percentage is shown below:



## 2. Individual comments and responses

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

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

### (General Comments)

-

comment	20	comment by: <i>Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</i>
	The proposals in this NPA are of a horizontal nature since it affects OPS, ADR and Airworthiness provisions. It is therefore essential that provisions in all domains enter into force at the same time with synchronised applicable dates. Expected opinion is set to Q3/2017 and publication date of EASA-decision is set to Q3/2018 while expected publication of decision of ADR provisions in RMT.0704 is set to Q2/2020. Acceptable means of Compliance and Guidance Material for ADR operations on how to deal with runway surface condition assessment and reporting issues is absolutely essential and should be developed in collaboration with the Rulemaking group responsible for NPA 2016-11.	
response	Accepted.	
	The two EASA rulemaking tasks RMT.0296 and RMT.0704 are conducted in close coordination and, regardless the date of publication of the deliverables of each task, the applicability date of the amended provisions in the various domains will be consistent.	
comment	32	comment by: <i>Austro Control</i>
	Dear all, Austro Control explicitly welcomes this NPA and has no objections or any other comments. best regards Franz Graser	
response	Noted.	
comment	165	comment by: <i>Luftfahrt-Bundesamt</i>
	The LBA has no comments on NPA 2016-11.	



response

Noted.

comment

167

comment by: UK CAA

**Page No:** Whole document**Paragraph No:** Whole document

**Comment:** Dates for Applicability and Implementation. The dates for the applicability and implementation of the proposals have not been addressed in the NPA. Recognising that the implementation of the ICAO State Letters 2016/12 and 2016/29 provisions is 5 November 2020, and also that the reduced required landing distance factors proposals are inter-related with them, it is vital that EASA works within the ICAO timetable for both of these provisions.

**Justification:** This is a global change of processes and procedures that will affect airlines, ANSPs and aerodromes, coordination with ICAO and its planned timescale is vital so as not to have individual States or regions developing new procedures early or late.

response

Accepted.

The date of applicability will be specified in the Amending Regulation and it will be in line with the ICAO implementation timelines, not only for the air operations provisions but also across the other domains concerned.

comment

168

comment by: UK CAA

**Page No:** Various**Paragraph No:** Those relating to reduced required landing distance proposals.

**Comment:** In Chapter 3 of the NLR Safety Assessment, it is stated that unstabilised approaches are far more prevalent for business operators compared to commercial operators - there are significantly more overspeed events at the threshold during unstable approaches. The flight data also shows that for business aircraft the speed deviations at the threshold are much higher than with landings of commercial airlines. FAA AC No: 91-79A (Mitigating the Risks of a Runway Overrun Upon Landing) states that a 10 percent increase in final approach speed results in a 20 percent increase in landing distance). Thus it's not surprising that the same flight data from business operators also shows that compared to commercial operators; long landings occur more often within the business aircraft operations.

**Justification:** If the mitigating measures related to these parameters only have the effect of enabling business operators to achieve the same landing accuracy as commercial operators, then it would seem that this is not sufficient to justify the former being able to take credit for any reduction in landing distance factors due to those parameters, compared to the latter, who do not. The proposals would benefit from further explanation of this aspect.

response

Noted.



Business jet operators as intended by Part-CAT and the proposal for reduced required landing distance in CAT.POL.A.255 are commercial operators that normally have to observe the same landing distance that apply to all commercial operators as prescribed by CAT.POL.A.230 (i.e. 60% of the LDA for jets and 70% of the LDA for turbo-props). The proposed mitigating measures are intended to achieve, when using 80% of the LDA, the same level of safety of when using the traditional factors. This apply only to those aircraft and operators eligible to be approved for reduced required landing distance and not to all commercial operators.

comment 169

comment by: UK CAA

**Page No:** Various**Paragraph No:** Those relating to proposals to align with the ICAO SARPS and Recommended Practices for the new Global Runway Condition Reporting Format.**Comment:** As the proposed alignment with the new ICAO SARPS and Recommended Practices for the Global Runway Condition Reporting Format will affect runway condition reports to all aircraft, the introduction of similar proposals to the operating regulations for non-commercial air operations needs to be considered**Justification:** Consistency.

response Accepted.

The new provisions on the Global Runway Condition Reporting Format will be extended to non-commercial operations.

comment 190

comment by: Dassault-Aviation

Dassault-Aviation

General comment:

The main concern is the EASA deployment of the TALPA arc through operational requirements which make it mandatory not only for new TC but also for in-service aircraft. This NPA is creating a different approach between FAA (current use of the TALPA is on a voluntary manner from the operator whatever commercial or not) and EASA (use of the new CS 15.1592 is mandatory retroactively through AMC1 CAT OP 303 reserve to CAT operators).

response Partially accepted.

The approach followed by EASA in the implementation of the TALPA ARC recommendations is in line with ICAO. It is however recognised the difficulty for certain aircraft types to be provided with performance data compliant with the new proposed standard of CS 25.1592. Alternatives will be developed for those cases.

comment 191

comment by: Dassault-Aviation



	<p>Dassault-Aviation</p> <p>General comment: The way that EASA propose to introduce the TALPA has major negative effects for Business aviation manufacturers and operators:</p> <ul style="list-style-type: none"> <li>• Introduction of the new table of coefficient (AMC CAT OP 303) will prohibit the use of non-negligible quantities of corporate airfield used mainly by corporate operators (impact non correctly evaluated in the corresponding RIA)</li> <li>• Creates a gap in performance capabilities between FAA and EASA CAT operators for airplane not having this new operational performance data approved in their AFM. EASA CAT operators will have to use a new table with conservative coefficients while FAA operators may continue to use current operational data from their manufacturer including material already approved by JAA or EASA (AC 25-32 paragraph 11)</li> <li>• Creates a confused situation for EASA CAT operators for in-service airplanes on contaminated runway using: <ul style="list-style-type: none"> <li>○ current CS25.1591 (or older regulation) for preflight assessment at take-off and landing</li> <li>○ new CS 25.1592 (or coefficient table) for in-flight assessment</li> </ul> </li> </ul> <p>hence, for the same reported runway condition, they will have to use different assumptions between preflight and in-flight assessment.</p>
response	<p>Accepted.</p> <p>EASA acknowledges the difficulty for certain aircraft types to be provided with performance data compliant with the new proposed standard of CS 25.1592. Alternatives will be developed for those cases.</p>
comment	<p>192 <span style="float: right;">comment by: <i>Dassault-Aviation</i></span></p> <p>Dassault-Aviation</p> <p>General comment: Introduction of "reduced required landing distance operation" includes requirement for approval and training. The large number of requirements for EASA operators compared to FAA operators for the same type of operation will bring excessive burden to EASA CAT operators.</p>
response	<p>Noted.</p> <p>In general terms an approval is also required by the FAA for eligible on demand operations under Part-135 and 91K. The specific training requirements proposed by EASA are considered an important element to achieve an equivalent level of safety in this kind of operations.</p>
comment	<p>217 <span style="float: right;">comment by: <i>Federation of Norwegian Aviation Industries</i></span></p>





	<p>The Federation of Norwegian Aviation Industries fully supports the comments submitted by our Norwegian member airlines and by the Norwegian Civil Aviation Authority. We are concerned that some of the proposed changes may have as a result that winter operations in Norway in many cases will be very difficult to carry out causing a large number of delays, cancellations and diversions. Both Norwegian air carriers and airport operators have a vast experience conducting winter operations in all types of weather. In the proposal a -15C threshold value is proposed for friction coefficients, RwyCC 4. We ask that this temperature threshold is reevaluated and raised accordingly.</p>
response	<p>Noted.</p> <p>The concerns expressed in this comment will be addressed in the rulemaking task RMT.0704 by introducing the concept of operations on “specially prepared winter runways”, which will be referenced appropriately in the Regulation for air operations.</p>
comment	<p>222 <span style="float: right;">comment by: ERAA</span></p> <p><b>GENERAL COMMENTS</b></p> <p>Widerøe's Flyveselskap AS support the notion that alignment of EU rules and ICAO SARPs, and harmonization between EU and US rules can increase safety for operators operating on both sides of the Atlantic.</p> <p>However, the NPA in its current form is imposing restrictions that are both too conservative, and for some runway conditions, not sufficiently restrictive, resulting in a negative economic impact as well as degraded safety.</p> <p>The objections are expressed as comments to the relevant section and/or paragraph of the NPA.</p> <p>Widerøe's Flyveselskap AS operates in a part of the world where extensive winter conditions prevail for more than half of the year. The weather is characterized by frequent low pressure systems with associated frontal activity. Transportation of mild moist air gives rise to frequent showers of snow.</p> <p>Widerøe's Flyveselskap AS operates on 830 metre runways as steep approach 4.5 degrees with 35 ft screen height using Dash-8-100/200, and much of the material in the NPA is not applicable for this type of operation. Widerøe operates a Public Service Obligation network with clear public interest.</p> <p>Widerøe's Flyveselskap AS is of the opinion that the proposed NPA may have the effect of making winter landing operations impossible. The proposed regulation may very well be prohibitive.</p> <p>We are concerned that it will be difficult to have revised performance documentation developed. The cost may be prohibitively high, especially if a new test flight campaign needs to be carried out. The proposed landing distance factors that may be used in lieu of manufacturer data are prohibitive.</p>



	We believe that the proposed changes should be coordinated with other regulatory material, e.g. new AMC and GM to ADR. We expect that material for aerodrome personnel would need to be revised.
response	Noted.  See response to comment 285.

comment 268 comment by: *FNAM*

The FNAM (Fédération Nationale de l'Aviation Marchande) is the French Aviation Industry Federation / Trade Association for Air Transport, gathering the following members:

- CSTA: French Airlines Professional Union (incl. Air France)
- SNEH: French Helicopters Operators Professional Union
- CSAE: French Handling Operators Professional Union
- GIPAG: French General Aviation Operators Professional Union
- GPMA: French Ground Operations Operators Professional Union
- EBAA France: French Business Airlines Professional Union

And the following associated members:

- FPDC: French Drone Professional Union
- UAF: French Airports Professional Union

**Introduction:**

The comments hereafter shall be considered as an identification of some of the major issues the French industry asks EASA to discuss with third-parties before any publication of the proposed regulation. In consequence, the following comments shall not be considered:

- As a recognition of the third-parties consultation process carried out by the European Parliament and of the Council;
- As an acceptance or an acknowledgement of the proposed regulation, as a whole or of any part of it;
- As exhaustive: the fact that some articles (or any part of them) are not commented does not mean FNAM has (or may have) no comments about them, neither FNAM accepts or acknowledges them. All the following comments are thus limited to our understanding of the effectively published proposed regulation, notwithstanding their consistency with any other pieces of regulation.

**General comments :**

**Reduced required landing distance operations**

The FNAM thanks the EASA for listening to the industry by introducing the « reduced required landing distance operations » possibility.

**In-flight check of the landing distance at the time of arrival - aeroplanes**



However, the FNAM is strongly against the implementation of the IR CAT.OP.MPA.303 and its AMC & GM. Indeed, there are a lot of inconsistencies between the IR CAT.OP.MPA.303, its AMC & GM and the spirit of the Air Ops regulation. This requirement is far too complex because it is not consistent with the logic described in the IR CAT.POL.A.230. This new measure may appear dangerous to implement since it is introducing additional workload for pilots at a critical phase of flight. This additional period of consultation would allow:

- A simplification of the methodology described in the AMC1 so that it can be applicable in the cockpit
- A reevaluation of the Landing Distance Factors (LDF) which seem pulled out of the hat (contrary to what was stipulated in the explanatory note of this NPA, the factors defined in the AMC1 CAT.OP.MPA.303 (a) and (b)(1) and (c)(1) are not explicated in the FAA Advisory Circular (AC) 25-32).

Furthermore, this measure creates discrepancies between European operators and the other ones without knowing what will happen for TCO holders.

response Partially accepted.

The support of the proposal on reduced required landing distance operations is noted. The introduction of a requirement for an in-flight check of the landing distance at the time of arrival is part of a global effort at ICAO level consequent to the new standard for assessing and reporting runway surface condition. For this reason it needs to be implemented at EU level.

On the specific issues raised by the comment:

- Consistency with existing rules such as CAT.POL.A.230 will be ensured.
- The methodology and timing for the inflight-assessment will be better explained at AMC and GM level
- The factors have been established during the work of the TALPA ARC as the result of a Monte Carlo statistical analysis of operational landing distances on different runway surfaces, based on the use of:
  - 5 sample FAR 25 turbojet types (in 6 landing configurations)
  - 3 sample FAR 25 turboprop types (in 8 landing configurations), and
  - 12 sample flight conditions

The resulting factors being those with a 99% reliability.

Though not explicitly mentioned in the AC 25-32, they are proposed for use in the FAA order 8900 when OEM data developed in accordance with AC 25-32 are not available. They are also recommended by the ICAO Aeroplane Performance Manual (Doc. 10064). EASA acknowledges the difficulty for certain aircraft types to be provided with performance data compliant with the new proposed standard of CS 25.1592 and the fact that in certain cases the generic factors may be too penalising.

For such cases alternatives to the generic factors will be offered.

See also the response to comment 270 for more detailed explanations.

comment 285

comment by: *Wideroe Flyveselskap AS*

**GENERAL COMMENTS**



Widerøe's Flyveselskap AS support the notion that alignment of EU rules and ICAO SARPs, and harmonization between EU and US rules can increase safety for operators operating on both sides of the Atlantic.

However, the NPA in its current form is imposing restrictions that are both too conservative, and for some runway conditions, not sufficiently restrictive, resulting in a negative economic impact as well as degraded safety.

The objections are expressed as comments to the relevant section and/or paragraph of the NPA.

Widerøe's Flyveselskap AS operates in a part of the world where extensive winter conditions prevail for more than half of the year. The weather is characterized by frequent low pressure systems with associated frontal activity. Transportation of mild moist air gives rise to frequent showers of snow.

Widerøe's Flyveselskap AS operates on 830 metre runways as steep approach 4.5 degrees with 35 ft screen height using Dash-8-100/200, and much of the material in the NPA is not applicable for this type of operation. Widerøe operates a Public Service Obligation network with clear public interest.

Widerøe's Flyveselskap AS is of the opinion that the proposed NPA may have the effect of making winter landing operations impossible. The proposed regulation may very well be prohibitive.

We are concerned that it will be difficult to have revised performance documentation developed. The cost may be prohibitively high, especially if a new test flight campaign needs to be carried out. The proposed landing distance factors that may be used in lieu of manufacturer data are prohibitive.

We believe that the proposed changes should be coordinated with other regulatory material, e.g. new AMC and GM to ADR. We expect that material for aerodrome personnel would need to be revised.

response

Accepted.

The concerns expressed in this comment will be addressed by adding assumptions to derive landing distances in case of steep approaches and by introducing the concept of operations on "specially prepared winter runways", which will be referenced appropriately in the Regulation for air operations.

comment

326

comment by: *NetJets Europe*

NetJets supports this NPA and would like to thank the RMT for the NPA produced.

response

Noted.



comment

29

comment by: *Horst Nentwich***Comment 1. General**

Short Landing Operation using a reduced Factor should be foreseen for CAT Operator and Part NCC Operator without any difference. The focus should be on the Business Aviation having an Aircraft in Operation with a MOPSC 19 or less, a MTOM of 45.360 kgs or less.

**Comment 2. General**

The exclusion of "holiday charter" is not justifiable. It should be no difference if a Business Aviation Aircraft (e.a. MOPSC 19 or less, MTOM 45.360 kgs) is used for Transportation of Passengers doing Business or going on Holidays. EASA shall make a clear difference in regards of Short Landing Operation between commercial Scheduled/Non Scheduled Airline Industries vs commercial and NCC Business Aviation Operator.

**Comment 3. Risk Assessment or Criteria for CAT POL A 255**

Explain more in details what EASA expects to be included in the risk assessment and also make it more detailed what criteria according CAT POL A 255 (b)(2) shall be considered.

Maybe a combination of both is also a solution in order to combine steep approaches with short Landing Operations

**Comment 4: CAT.POL.A.255(b)(2)(i)**

The exclusion of steep approaches in general is much too restrictive because some airports in the Alps have a combination of a steep approach and a short runway (like Lugano e.a.). Since these airports are amongst those for which this type of operation is very much required it would be very helpful to increase this limit according to the approved AFM / AFM Supplemental Data by the Manufacturer (most of the Business Aircraft are certified for steep approach of 4.5 up to 6.0 degrees).

**Comment 5. AMC1 CAT.POL.A.255(b)(2)(iii) – Recurrent Training and Checking (c)(4):**

Since a reduced required landing distance operation is not allowed to be performed with a defect that affects the landing performance, the Recurrent Training/Checking should be more focused on the specialities of such an operation. A more detailed description would be necessary.

**Comment 6: ALAP:**

What does EASA require from an ALAP. A more precise Rule should be established

**Comment 7: Recency vs. AMC1 CAT.POL.A.255(b)(2)(iii) – Recurrent Training and Checking**

The Rule should include the possibility to keep recency when a real landing took place; but latest every three years a Simulator Recurrent should be performed.

**Comment 8: FDM**

FDM is required if the MTOM is 27.000 kgs or more, this should be considered also for Short Landing Operation.



	<p>Regards Horst Nentwich</p>
response	<p>Partially accepted.</p> <p>Comment 1: Part-NCC does not require any factor.</p> <p>Comment 2: The definition of holiday charter re-called in this GM is already existing and used in Reg. (EU) 965/2012 and it does not apply to business jet operators.</p> <p>Comment 3 and 4: Steep approach operations, as well as other special approach procedures outside of stabilised approach criteria, are not intended to be combined with reduced required landing distance operations. Each one of these options, under the conditions prescribed by the relevant rule, may be used by an operator to benefit of some flexibility under appropriate mitigating conditions, but they are not meant to be combined.</p> <p>Comment 5: An adequate training description will be provided at AMC and GM level.</p> <p>Comment 6: Clarifications on the intent and the content of the ALAP will be provided.</p> <p>Comment 7: It will be included.</p> <p>Comment 8: FDM for aircraft having a MCTOM below 27 000 kg will be recommended.</p>
comment	<p>166 <span style="float: right;">comment by: CAA Norway</span></p> <p><b>General:</b> The main threat to safe operation on contaminated runways is the presence of contamination. Consequently, the main focus for aerodrome operators will always have to be removal, so as to provide runway surface conditions equal to runway surface condition code 6 or 5, i.e. Dry or Wet conditions.</p> <p>CAA Norway has decided to focus on the part of the NPA concerning operation on other than dry runways. On the aspect of allowing an 80 % rule for some landing operations, there are only a couple of comments to the AMC/GM material.</p>
response	<p>Noted.</p>
comment	<p>206 <span style="float: right;">comment by: CAA Norway</span></p> <p><b>Relationship with other regulatory tasks</b></p> <p>CAA-N is of the opinion that the rulemaking task in hand must be seen in conjunction with the rulemaking task on the same subject related to other Parts relevant to the introduction of the new reporting format and caused by changes to ICAO Annex 3, 11, 14 and 15. (MET, ATS, ADR, AIS).</p>



	<p>Rationale: The chain from runway preparation and condition assessment through the condition report promulgation via AIS (strategically) and ATIS / ATC Voice for tactical purpose, and subsequent use of the information by operators and flightcrew for performance calculation/assessment and reporting of perceived braking performance is long. It is seen as vital that the interfaces are properly managed, and that the possibility of errors or misunderstandings is kept as low as possible and must not leave anything to chance.</p>
response	<p>Accepted. The two EASA rulemaking tasks RMT.0296 and RMT.0704 are conducted in close coordination to ensure consistency of the new provisions proposed in each domain.</p>

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comment	<p>265 <span style="float: right;">comment by: <i>Tom Wike</i></span> The proposed performance limitations are applicable to CAT operations only. NCC operations should be included as well. In reality, NCC operators are often direct competitors to CAT operators. They even might appear to customers as CAT operators, but with less restrictive performance limits. That is a flight safety issue.</p>
response	<p>Accepted. The new provisions on the Global Runway Condition Reporting Format will be extended to non-commercial operations in line with ICAO Annex 6 Part II.</p>

<b>2. Explanatory Note</b>	p. 5-18
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comment	<p>10 <span style="float: right;">comment by: <i>Aliparma/FOPh</i></span> Usually "on demand" operations do not allow enough time for such approval process by the competent authority . Furthermore, considering the purpose of this flights, it may be impossible to have determined the "public interest" by some States, specially out of Europe.</p>
response	<p>Noted. It should be noted that two types of approval of reduced required landing distance operations are being proposed. The first, proposed under CAT.POL.A.255, applies to non-scheduled on-demand commercial air transport (CAT) operations of Performance Class A aeroplanes only. This approval is not aerodrome specific and is given to the operator in general. The operator may then choose where to exercise it. The second, proposed under CAT.POL.A.355, applies to Performance Class B aeroplanes only. This approval is aerodrome specific, is valid only for aerodromes where there is a public interest, but applies to all CAT operations (i.e. scheduled and non-scheduled) conducted at that aerodrome.</p>



comment	<p>26 <span style="float: right;">comment by: <i>Gabriel Arroyo</i></span></p> <p>· Regarding the method of calculation of crosswind limits by aircraft manufacturers, even when it is accepted that is out of the scope of this NPA, we suggest to ask them to refer those limits to a certain runway width. Unlike runway slope limits, minimum runway width do not use to appear on the AFM limitations. Therefore, some limits that have been proven in a 45m width runway could not be equally acceptable for 30 m.</p>
response	<p>Noted.</p> <p>This is being done on recently certified aircraft types.</p>
comment	<p>102 <span style="float: right;">comment by: <i>Stefan</i></span></p> <p>The reduction to 80% is a good idea to harmonize EU to US. Someone would probably see this as an example of "decrementalism" allowed by regulation: operators, that are under high commercial pressure, will be approved based on risk assessments evaluated by national CAA that has (probably) no guidelines on how evaluate such a risk assessment and sometimes no specific knowledge on the aircraft types, operations, etc. It is interesting. Statistics will be provided in the future at EU level about the effects of such a change, the RIA will be therefore updated based on the data on serious incidents, accidents vs approvals accepted? The very well done study of NLR, full of interesting information, will be then updated in few years?</p>
response	<p>Noted.</p> <p>Evaluation of the rules will be performed systematically by EASA in the future. New studies may be conducted on the same subject when the need arises.</p>
comment	<p>108 <span style="float: right;">comment by: <i>Conrad</i></span></p> <p><u>Reference:</u> 2. Explanatory Note 2.4.4. Annex IV (Part-CAT) to the Air OPS Regulation AMC1 CAT.OP.MPA.303(a);(b)(1);(c)(1) In-flight check of the landing distance at the time of arrival - aeroplanes</p> <p><u>Suggested Change:</u> A new AMC is proposed, based on the FAA Advisory Circular (AC) 25-32, for the use of corrective factors for the in-flight check of the landing distance at the time of arrival when no manufacturer's data are provided <del>in the AFM</del> for performance class A aeroplanes.</p> <p><u>Rationale:</u> The main point is that manufacturers provide the required data. However, the data need not be provided in the AFM.</p>





	<p>This is actually in contradiction to the AMC1 CAT.OP.MPA.303(a), where we find: "(a) Performance information for landing distance assessment at the time of arrival should be developed in accordance with AMC 25.1592, or equivalent, and included <b>in the operations manual (OM)</b>." (Emphasis is mine)</p> <p>Actually I wouldn't like to have the at-time-of-arrival data in the AFM, as long as they are different from the dispatch data, since that would leave us with two sets of contaminated landing data in the same (certified) document. The operations manual is a good place for the at-time-of-arrival data.</p>
response	Accepted.

comment	<p>121 <span style="float: right;">comment by: ESDU, IHS Markit</span></p> <p>Page 5 Paragraph 2.2 – Objectives</p> <p>Assuming these objectives are in order of importance, the prime objective is to reduce the number of accidents and serious incidents where aeroplane performance is a causal factor. However, in the case of the third objective, the proposal is to <i>reduce safety factors</i>. This is in direct opposition to the first objective.</p> <p>It may be argued that private operators have not been required to adhere to the current CAT safety factors in the past, but those factors are currently the standard published by the safety authority. Aircraft insurers may have required private operators to adhere to the CAT factors as a condition of their insurance cover. Changing the rule to allow reduced multiplying factors will restrict insurers from requiring the use of higher safety factors, because the lower runway length safety factors would be specified in the Implementing Rules. Should there be overrun incidents in the future that would have not occurred had the current rules remained in force, there may be some difficult post-accident discussions with respect to liability for the losses incurred.</p> <p>The proposed reduction in the safety factors will expose all operators in this category of aeroplane (19 passengers, 45,360kg) to reduced runway distance safety factors. This must increase the risk of runway excursions, regardless of enhanced crew training and other proposed mitigations. The crew can still get it wrong, no matter how well-trained they are; but the additional 67% of Landing Distance Available currently set out in the CAT rules is always there whatever may happen during a particular landing. It is the expectation of a passenger that the paying of money should ensure the same level of safety for their safe arrival as if with a large commercial airline. Operators taking advantage of the reduced factors will not include in their advertising the fact that reduced safety margins are being used.</p> <p>It is claimed in this document that the mitigations added by the proposed rule change will compensate for the reduction in the multiplying factors for landing distance and so the level of safety will be 80 equivalent to the existing CAT rules. If the Agency truly believes this, why is the use of the new rules restricted to aeroplanes with no more than 19 passengers and a Maximum Certificated Take Off Mass not exceeding 45,360kg?</p>
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Many of the major airlines would be able to demonstrate greater consistency and accuracy in landing operations and better assurance of quality of crew training than the operators of these smaller aircraft. If a major airline could show compliance with all of the mitigations and asked for the rules to be amended to remove the passenger and mass restrictions (and so allow the Airbus A380 and other airliners to operate to factors based on 80% / 1.25 instead of 60% / 1.67) how would the Agency refuse to do so, given that the NPA claims that the level of safety is the same? If there were to be universal use of the proposed lower factors the overall safety record would undoubtedly be affected adversely.

The Agency should not risk misleading the public and the Commission on this point. The Agency should be open and honest about the proposal and state in the NPA/Opinion that the change is being made to harmonise with the reduced safety margins that are permitted by FARs, which, so far, have not led to an accident rate that is unacceptable in the USA. It can also be stated that harmonisation with FARs will avoid putting European operators at a commercial disadvantage when competing with similar operators who are complying with FARs. But the Agency should not claim that the new rules will provide a level of safety that is equivalent to the current rules.

response

Partially accepted.

The reasons for the proposal on reduced required landing distances are clearly explained in the RIA with regards to business aviation operations and the need for harmonisation with the corresponding US rules. The RIA figures will be also updated with data gathered from operations conducted in the US over the last years with a satisfactory safety record. Considering that the conditions proposed by EASA to conduct the said operations are more restrictive than those in the US, the safety level is expected to remain at the same level or to improve.

As regards the aircraft eligibility for the said operations, the mass threshold will be changed to an AFM eligibility statement.

comment

122

comment by: ESDU, IHS Markit

Page 6

Paragraph 2.3 – Summary of the RIA - Reduced Landing Distance

The paragraph that deals with ‘Reduced required landing distance for Performance Class A and B aeroplane operations’ is both confusing and misleading.

It is confusing because it does not define the options clearly – (this is a public consultation NPA, not a discussion document between specialists).

It is misleading because it states that the reduction in landing distance factors with the specified mitigations will provide the same level of safety as the current rules. How can a reduction in the minimum Landing Distance Available (a 25% reduction for Class A jet aeroplanes) offer the same level of safety? (See also comment made against paragraph 2.2)

This paragraph 2.3 claims social and economic benefits that are difficult to understand given that the proposal is to reduce the multiplying factors for landing distance. The passengers on these smaller aircraft are likely to be paying considerably more for their journey compared



	<p>with airline passengers over a similar route; potentially many times more. How can it be more proportionate to allow reduced runway safety factors for aeroplanes carrying passengers who are paying the highest fares?</p> <p>The requirement for these operations to be approved by the competent authority of the operator is of limited value. Any competent authority within EASA who refuses approval will be accused of “gold plating” the rules by requiring a more rigorous level of compliance compared with other Member State authorities.</p> <p>The supporting safety assessment produced by NLR presents evidence that there are significantly more “long landings” and a greater variation in touchdown point position in ‘business type aircraft’ operations compared with airline operations. It does not make logical sense that this is presented as evidence for allowing smaller landing distance multiplying factors for business aircraft operators. Surely this evidence is a clear justification for keeping the existing 60% / 1.67 factors for business operators?</p> <p>The NPA is proposing to introduce reduced runway distance factors without presenting any evidence that the proposed mitigations will be effective. What evidence is there to support the claim that these mitigations will compensate for the reduced landing distance factors?</p>
response	<p>Not accepted.</p> <p>Paragraph 2.3 is a short summary of the RIA. The full details are given in the RIA chapter of the NPA. As regards the options they are only two: Option 0 i.e. do nothing (the baseline option) and option 1, which is the regulatory proposal for reduced landing distance operations.</p> <p>The mentioned social benefits are intended mostly for performance class B aeroplanes where reduced landing distance operations will be allowed only for aerodromes where a public interest exists.</p> <p>The economic benefit will be for the potential traffic increase at certain aerodromes where those operations may be conducted.</p> <p>As regards competent authority approvals, already today special limitations may be imposed at aerodromes where a specific safety concern exists.</p> <p>The NLR study, after highlighting certain risks proposed the measures to mitigate those risks to a level comparable to that of the traditional landing factors.</p>
comment	<p>123 <span style="float: right;">comment by: ESDU, IHS Markit</span></p> <p>Page 11 – AMC1 CAT.OP.MPA.311, The use of words like ‘should consider’ in the AMC material may cause significant problems in an operational environment when things go wrong. There is a known case (an overrun incident in January 2016) leading to a dispute between an operator and an aerodrome as to whether the runway state report reflected the actual conditions. It is believed that this matter is being referred to the local legal courts. Whilst it is understood that AMC material cannot use terms such as ‘must’ or ‘shall’ It is recommended that the AMC wording be strengthened where possible and that definitions are made more precise.</p> <p>To take an example - if a runway is cleared, but there are ice patches on the runway that total less than 25% of one third of the runway, is this really to be considered DRY?</p>
response	<p>Noted.</p>



As correctly mentioned the use of the verb “should” is part of the drafting conventions for AMCs. However, while more precise information may be provided at GM level, further details are also provided in the aerodrome regulation which is being concurrently and consistently amended in regard to these matters by the rulemaking task RMT.0704.

comment

124

comment by: ESDU, IHS Markit

Page 13

CAT.POL.A.255 Approval of reduced required landing distance operations.

The proposal to change the landing distance factors for smaller aeroplanes (not more than 19 passengers and 45,360 kg MTOM) is presented in a very confusing way. We believe that the description in the NPA makes the proposal difficult to understand even by experts. This undermines the purpose of the NPA, which is a ‘public consultation’.

The use of percentages and multipliers to refer to the same limitations is extremely confusing, especially if the reader is not a performance specialist. For example the same factor appears as the multiplier 1.43 and as 70%. In particular, the use of percentages where an increased percentage means a reduced runway length available is very confusing. It is accepted that this is how the FAA expresses distances, but we recommend that EASA does not do this. Using the ‘traditional’ terms ‘Landing Distance Available’ (which is completely fixed and unambiguous) and ‘Landing Distance Required’ (which can either be unfactored or expressed with a multiplying factor) gives much greater clarity.

Always expressing the safety landing distance factors as multipliers, so that factors that are greater than 1 increase the distance required, is logical and may be understood more easily. It is recommended that the entire NPA, Opinion and regulation text should be adjusted to do this.

We also recommend that a clearly written statement explaining the proposed changes to the runway distance factors should be included when this proposal is published again, whether it is published as a revised NPA or as an ‘Opinion’.

It is suggested that the following text could be inserted just after the list of four mitigating measures to provide a clearer explanation – particularly for a non-specialist reader

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Explanation of the rules for aeroplane landing distances.

Aircraft/Actual Landing Distances (ALD) -

For each aircraft type the manufacturer will provide performance data in the Aircraft Flight Manual (AFM). This should include the Aircraft/Actual Landing Distances (ALD) for the full range of landing conditions that may be encountered in service. i.e. ALD values are provided for the appropriate range of values of aircraft operating mass, runway altitude, wind speed and direction etc.

The ALD is the distance from the position of the approach ‘screen height’ to the aircraft coming to a full stop - on a DRY runway.



The calculation of ALD assumes that the landing is performed precisely in accordance with the procedures set out in the AFM, meaning that: the aircraft crosses the runway screen height position at the correct altitude and speed; it touches down at the correct point on the runway; and maximum braking is used to bring the aircraft to a stop.

Landing Distance Available (LDA) –

The Landing Distance Available is the length of the runway at the destination aerodrome that is available to be used safely. It is measured from the position of the screen height to the opposite end of the runway.

The operating rules recognise that any particular landing may be different to the landing technique that is assumed in the AFM performance calculations. The aircraft may approach the runway faster and/or higher than assumed; the aircraft may touchdown further along the runway than the optimum point; the actual winds and other weather factors may be different to those assumed in the calculation of ALD; and maximum braking may not be achievable. For this reason the Landing Distance Available (LDA) must always be greater than the predicted Aircraft/Actual Landing Distance (ALD) that is provided in the AFM performance data. The amount by which the LDA must exceed the ALD is defined in the Operating Rules.

For aeroplanes operating for Commercial Air Transport the current rules for landing distance factors may be found in CAT.POL.A.225, CAT.POL.230 and CAT.POL.235.

For a turbo-jet powered aeroplane in Performance Class A that is to land on a dry runway the current CAT.POL.A.230 requires that the ALD must not exceed 60% of the LDA.

This means that the Landing Distance Available must be at least  $1.67 \times \text{ALD}$  – (i.e. 1.67 times the distance that will be used by the aircraft according to the AFM data if the landing is precisely in accordance with the calculation assumptions).

The crew will look up the ALD in the AFM for the aircraft weight and for the altitude, wind etc. that is forecast at the destination aerodrome and then multiply this by 1.67 to obtain the minimum permitted runway length that must be available at the destination, (the Landing Distance Available).

If the runway is wet, CAT.POL.A.235 requires that a further factor of 1.15 must be applied.

So for a turbo-jet powered aeroplane landing on a wet runway the Landing Distance Available (LDA) must be at least  $1.67 \times 1.15 \times \text{ALD} = 1.92 \times \text{ALD}$ .

For a turbo-propeller powered aeroplane in Performance Class A the ALD must not exceed 70% of the LDA. So the equivalent factors for a turbo-propeller powered aeroplane are  $1.43 \times \text{ALD}$  for a dry runway and  $1.64 \times \text{ALD}$  for a wet runway.

The proposed amendment to the rules -

The amendment that is proposed in this document would allow the operators of small Performance Class A aeroplanes (with not more than 19 passengers and Maximum Take Off Mass not exceeding 45,360kg) to use smaller landing distance factors. The rule change would permit these aeroplanes to land on shorter runways. The new factors for these smaller aircraft are based on the dry ALD not exceeding 80% of the LDA, for both turbo-jet and turbo-propeller powered aeroplanes.



The resulting multiplying factors for Performance Class A aeroplanes are compared with the existing factors as follows:

Aeroplane	Runway condition	Landing Distance Factors LDA must be at least [factor] x ALD		Percentage reduction in minimum LDA at destination
		Existing rules	Proposed rules for smaller aeroplanes	
Turbo-jet powered	Dry	1.67	1.25	25%
	Wet	1.92	1.44	25%
Turbo-propeller powered	Dry	1.43	1.25	12.5%
	Wet	1.64	1.44	12.5%

This means that, under the proposed new rules, small turbojet-powered aeroplanes will be allowed to land on runways that are 25% shorter than currently; and small turbo-propeller powered aeroplanes will be allowed to land on runways that are 12.5% shorter.

To give an example:

Assume that the crew of a turbo-jet powered aeroplane look up the aircraft/actual landing distance in the Aircraft Flight Manual for the aircraft mass and other conditions expected at the destination and they find that the value of ALD is 1000 metres.

Under the existing rules for turbo-jet powered aeroplanes, the minimum landing distance available at the destination must be 1,670m if the runway is dry or 1,920m if the runway is wet.

If the aeroplane can carry fewer than 19 passengers and its maximum certificated take-off mass does not exceed 45,350kg, the proposed new rules will reduce the minimum landing distance that must be available at the destination to 1,250m if the runway is dry or 1,440m if the runway is wet. (i.e. A reduction of 420m for dry conditions and 480m for wet conditions).

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It is recommended that a clear explanation, similar to the above, be included in any revised NPA and in any Opinion on this subject. It is further recommended that any revised NPA and the Opinion should refer throughout to the factors 1.67, 1.92, 1.25 and 1.44. This should then avoid causing any confusion by the use of percentages and words such as ‘increase’ and ‘decrease’ etc.

response

Accepted.

The text proposed in the comment will be used as a basis to provide more explanations in the AMC/GM to the relevant rules.

comment

125

comment by: ESDU, IHS Markit

Page 13 –

Paragraph 2.4.4 – CAT.POL.A.255 Approval of Reduced Required Landing Distance Operations.



It is difficult to understand how reduced factors are needed “to achieve proportionality of the rules for business aviation operators”. What is being proposed is a lower safety standard for Business Aviation relative to that required for other forms of Commercial Air Transport (CAT). The supporting NLR report shows that Business Aviation Operators currently fall far short of the standards achieved by Commercial Air Transport Operators for touchdown dispersal accuracy and the target approach speeds. To compensate for the reduced factors, the mitigation measures must improve the performance of the flight crews to a standard that is better than that currently achieved by the airlines operating to CAT rules, It is considered that the proposed mitigation measures will not achieve this for the following reasons:

- Operational Conditions - see CAT.POL.A.230 (a)(3) and CAT.POL.A.235 (a).

The current dry landing distance factor is 1.67 (land within 60% of the distance available) for turbojet powered aircraft and 1.43 (land within 70% of the distance available) for turbo-propeller powered aeroplanes. For turbojet powered aircraft, an additional 15% factor for wet gives an overall factor of 1.92 which means that the specific increase for a wet runway is 25% of the un-factored landing distance. If the proposed landing distance factor (80%) is used, this corresponds to a 25% factor and an additional 15% factor for wet giving an overall factor of 43.8%. This means that the specific increase in landing distance for a wet surface reduces from 25% to 18.8% and the overall factor for a wet surface is considerably less than that originally applied to a dry surface for turbojet powered machines.

- Flight Crew

The same crew complement is proposed as was previously required for turbojet powered aircraft. Additional training on simulators is unlikely to enhance the crew skills significantly as business jet simulators rarely have limiting runways modelled. (The European certified airfields for many of these simulation devices include Heathrow, Gatwick and Amsterdam). Also, the contaminated runway modelling in these simulators is generally not consistent with the TALPA ARC matrix.

The wheel brake system characteristics for the smaller business jets are generally not as effective as those for the larger aircraft and for the flight crew there is also a greater emphasis on smooth landings and moderate braking for executive customers.

- Aerodrome Conditions

The proposed change is targeted at business operations, which are likely to be flying into smaller aerodromes that are less well-equipped. Compared with airline operations these operations are likely to be landing at aerodromes with: shorter runways; less equipment available (i.e. a lack of precision approach aids); runway surfaces that are not as well maintained and monitored; and less frequent aircraft movements resulting in runway surface reporting that is less up to date.

In addition, the surrounding environment including terrain and obstacles can be more challenging at these smaller airports. Reliance on external visual cues would limit operations to good VMC and daylight!

- Aeroplane Characteristics and Performance

The small business aircraft in question tend to be less capable in marginal conditions compared with large transport aeroplanes. They have fewer supporting systems such as autobrake and auto-throttle and many do not have thrust reversers - or because of their configuration they have reversers that are less effective. In addition, speed control can be



more challenging in these smaller aircraft; (even the more sophisticated autopilots of large transport aircraft use an approach speed of  $V_{REF} + 5$  knots to address speed variation).

The NPA proposes to change the Operating Rules significantly, but only to modify the Airworthiness Certification rules with respect to operations from Contaminated Runways, and to make changes in the AMC to the details for deriving Landing Distance information in flight. The NPA does not modify the Airworthiness Certification Rules for the landing distance determination made before departure. This will lead to inconsistencies as will now be illustrated.

The following assessment uses the AFM data for a real mid-range business jet.

For this aircraft type the certification tests for dispatch data used the parametric method with a  $3\frac{1}{2}^\circ$  approach at  $V_{REF}$ , a touchdown rate of 8 ft/sec and maximum manual braking. In real operations the techniques that were used to establish the scheduled landing distance are unlikely to be reproduced.

For normal operations (where passenger comfort is a significant factor) a  $3^\circ$  approach at  $V_{REF} + 7$  knots, a touchdown rate of 1-4 ft/sec (see the last line of page 44 – AMC 25.1592 paragraph 6.1) and autobraking would be typical.

A calculation of the total effect of these deviations from the certification technique (actually using 6 ft/sec touchdown due to software constraints) gives an expected landing distance on a dry runway that is 25.9% greater than the AFM value. This means that a typical normal landing would use all of the landing distance available based upon the proposed 25% factor, with no margin. These assumptions may be optimistic if other factors are present, such as lack of precision approach guidance.

This calculation used AFM data for a standard ISA day. Current operating rules allow standard conditions to be used for landing distance calculations, because the pressure/density and temperature variations are considered to be covered by the existing 1.67 factor.

For this aircraft type we have calculated that a warm summer temperature of  $35^\circ\text{C}$  (ISA+20) would result in the 25.9% factor derived above increasing to 31.8%. This would clearly exceed the Landing Distance Available based on the proposed 1.25 factor.

Even though the existing landing distance factors are in place to cover these variabilities in technique and weather conditions, runway excursions are one of the most frequent kinds of accident or serious incident. A casual look at the accident statistics suggests that business jets have a much poorer record than other commercial aircraft in this respect. Therefore the proposal goes against the stated objective of reducing the number of performance related accidents and we recommend that the reduced factors are not permitted for any CAT operations.

response

Not accepted.

The issues mentioned in the comment have been considered in the NLR study, and the results indicate that, the current average standard of business aviation operators is certainly lower than that of traditional large CAT operators. However, enhanced flight crew training, to the same standard of CAT operations and a number of additional mitigating measures (such as no operations on contaminated runways, plus others included in the conditions required for the approval) will allow to attain an equivalent level of safety.

comment

126

comment by: ESDU, IHS Markit

Page 16 –





	<p>CAT.POL.A.355, Paragraph 3 This paragraph states: “The intent of the rule is to achieve proportionality of the rules for small CAT operators under a set of conditions that, as explained in Chapter 4 (RIA) of this NPA, are considered to attain a level of safety equivalent to that intended by CAT.POL.A.230.”</p> <p>If it is considered to be an equivalent level of safety why is the use of the reduced factors restricted to aircraft with 19 passengers and a mass of 45,360 kg? If the level of safety will be unchanged or will even be increased with the new rule, it must be acceptable to operate larger/heavier aeroplanes to the factors based on 80% of landing distance available. The application of the passenger and mass limitations is a clear admission by the Agency that the level of protection provided by the proposed runway distance factors for the smaller aeroplanes will be lower than is provided by the current rules. This should be made clear in the NPA and any Opinion to the Commission.</p>
response	<p>Partially accepted.</p> <p>The mass threshold will be replaced by an aircraft AFM eligibility statement.</p>
comment	<p>127 <span style="float: right;">comment by: ESDU, IHS Markit</span></p> <p>Page 16 Paragraph 2.4.4 – CAT.POL.A.355 Approval of Reduced Required Landing Distance Operations. (Performance Class B aeroplanes) Our comments made against CAT.POL.A.255 (Class A Aeroplanes) also apply here, but with additional concerns because it is stated that the training will be simplified compared with that provided for the pilots of Class A aeroplanes. What are the further limitations proposed for the ‘control of the touchdown area’?</p>
response	<p>Noted.</p> <p>The control of the touchdown area should be identified by references on the runway visible from the flight deck. Adequate go-around and balked landing instructions should be also provided in case touchdown in the designated area is not achieved.</p>
comment	<p>170 <span style="float: right;">comment by: UK CAA</span></p> <p><b>Page No:</b> 5</p> <p><b>Paragraph No:</b> Explanatory note</p> <p><b>Comment:</b> The UK CAA appreciates the considerable amount of effort that has obviously gone into providing such a comprehensive explanatory note. This helped considerably in understanding rationale and principles intended with the proposed changes.</p>
response	<p>Noted.</p>
comment	<p>171 <span style="float: right;">comment by: UK CAA</span></p>



	<p><b>Page No:</b> 6 et seq.</p> <p><b>Paragraph No:</b> Those relating to reduced required landing distance proposals.</p> <p><b>Comment:</b> Before approval can be given for use of required landing distance it is essential that there is a measurable demonstration that all the enhanced mitigating measures have had an effect on achieved landing parameters cited in the NLR justification. Especially for those relating to crew performance, there needs to be some demonstration that they have had some measurable effect on the improvement in accurate approach and landing criteria. FDR evidence would be the best method of assessment criteria that should be introduced into the rule proposal.</p> <p><b>Justification:</b> The NLR Safety Study highlights in Table 2 on page 16 that only two of the four types studied would meet theoretically the equivalent level of safety for the normally-factored dry case cases, and this assumes that all the enhanced mitigation measures have their intended effect. In the case of the measures relating to crew performance, (e.g. enhanced training, accuracy of approach and landing speed control) these are not directly measurable quantities and are difficult to assess.</p> <p>Recognising that, as the NLR Safety Study says “Flight data from business operators show that compared to commercial operators a larger percentage of unstabilised approaches are continued”, and also that for business aircraft, the speed deviations at the threshold are much higher than for commercial airlines, it would appear that FDR evidence would be the best method of assessment criteria.</p>
response	<p>Partially accepted.</p> <p>The aircraft categories for which FDM is mandatory are established in ORO.AOC.130 on the basis of more general criteria which are not meant to be revised by this proposal. When FDM is available, it should be used also for the purposes of CAT.POL.A.255. Moreover it is recommended to be used on a voluntary basis also when it is not required by ORO.AOC.130. However, alternative means for data collection will be considered and the analysis of operator’s performance in relation to unstable approaches and long landings will be included in the risk assessment.</p>
comment	<p>188 <span style="float: right;">comment by: Dassault-Aviation</span></p> <p>Dassault-Aviation</p> <p>Page 6: Reduced required landing distance</p> <p>Comment: Dassault supports this evolution but profusion of requirements for approval and training may dissuade operators. Requirements should be harmonized with Part 91K and part 135 EOD.</p>
response	<p>Noted.</p>



The training requirements, along with the other conditions required for the approval of this kind of operations, are an essential part of the balanced approach enabling an equivalent level of safety.

comment 189 comment by: Dassault-Aviation

Dassault-Aviation

Page 10: In flight check of the landing distance at the time of arrival.

Comment:

This evolution is a necessary step in the way of providing and using performance data for in flight assessment. Dassault position is to support these evolutions in parallel to the activities in process of the “Flight Test Harmonization Working Group”. We would highlight the fact, that the introduction of this proposal concerning the certified data should be delayed and introduced simultaneously with the results of the “Flight Test Harmonization Working Group” for consistency of the full package related to preflight and in flight performance assessment.

response Noted.

Though the work of the FTHWG has been followed and acknowledged during this RMT, there is not yet a final decision and a schedule on the implementation at regulatory level of its proposals on landing performance for wet runways. Therefore they may only be considered at a general level by re-wording the EASA rules on wet runways in a performance-based manner that can host the future availability of new landing performance standards for wet runways.

comment 223 comment by: ERAA

CAT.OP.MPA.303 p. 10:

Performance class A: Is the 15% margin applicable to the unfactored landing distance?

response Noted.

See response to comment 286.

comment 224 comment by: ERAA

AMC1 CAT.OP.MPA.311 Runway braking action reporting

Pilot advisory report



The NPA is stating that pilot advisory report of braking action should be used for downgrading a braking action category. Widerøe's Flyveselskap AS is questioning how this is envisioned as this concept introduces challenges related to pilot evaluation and standardization.

Experience, being an airline operating turbo prop aircraft, with mass between 15-30 tonnes, is that pilots of medium weight jet aircrafts, typically Boeing 737, are reporting braking action that are more slippery than the values observed by our flight crew.

The difference in observed braking action is likely related to the aircraft characteristics. The jet, which is 2-4 times heavier than the turbo prop in question, also has a touchdown speed which is approximately 30-40 knots higher. The resulting kinetic energy that has to be dissipated for the jet is thereby 3,5 to 8 times higher for the jet than for the turbo prop.

A jet aircraft is mainly relying on wheel brakes for stopping, whereas a turboprop employ much more effective aerodynamic braking by propellers in disc or reverse. Flight crew operating jets will likely observe activation of the anti skid function of the brakes when auto brake is selected before landing, while flight crew of turbo prop will not use brakes other than for management of taxi speed and setting of parking brake.

The NPA does not indicate means for standardized pilot reports, neither within an airline nor between different aircraft types. This may be difficult to achieve and most likely some kind of standardized aircraft system is required to obtain reliable and consistent data.

Hence, too much reliance on pilot reports can have two important consequences that should be considered:

1. Pilot report issued from a turbo prop can confirm that the braking action is better than it really is, which may introduce stopping and/or control problems for a jet
2. Pilot report issued from a jet aircraft may downgrade the RWYCC so that the runway must be closed for treatment, leading to unnecessary holding and possible diversion and low fuel scenario for turbo prop aircraft

Runway Friction Measurements ( $\mu$ )



The NPA quotes the TALPA ARC that; “reported friction values should no longer be reported to pilots,..... .. Furthermore, an ICAO SARP recommends not to consider friction readings in winter conditions, except for hard contaminants.” Widerøe's Flyveselskap AS is arguing that such practice may benefit flight crew not accustomed to winter operation as it reduces possible confusion, but it definitively has a negative impact on the total situational awareness for experienced flight crew operating in the same environment.

Widerøe's Flyveselskap AS is operating 130000 flights per year in Norway, Scandinavia and UK, to aerodromes that in 2012/2013 produced a total of 34000 SNOWTAMS. This means that our flight crew has considerable knowledge of, and experience in winter operation and as such can anticipate what the runway condition should be based on weather reports, precipitation, temperature, forecast etc. In our view presentation of the measured friction coefficient and type of measuring device in the remark field of the Runway Condition Report, RCR; will enhance the possibility for an experienced flight crew to increase his overall situational awareness when evaluating the runway conditions. The flight crew will then know if the reporter has upgraded or downgraded the RWYCC both from the RCAM and in relation to the measured value.

Widerøe's Flyveselskap AS is suggesting that friction measurements performed by competent personnel may be presented in the remark field of the RCR. The presented data is only to be used for increased situational awareness, not performance calculation.

response

Noted.

See response to comment 289.

comment

247

comment by: *General Aviation Manufacturers Association / Hennig*

GAMA notes the NPA's reference to the Takeoff and Landing Performance Assessment Aviation Rulemaking Committee (TALPA ARC) which met in 2008-2009 and in which the agency directly participated together with all the turbine aeroplane OEMs.

GAMA is providing several specific comments about areas where NPA 2016-11 seems to diverge from FAA generated guidance material which causes concern for divergent requirements being established between the two regulators.

GAMA recommends that the agency work closely with its trans-Atlantic partners at the U.S. FAA to achieve a harmonised set of requirements for runway performance, because diverging standards that are not harmonised will significantly increase cost on manufacturers and cause confusion in the operator community.

response

Noted.

Harmonisation will be pursued to the maximum possible extent.



comment	272	comment by: IATA
	<p>2.2 Objectives [...] “- contribute to the harmonisation of FAA and EU operational requirements on aeroplane performance for CAT operations”</p> <p>IATA Comments: It is proposed that Harmonization should be mentioned as follows: “contribute to the global harmonization of regional, notably FAA and EU operational requirements on aeroplane performance in support of CAT operations”</p>	
response	<p>Accepted.</p> <p>It will be mentioned in the Opinion.</p>	
comment	273	comment by: IATA
	<p>EAPPRE Ref 3.7.2 EASA reply “Flight Test Harmonization Working Group (FTHWG)”</p> <p>IATA Comments: It is proposed to mention under which governance this Group is working. It should then be read as follows:...</p> <p>“it was recognised that the issue is currently being addressed by the [??] Flight Test Harmonization Working Group (FTHWG), etc”</p>	
response	<p>Accepted.</p> <p>The Opinion will specify that the FTHWG is a working group which answers to the FAA Aviation Rulemaking Advisory Committee.</p>	
comment	286	comment by: Wideroe Flyveselskap AS
	<p>CAT.OP.MPA.303 p. 10:</p> <p>Question to EASA:</p> <p>Performance class A: Is the 15% margin applicable to the unfactored landing distance?</p>	
response	<p>Noted.</p> <p>Yes the 15% margin is applicable to the unfactored landing distance calculated using performance data for the time of arrival.</p>	
comment	289	comment by: Wideroe Flyveselskap AS
	<p>P11 AMC1 CAT.OP.MPA.311 Runway braking action reporting</p>	



### Pilot advisory report

The NPA is stating that pilot advisory report of braking action should be used for downgrading a braking action category. Widerøe's Flyveselskap AS is questioning how this is envisioned as this concept introduces challenges related to pilot evaluation and standardization.

Experience, being an airline operating turbo prop aircraft, with mass between 15-30 tonnes, is that pilots of medium weight jet aircrafts, typically Boeing 737, are reporting braking action that are more slippery than the values observed by our flight crew.

The difference in observed braking action is likely related to the aircraft characteristics. The jet, which is 2-4 times heavier than the turbo prop in question, also has a touchdown speed which is approximately 30-40 knots higher. The resulting kinetic energy that has to be dissipated for the jet is thereby 3,5 to 8 times higher for the jet than for the turbo prop.

A jet aircraft is mainly relying on wheel brakes for stopping, whereas a turboprop employ much more effective aerodynamic braking by propellers in disc or reverse. Flight crew operating jets will likely observe activation of the anti skid function of the brakes when auto brake is selected before landing, while flight crew of turbo prop will not use brakes other than for management of taxi speed and setting of parking brake.

The NPA does not indicate means for standardized pilot reports, neither within an airline nor between different aircraft types. This may be difficult to achieve and most likely some kind of standardized aircraft system is required to obtain reliable and consistent data.

Hence, too much reliance on pilot reports can have two important consequences that should be considered:

1. Pilot report issued from a turbo prop can confirm that the braking action is better than it really is, which may introduce stopping and/or control problems for a jet
2. Pilot report issued from a jet aircraft may downgrade the RWYCC so that the runway must be closed for treatment, leading to unnecessary holding and possible diversion and low fuel scenario for turbo prop aircraft

### Runway Friction Measurements (Mu)

The NPA quotes the TALPA ARC that; "reported friction values should no longer be reported to pilots,..... .. Furthermore, an ICAO SARP recommends not to consider friction readings in winter conditions, except for hard contaminants." Widerøe's Flyveselskap AS is arguing that such practice may benefit flight crew not accustomed to winter operation as it reduces possible confusion, but it definitively has a negative impact on the total situational awareness for experienced flight crew operating in the same environment.

Widerøe's Flyveselskap AS is operating 130000 flights per year in Norway, Scandinavia and UK, to aerodromes that in 2012/2013 produced a total of 34000 SNOWTAMS. This means that our flight crew has considerable knowledge of, and experience in winter operation and as such can anticipate what the runway condition should be based on weather reports, precipitation, temperature, forecast etc. In our view presentation of the measured friction coefficient and type of measuring device in the remark field of the Runway Condition Report, RCR; will enhance the possibility for an experienced flight crew to increase his overall



	<p>situational awareness when evaluating the runway conditions. The flight crew will then know if the reporter has upgraded or downgraded the RWYCC both from the RCAM and in relation to the measured value.</p> <p>Widerøe's Flyveselskap AS is suggesting that friction measurements performed by competent personnel may be presented in the remark field of the RCR. The presented data is only to be used for increased situational awareness, not performance calculation.</p>
response	<p>Partially accepted.</p> <p>The remark filed of the RCR can be always used to provide additional information to increase the flight crew situational awareness. Part of the concerns expressed in the comment will be also addressed in the rulemaking task RMT.0704 by introducing the concept of operations on “specially prepared winter runways”, which will be referenced appropriately in the Regulation for air operations.</p>
comment	<p>333 <span style="float: right;">comment by: <i>NetJets Europe</i></span></p> <p>NetJets supports the in-flight check of landing distance at the time of arrival and teh harmonisation with the FAA.</p>
response	<p>Noted.</p>
comment	<p>343 <span style="float: right;">comment by: <i>NetJets Europe</i></span></p> <p>NetJets supports the increased safety due to more accurate assumptions and supports the accompanying reduction from 60% to 80% of the LDA.</p>
response	<p>Noted.</p>
comment	<p>344 <span style="float: right;">comment by: <i>NetJets Europe</i></span></p> <p>NetJets supports teh objectives. The Accident Investigation Board Norway and UK Civil Aviation Authority highlight risks of operating on contaminated and slippery runways. This NPA address these highlighted risks</p>
response	<p>Noted.</p>
comment	<p>345 <span style="float: right;">comment by: <i>US FAA</i></span></p> <p><b>AMC1 CAT.OP.MPA.311</b></p> <p><b>Comment summary</b></p> <p>Sentence: Runway condition codes are to be reported for each third of the runway when more than 25% of one third of the runway surface is contaminated.</p> <p>FAA implementation of TALPA ARC requires RCC to be reported when 25% of the entire runway is contaminated.</p>





	<p>EASA (and ICAO) recommended practice may greatly increase the number of occurrences when airplane performance will be affected adversely without a commiserate increase in safety.</p> <p><b>Suggested resolution</b></p> <p>Recommend EASA adopt FAA and traditional standard of reporting RCC's only when more than 25% of the entire surface is contaminated.</p>
<p>response</p>	<p>Not accepted.</p> <p>The reporting criteria are an important element agreed at ICAO level for the global implementation of the new set of rules on runway condition assessment and reporting and therefore are kept.</p> <p>The new reporting format leads to an assumption of dry runway below the coverage threshold where previously the operator would have calculated with a wet runway assumption. This reduces the margins available in operations. To ensure that the existing margins are sufficient for (unreported) worse case contamination of the runway, the reporting threshold had to be reduced to 25% of one third.</p>
<p>comment</p>	<p>346 <span style="float: right;">comment by: US FAA</span></p> <p><b>AMC1 CAT.OP.MPA.311</b></p> <p><b>Comment summary</b></p> <p>Sentence: The concept of reporting runways as 'slippery wet', when the measured friction drops below the <b>maintenance threshold</b>, was previously recommended for enforcement by the States in ICAO Annex 14, but no associated aeroplane performance was so far available to allow flight crew to take this information into account in their performance assessment at the time of arrival.</p> <p>ICAO Annex 14 Attachment A and FAA AC 150-5320-12C refer to reporting slippery wet runway conditions when the friction falls below the established 'minimum' level not the 'maintenance'. This threshold is also called out in the draft version of the ICAO Airplane Performance Manual being created to support TALPA.</p> <p><b>Suggested resolution</b></p> <p>Change the phrase "below maintenance threshold" to "below minimum threshold"</p>
<p>response</p>	<p>Noted.</p> <p>The explanatory note of the NPA cannot be re-issued. However the correct terminology will be used in the Opinion.</p>



comment	<p>347</p> <p><b>AMC 25.1591</b></p> <p><b>Comment summary</b></p> <p>Sentence: Information and explanatory material is amended in accordance with the TALPA ARC recommendations and FAA AC 25-31, taking into account ICAO standards for runway condition codes and contaminant descriptors.</p> <p>AMC 25.1591 refers to <b>takeoff only</b> as does FAA AC 25-31. Takeoff performance is only referred to contaminant descriptors, type and depth. Runway condition codes are not referred in AMC 25.1591 nor are they referred to in FAA AC 25-31.</p> <p><b>Suggested resolution</b></p> <p>Delete: “runway condition codes and” from the sentence.</p>	comment by: <i>US FAA</i>
response	<p>Not accepted.</p> <p>The text in question is only a summary explaining in general terms the background of the changes. Runway condition codes do not appear in AMC 25.1591.</p>	

### 3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.1. Definitions p. 19-21

comment	<p>4</p> <p>Definitions to be in line with Annex 6 – 14 Contaminated / dry rwy and delete damp</p>	comment by: <i>KLM</i>
response	<p>Accepted.</p> <p>Definitions will be harmonised.</p>	
comment	<p>11</p> <p>"Dry Runway" definition needs a more clear and observable state as the words "visible moisture" concept is subject to personal interpretation.</p> <p>"Damp Runway" definition is needed (and should not be deleted) the "shiny appearance" concept was appropriated</p>	comment by: <i>Aliparma/FOPh</i>
response	<p>Not accepted.</p> <p>These definitions are kept in line with the relevant ICAO standards for the global reporting format. The definition of “damp runway” is deleted as this condition is included in the definition of “wet runway”.</p>	



comment	<p>31 <span style="float: right;">comment by: <i>safe-runway.GmbH</i></span></p> <p>(103a) ‘Runway condition assessment matrix (RCAM)’ means a matrix allowing the assessment of the runway condition code, using associated procedures, from a set of observed <b>or measured</b> runway surface condition(s) and pilot report of braking action.</p> <p><u>Motivation:</u> Adding “or measured” opens the possibility for (future) technical development and innovations capable of providing and disseminating automated measurements of braking actions from e.g. aircraft.</p>
response	<p>Not accepted.</p> <p>The proposed definition is in line with ICAO SARPs and does not preclude the introduction of future technologies.</p>
comment	<p>47 <span style="float: right;">comment by: <i>AIRBUS</i></span></p> <p><b>SUBJECT :</b> Definition of RWYCC</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b> 3.1.1 Definitions 1. (103b) ‘Runway condition code (RWYCC)’</p> <p><b>2. PROPOSED TEXT / COMMENT:</b> Replace definition with: “means a number that describes the effect of the runway surface condition(s) on aeroplane deceleration performance and lateral control.”</p> <p>Amend the Note to say: “the purpose of the runway condition code is to permit an operational aeroplane <b>landing</b> performance calculation by the flight crew.”</p> <p><b>3. RATIONALE / REASON / JUSTIFICATION:</b> The definition taken from ICAO is misleading and does not define well what the Runway Condition Code is. It does not as such describe the runway condition. That is achieved by the Runway surface descriptors. It quantifies the effect of the runway condition on available braking action and lateral control of the aeroplane.</p> <p>The change to the note is necessary to make clear that RWYCCs are not a direct input into a takeoff computation, but can only used for landing.</p>
response	<p>Accepted.</p> <p>The Definition will be changed.</p>
comment	<p>84 <span style="float: right;">comment by: <i>AIRBUS</i></span></p> <p><b>SUBJECT :</b> Slippery wet runway for Takeoff</p>



**1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:**

General

**2. PROPOSED TEXT / COMMENT:**

The Definitions section correctly identifies that a Slippery wet runway is not a contaminant, but a runway state, just like dry or wet (smooth). As such, the performance for slippery wet runways should not be described in AMC25.1591, which is for takeoff operations on contaminated runways only. Removing it from the scope of this AMC also ensures that slippery wet runways are appropriately deal with under the limitations set out in AMC25-13 5 f. (1):

“(…) take-offs utilising reduced take-off thrust settings –

(1) Are not authorised on runways contaminated with standing water, snow, slush, or ice, and are not authorised on wet runways unless suitable performance accountability is made for the increased stopping distance on the wet surface.”

It is thus recommended to insert a new paragraph in CS25.109 before (e):

“The slippery wet runway effective friction is defined as 0.16 for a fully modulating anti-skid system. The maximum tyre to ground wet runway friction must be adjusted to take into account other types of anti-skid systems. For quasi-modulating systems, multiply the listed braking coefficient by 0.625. For on-off systems, multiply the listed braking coefficient by 0.375. For the classification of anti-skid systems, please refer to AMC 25.109(c)(2). Aeroplanes without anti-skid systems will need to be addressed separately on a case-by-case basis.”

Consequently, the following changes should be made to AMC 25.1591:

Remove definition 4.7 of Slippery Wet

Remove line for Slippery Wet from Table 1

Remove line for Slippery Wet from Table 2

For clarification, amend AMC CS-13 5 f. (1) to say:

“(…) runways unless suitable performance accountability is made for the increased stopping distance on the wet and wet slippery surface.”

Since CS25.1592 and the associated AMC already considers both states and contaminants, it is proposed to include slippery wet more explicitly into its scope, as detailed in a separate comment.

**3. RATIONALE / REASON / JUSTIFICATION:**

ICAO classifies Slippery Wet as a Runway State rather than a Contaminant. Including this state into the Supplemental information would make the provision of data for takeoff optional. The lack of this information carries the risk that operators and flight crew are not appropriately made aware that braking action on slippery wet conditions is degraded below the level assumed in CS 25.109(c). Additionally, including this state in CS 25.109 clarifies that operations with reduced thrust are permissible on slippery wet conditions when appropriate performance data is furnished.

response

Partially accepted.



The line for “Slippery Wet” will be removed from Table 2. It is however preferable to keep “Slippery Wet” in the supplemental data, since the definition of a slippery wet runway remains relatively vague from an aerodrome point of view.

comment

85

comment by: AIRBUS

**SUBJECT :** Harmonization of AMC 25-13

**1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:**

Out of current scope

**2. PROPOSED TEXT / COMMENT:**

Change Definitions in AMC 25-13 5 d. and e.:

“d. A wet runway is one whose surface is covered by any visible dampness or water up to and including 3 mm deep within the intended area of use.

e. A contaminated runway is one of which a significant portion of the runway surface area (whether in isolated areas or not) within the length and width being used is covered by one or more of the following substances:

- Compacted Snow
- Dry Snow of a Depth of more than 3mm
- Heavy Frost
- Ice
- Slush of a Depth of more than 3mm
- Standing Water of a Depth of more than 3mm
- Wet Snow of a Depth of more than 3mm”

Add definition for “Wet slippery runway”:

“f. A slippery runway is a wet runway where the surface friction characteristics of a significant portion of the runway have been determined to be degraded”

**3. RATIONALE / REASON / JUSTIFICATION:**

Harmonization with the definitions in AMC 25.1591 and AIROPS. The proposed definitions are slightly changed to make them self-contained. Definition of wet slippery is added in line with the comment to amend AMC 25-13 6 f.

response

Accepted.

comment

86

comment by: Stefan

Defintion for "wet grooved" runways is at the moment missing even if it is cited in GM1 CAT.OP.MPA.303

response

Not accepted.

There is no definition of “wet grooved” because “grooved” refers to the way the runway has been constructed (by mechanically making grooves on its surface) and it is independent from the presence of water or contaminants on it. A grooved runway may be dry, wet or contaminated in accordance with the existing definitions of these conditions.

comment

95

comment by: CAA Norway



### 3.1.1 Definitions

*Comment:*

There is a need for an editorial review of the whole document to ensure that terminology in the definitions and the proposal as a whole is used consistently and in line with ICAO terms and definitions compliant with the 5<sup>th</sup> November 2020 SARPs and PANS.

*Rationale:*

The prime importance of using the same concepts, terminology and definitions world-wide, as these are the basic building blocks which should mean the same to aircraft designers, performance engineers aerodrome operators and staff as well as aircraft operators and flight crew worldwide and provide one common understanding of the issue at hand.

*Proposal:* Include New definitions as follows:

‘Approved’, means *Accepted by a Contracting State as suitable for a particular purpose.*  
(Source ICAO)

*Rationale:*

There are several important references to approved data. Therefore, there is a need for an ICAO compliant definition.

In this context there is also a need for clarification as to “approved by whom” in order to avoid misunderstandings, as there might be several possibilities. Reference is made to our comments to CAT.OP.MPA.303.

‘Distance at Time of Landing’ means Landing distance achievable in normal line operations following recommended procedures furnished for the prevailing conditions (Source: Draft ICAO Doc 10064 Aeroplane Performance Manual.)

*Rationale:*

This term is used extensively in the proposed regulatory material, and thus a formal definition is required.

‘Factored Distance At Time of Landing’ A factored landing distance derived from the distance at time of Landing used for the check at Time of Landing. (Source: Draft ICAO Doc 10064 Aeroplane Performance Manual.)

*Rationale:*

This term is used extensively in the proposed regulatory material, and thus a formal definition is required.

‘Unfactored Landing Distance’

*Rationale:*

This term is used extensively in the proposed regulatory material, and thus a formal definition is required. Especially as there is uncertainty about whether this should be the unfactored landing distance on a level runway or if it should be adjusted for negative slope and possibly other factors. This should be seen in context with and not be in conflict with the terms (undefined) in ICAO Annex 8, 11th edition – July 2016, amendment 108-B; *Landing performance data at the time of take-off* and *At the time of landing performance data*

response

Partially accepted.



The general definition of approval is out of the scope of the present rulemaking task. However the Agency is aware that work is on-going at ICAO level on the concepts of “approval”, “acceptance” and “authorization. The deliverables of this work will be considered in the future.

The definition of “landing distance at the time of landing” will be added. Some of the other proposed definitions may better placed, when necessary, as guidance material to the appropriate operational requirements where they are used.

comment	<p>105</p> <p>(103a) ‘Runway condition assessment matrix (RCAM)’ means a matrix allowing the assessment of the runway condition code, using associated procedures, from a set of observed runway surface condition(s) and pilot or aircraft report of braking action</p> <p>Adding “or aircraft” allows for consideration of using live aircraft landing data to provide an objective report of braking action.</p>	comment by: <i>Regional Director</i>
response	<p>Not accepted.</p> <p>The proposed definition, which is kept in line with the relevant ICAO standards for the global reporting format, does not preclude the use of future technologies. A braking action measured by aircraft systems may be reported by the pilot.</p>	

comment	<p>107</p> <p>(103a) ‘Runway condition assessment matrix (RCAM)’ means a matrix allowing the assessment of the runway condition code, using associated procedures, from a set of observed runway surface condition(s) and pilot <b>or automated</b> report of braking action</p> <p>Justification: Adding “or automated” allows for consideration of using live aircraft landing data or other automated sources to provide an objective report of braking action.</p>	comment by: <i>Regional Director</i>
response	<p>Not accepted.</p> <p>The proposed definition, which is kept in line with the relevant ICAO standards for the global reporting format, does not preclude the use of future technologies. A braking action measured by aircraft systems may be reported by the pilot.</p>	

comment	<p>109</p> <p><u>Reference:</u> 3. Proposed Amendments 3.1.1. Definitions (103b) 'Runway condition code (RWYCC)'</p> <p><u>Suggested Change:</u> (103b) ‘Runway condition code (RWYCC)’ means a number <del>describing the runway surface condition to</del></p>	comment by: <i>Conrad</i>
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be used in the runway condition report to be used in the runway condition report (RCR), describing the level of deceleration performance that can be achieved.

Note: the purpose of the runway condition code is to permit an operational aeroplane landing performance calculation by the flight crew.

Rationale:

The proposed definition is not correct and the added Note does not help much. The current wording states that the RWYCC describes the “runway surface condition”.

However, “runway surface condition” is a well defined term (defined in the subsequent section (103d)), meaning the actual descriptive condition of a runway, like slippery when wet, slush, ice, etc. Thus, the current wording insinuates, that the RWYCC describes directly the descriptive condition.

This, however is not the case, for two reasons:  
 1. one RWYCC can correlate to multiple runway surface conditions, and  
 2. the RWYCC, due to down/up-grading, might not match the actual runway surface condition at all

The runway contaminant type and depth (i.e. "runway surface condition") can give a RWYCC, but a RWYCC can never give contaminant type and depth. The RCAM can and must not be read backwards! However, the proposed definition of the RWYCC insinuates that backward reading was possible.

response

Accepted.  
  
The definition will be changed.

comment

128 comment by: ESDU, IHS Markit

Page 20 –  
 3.1.1 – Definitions  
 The “Note 2” on page 20 with respect to the contamination of the runway with de-icing chemicals and other contaminants is not particularly helpful as it gives no guidance on what should be done. It should state that the runway should be cleared of de-icing chemicals and contaminants or a conservative approach be applied.

response

Not accepted.  
  
The intent of this note is to raise awareness of the issue. The application of de-icing fluids creates a temporarily worse situation but eventually results in a runway that is wet instead of contaminated. Therefore the flight crew should be aware that unexpected slippery conditions may be encountered, however it is not possible to give specific guidance on the transient condition of the runway in such cases.

comment

172 comment by: UK CAA





	<p><b>Page No:</b> 19</p> <p><b>Paragraph No:</b> 3.1.1 Definitions (25)</p> <p><b>Comment:</b> It is unclear what ‘significant’ means, now that 25% appears to have been deleted from the definition. Earlier in the NPA (AMC1 CAT.OP.MPA.311 (on page 11), 25% is still used. The proposals would benefit from guidance on what ‘significant’ means in this context.</p> <p><b>Justification:</b> Clarity.</p>
response	<p>Accepted.</p> <p>The clarification will be given at GM level.</p>

comment	<p>173 <span style="float: right;">comment by: UK CAA</span></p> <p><b>Page No:</b> 20</p> <p><b>Paragraph No:</b> 3.1.1 Definitions (103d), Note 2</p> <p><b>Comment:</b> The Note with respect to the contamination of the runway with de-icing chemicals and other contaminants gives no guidance on what should be done as a result. It should state that the runway should be cleared or a conservative approach be applied.</p> <p><b>Justification:</b> Clarity.</p>
response	<p>Not accepted.</p> <p>The intent of this note is to raise awareness of the issue. The application of de-icing fluids creates a temporarily worse situation but eventually results in a runway that is wet instead of contaminated. Therefore the flight crew should be aware that unexpected slippery conditions may be encountered, however it is not possible to give specific guidance on the transient condition of the runway in such cases.</p>

comment	<p>200 <span style="float: right;">comment by: Thomson Airways</span></p> <p>3.1.1 (32)</p> <p>The deletion of the facility to use dry runway performance when damp runway conditions prevail - this can be overly limiting. Many runways have excellent friction characteristics (equivalent to dry) with low levels of dampness. The proposed change could result in restrictive performance and crosswind limitations with unclear safety benefits.</p>
response	<p>Not accepted.</p> <p>The Definition of “damp runway” has been included in the definition of “wet runway” because the physical effects causing reduced friction forces begin to take effect from very small film</p>



	thickness of water, therefore damp conditions are considered to provide no better braking action than a wet runway (No response entered yet)	
comment	202	comment by: <i>Embraer S.A.</i>
	(103e) - (b) Definition of Dry Snow. Embraer suggests using the same definition of Dry Snow provided on paragraph 6.3.1 of AC 25.32.	
response	Not accepted.	
	These definitions are kept in line with the relevant ICAO standards for the global reporting format.	
comment	203	comment by: <i>Embraer S.A.</i>
	(103e) - (h) Definition of Wet Snow. Embraer suggests using the same definition of Wet Snow provided on paragraph 6.3.2 of AC 25.32.	
response	Not accepted.	
	These definitions are kept in line with the relevant ICAO standards for the global reporting format	
comment	262	comment by: <i>AIR FRANCE</i>
	(25) 'contaminated runway' means a run-way of which a significant portion of the run-way surface area (whether in isolated areas or not) within the length and width being used is covered by one or more of the sub-stances listed under the runway surface condition descriptors.	
	<i>Typically non operational definition!</i> <i>Once I have read it I have to search elsewhere what is meant by "significant portion" and "whether in isolated areas or not".</i> <i>I pilot would like to read something directly usable like:</i> <i>'contaminated runway' means a run-way where more than 25 % of one third of the runway surface area is covered by one or more of the sub-stances listed under the runway surface condition descriptors.</i>	
response	Not accepted.	
	The definition will be kept in line with the ICAO standard, which leaves procedural information such as the percentage of contaminated runway surface at GM level.	
comment	263	comment by: <i>AIR FRANCE</i>
	(103b) 'Runway condition code (RWYCC)' means a number describing the runway surface condition to be used in the runway condition report. Note: the purpose of the runway condition code is to permit an operational aeroplane performance calculation by the flight crew.	



*Suggest to clarify:*  
 The RWYCC is a number  
 It does not describe the contaminant but the braking capability.

*So a customization of the ICAO wording would be:*

*'Runway condition code (RWYCC)' means a number which reflects the runway braking capability as a function of the surface conditions.  
 This number allows the flight crew to calculate, from the performance information provided by the aeroplane manufacturer, the necessary stopping distance of an aircraft on the approach under the prevailing conditions.*

response Accepted.

The definition will be changed.

comment

264

comment by: AIR FRANCE

(103c) 'Runway condition report (RCR)' means a comprehensive standardised report relating to runway surface conditions and their effect on the aeroplane landing and take-off performance.

*Comprehensive and standardized report?  
 Suggest "based on table 1 below"*

RWYCC	Braking Action	Description
6	N/A	
5	GOOD	Braking deceleration is normal for the wheel braking effort applied AND directional control is normal.
4	GOOD TO MEDIUM	Braking deceleration OR directional control is between good and medium.
3	MEDIUM	Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced.
2	MEDIUM TO POOR	Braking deceleration OR directional control is between medium and poor.
1	POOR	Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced.
0	LESS THAN POOR	Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain.

response Partially accepted.

This definition is general. Further guidance and samples will be provided in the operational rules along with references to the relevant aerodrome rules.

comment

269

comment by: FNAME



	<p>No definition of a « winter runway » is described within this AirOps regulation whereas it is mentioned several times in this NPA. Therefore, for clarity reasons, the FNAM suggests to add such definition in the Part DEF of the regulation EU n°965/2012.</p>
<p>response</p>	<p>Accepted.</p> <p>A definition of “specially prepared winter runways” will be added.</p>

<p>comment</p>	<p>274 <span style="float: right;">comment by: IATA</span></p>
	<p>3.1.1.</p> <p>1. Definitions is amended as follows:                  Definitions for terms used in Annexes II to VIII                  (103b) ‘Runway condition code (RWYCC)’ means a number describing the runway surface condition to be used in the runway condition report. Note: the purpose of the runway condition code is to permit an operational aeroplane performance calculation by the flight crew.</p> <p>The wording is taken from the ICAO SL30 descriptions but is incorrect: the Runway Condition Code does not describe the runway surface condition because for one code there could be several very different surface conditions. For example RWYCC 5 is associated with:</p> <ul style="list-style-type: none"> <li>• · FROST</li> <li>• · WET (water less than 3 mm)</li> </ul> <p>Less than 3 mm of:</p> <ul style="list-style-type: none"> <li>• · SLUSH</li> <li>• · DRY SNOW</li> <li>• · WET SNOW.</li> </ul> <p>So RWYCC 5 describes the runway surface condition as...?</p> <p>To avoid using an ill constructed ICAO definition, but to remain ICAO compliant, it is suggested to use the description of the RWYCC contained in the ICAO SL30 Attachment C, page C-6 point 1.1.1.4. There it is stated:</p> <p>“RWYCC reflects the runway braking capability as a function of the surface conditions. With this information, the flight crew can derive, from the performance information provided by the aeroplane manufacturer, the necessary stopping distance of an aircraft on the approach under the prevailing conditions.”</p> <p>This is important, it is not just a formal issue.                  Pilots need the braking capability, that is what should be highlighted, especially because they are requested to evaluate it during the landing in order to report if what they experienced was less than the reported one. The type and depth of contaminants is also important but only as a way to determine the braking capability.</p>
<p>response</p>	<p>Accepted.</p>



The definition will be changed.

comment	282	comment by: <i>IATA</i>
	<p>3.1.1. 1. Definitions is amended as follows: Definitions for terms used in Annexes II to VIII (103c) 'Runway condition report (RCR)' means a comprehensive standardised report relating to runway surface conditions and their effect on the aeroplane landing and take-off performance.</p> <p>IATA Comments: The RCR is defined but is nowhere explained. It is going to be the fundamental tool for the awareness of the runway surface conditions. It is going to be a task for the Aerodrome domain, but a quick reference for the operators is highly recommended.</p>	
response	<p>Accepted.</p> <p>The RCR is fully explained and samples are provided in the aerodrome rules. However further guidance will be added.</p>	
comment	295	comment by: <i>Finnish Transport Safety Agency</i>
	<p>Definitions for terms used in Annexes II to VIII p. 19</p> <p>Point (25) 'contaminated runway'</p> <p>Finnish Transport Safety Agency recommends to keep the requirement 'more than 25%' in the definition instead of GM material.</p>	
response	<p>Not accepted.</p> <p>The definition will be kept in line with the ICAO standard, which leaves procedural information such as the percentage of contaminated runway surface at GM level.</p>	
comment	296	comment by: <i>Finnish Transport Safety Agency</i>
	<p>Definitions for terms used in Annexes II to VIII p. 19</p> <p>Please notice point (103a) is already in use for 'required navigation performance (RNP) specification'.</p>	
response	<p>Accepted.</p>	



Numbering will be revised at the time of publication of the Opinion to take into account the latest version of the rules.

comment 298 comment by: *Finnish Transport Safety Agency*

Definitions for terms used in Annexes II to VIII  
p. 20

Points (103b), (103d) and (103e)

Notes have been added to certain definitions. What is the legal status of a note?  
If the status of a note is same as status of GM material, we consider the note text should rather be GM.

response Accepted.

The content of the notes will be put in guidance material to Annex I.

comment 348 comment by: *US FAA*

### **3.1.1 AMC 25.1591 AMC 25.1592**

#### **Comment summary**

Definitions/Runway surface condition descriptors  
There have been 3 recent regulatory efforts on the reporting of runway conditions: FAA, ICAO, EASA.

All three use slightly different runway surface definitions/descriptions. None of these differences are significant and do not add value to any of the products.

#### **Suggested resolution**

We recommend that EASA, ICAO, and FAA work together to harmonize on one set of runway surface definitions/descriptors.

response Noted.

EASA has adopted the ICAO definitions.

## **3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-ARO**

p. 21

comment 129 comment by: *ESDU, IHS Markit*



	Page 21 Part-ARO Appendix II. Reduced landing distance operations. Our comments against CAT.POL.A.255 sections on pages 13 and 27 also apply here.
response	Noted.  See responses to comments on CAT.POL.A.255.

**3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-CAT — CAT.OP.MPA.300**

p. 21

comment 12 comment by: *Landauer Aviation Consulting Ltd*  
 "...assessment shall be done in accordance..." Suggest that "carried out" is better than "done".

response Accepted.  
  
The text referred to in the comment is in the explanatory note of the NPA 2016-11 which will not be re-issued. However the comment is valid and will be taken into account in the rule text.

comment 278 comment by: *FNAM*

**The FNAM is asking for the removal of the implementing rule CAT.OP.MPA.303 and all its AMC and GM. Moreover, regarding the IR CAT.OP.MPA.300, the FNAM is asking for the removal of the reference to paragraph CAT.OP.MPA.303 in order to ensure consistency. Besides, we suggest that the AMC1 CAT.OP.MPA.300 remains as it was written before the modifications brought by this NPA.**

**Generally speaking, the FNAM is asking for the removal of all references to paragraph CAT.OP.MPA.303 and its AMC and GM that have been added through this NPA.**

**Furthermore, in order to document the impact of such a measure on the various activities of all the stakeholders potentially impacted by this new requirement, the FNAM is asking for a 3 months' extension of the period of consultation of this NPA so that all concerned operators may develop their own arguments.**

**This additional period of consultation would allow:**

**- a simplification of the methodology described in the AMC1 so that it can be applicable in the cockpit**

**- a reevaluation of the Landing Distance Factors (LDF) which seem pulled out of the hat (contrary to what was stipulated in the explanatory note of this NPA, the factors defined in the AMC1 CAT.OP.MPA.303 (a) and (b)(1) and (c)(1) are not explicated in the FAA Advisory Circular (AC) 25-32)**

response Noted.  
  
See response to comment 268.

comment 334 comment by: *NetJets Europe*



response	NetJets supports the changes to Part CAT in general.
response	Noted.
comment	335 <span style="float: right;">comment by: <i>NetJets Europe</i></span>
	NetJets supports the revised text as it helps to clarify the landing distance assessment requirement.
response	Noted.

**3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-CAT — CAT.OP.MPA.301**

p. 22

comment	131 <span style="float: right;">comment by: <i>ESDU, IHS Markit</i></span>
	Page 22 – CAT.OP.MPA.301 This sentence is difficult to read and to understand. We recommend replacement with the following:  Before commencing an approach to land, the commander of the aircraft, having regard to the performance information contained in the operations manual (OM) and other information available to him or her, shall be satisfied that the weather at the aerodrome and the condition of the runway or final approach and take-off area (FATO) intended to be used should not prevent a safe approach, landing or missed approach.
response	Partially accepted.  This rule is unchanged from the pre-existing CAT.OP.MPA.300. The original rule applied both to aeroplanes and helicopters. CAT.OP.MPA.301 was created only with the purpose of uncoupling helicopters from aeroplanes and so allow the introduction of those changes in the new aeroplane rule not affecting helicopters. However some remaining information non helicopter-relevant will be deleted from CAT.OP.MPA.301.

**3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-CAT — CAT.OP.MPA.303**

p. 22

comment	7 <span style="float: right;">comment by: <i>KLM</i></span>
	AMC1 CAT.OP.MPA 303 table 2 RWYCC 6 has a name 'DRY' as mentioned in table 1
response	Not accepted.  The runway surface condition "Dry" is mentioned in the first column of the table. The second column contains the runway surface descriptors when relevant (i.e. not for dry).





comment	<p>15</p> <p style="text-align: right;">comment by: <i>KLM Cityhopper</i></p> <p>The requirement to add 15% to the landing distance at the estimated time of landing on the intended runway results in unnecessarily large landing distances.</p> <p>The Talpa data is already quite conservative (it results in an extra 40-70 % margin on top of the unfactored certified landing distances).</p> <p>Adding another 15% as a requirement often results in the Landing distance based on Talpa Arc becoming larger than the dispatch landing distances (based on 1.67 and 1.92xULD), depending on the contaminant. This can lead to unworkable network operations.</p> <p>The TALPA ARC material clearly speaks only about a recommendation to add 15% (and not a requirement) and leaves that up to the operator, depending on experience level of crews and variance in the inputs used to calculate the landing distance (such as wind and runway contaminant).</p> <p>Inflight assesment data from manufactures, based on Talpa requirements, already covers the fact that this is for an average crew. The commander is able to decide if he calculates the inflight assesment based on the weather or contaminant provided by e.g. ATIS or based on an added margin for expected changing circumstances.</p> <p>It should be left to the commander or at least the operator to add a 15% margin and not by EASA requirement.</p>
response	<p>Not accepted.</p> <p>The definition of a fixed factor ensures uniform implementation of the rule. The purpose of the in-flight check of landing performance at the time of arrival is mainly to take into account variations occurred during the flight and to perform an actual calculation with the latest information available on the runway condition at the time of arrival. On short flights this is expected to have a minimal impact. Provisions will be added to allow compliance with the rule on dry and wet runways in those cases where conditions have not changed compared to the time of dispatch, by simply confirming that, at the time of arrival, the dispatch calculation is still valid. Overall, for wet runways the Agency expects that, at the time of arrival, longer distances will be obtained only in marginal cases. For dry runways the Agency does not expect a significant impact.</p>

comment	<p>48</p> <p style="text-align: right;">comment by: <i>AIRBUS</i></p> <p><b>SUBJECT :</b> Operational Factor for Time of Arrival Assessment</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b></p> <p>3.1.3 Part-CAT 3. New CAT.OP.MPA.303 (a)</p> <p><b>2. PROPOSED TEXT / COMMENT:</b></p> <p>Add a note below paragraph (a):</p> <p style="background-color: #e0e0e0;">„If this 15% margin is detrimental to the overall safety of the flight, it may be disregarded“</p>
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**3. RATIONALE / REASON / JUSTIFICATION:**

CAT.OP.MPA303 is very directive regarding the applicability of the margin and may be interpreted such that the margin must be present even in cases of landing after in-flight system failures or events that require to land as soon as possible. While this eventuality is in principle covered by CAT.OP.MPA.105 (b) (“The commander, or the pilot to whom conduct of the flight has been delegated, shall, in an emergency situation that requires immediate decision and action, take any action he/she considers necessary under the circumstances in accordance with 7.d of Annex IV to Regulation (EC) No 216/2008. In such cases he/she may deviate from rules, operational procedures and methods in the interest of safety.”) inclusion of this note reminds of the priority of safe conduct of the flight.

response

Not accepted.

As mentioned in the comment, the ultimate authority of the commander/pilot-in-command to act as he/she considers necessary in the interest of safety in emergency situations is already stipulated.

comment

49

comment by: AIRBUS

**SUBJECT :** Approved data for time of arrival assessment**1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:**

3.1.3 Part-CAT

3. New CAT.OP.MPA.303

(a)

And 3.3.3 Part CAT

3. AMC1 CAT.OP.MPA.303

(a)

**2. PROPOSED TEXT / COMMENT:**

Clarify the intent of the requirement for approved data in CAT.OP.MPA.303 (a):

„determined in accordance with the approved by the competent authority of the member state landing distance data at the time of arrival for landing distance assessment. “

And define minimum compliance criteria for equivalent data in AMC1 CAT.OP.MPA.303 (a):

„Performance information for landing distance assessment at the time of arrival should be developed in accordance with AMC 25.1592 or equivalent and included in the operations manual (OM). Such data should at the minimum include an operational airborne distance, cover the range of braking action specified in AMC CS25.1592, and account for the effects of approach speed increments, temperature and runway slope. Data developed in compliance with AMC CS 25.191 at Amdt 2 or later is considered appropriate.“

**3. RATIONALE / REASON / JUSTIFICATION:**

The requirement for approved data is easily read as exclusively allowing fully AMC 25.1592 compliant data developed by a manufacturer and certified by EASA. The only alternative to such data would be the use of the LDFs specified under AMC1 CAT.OP.MPA.303 (b). This is not the intent as far as Airbus understands it. Any data should be approved by the state of the AOC holder as part of the Operations Manual of the operator, but the minimum compliance criteria should be relaxed as proposed to allow use of reasonable data that has been developed for TALPA-compliance previously.



response	<p>Partially accepted.</p> <p>The intent of the comment is shared by the Agency, however the proposed wording needs to be adapted, in order to account for existing cases where data developed in accordance with previous standards that may be acceptable and other cases where compliance with AMC CS-25.1592 is difficult to achieve.</p>
comment	<p>87 <span style="float: right;">comment by: <i>Stefan</i></span></p> <p>Why the concept of ACTUAL landing distance is not included here like already done by FAA (see SAFO 06012 cited also in the AC 25-32). Using the reference to the actual landing distance will better clarify what data we are considering, the sentence written in proposed text seems to be more the expression of a lawyer ("determined in accordance with the approved landing distance data at the time of arrival for landing distance assessment"). Obviously this should be added also to the definition. The copy and paste from FAA regulation could help.</p> <p>For example:  "A safety margin of 15% shall be added to the actual landing distance and require that the resulting distance be within the landing distance available of the runway used for landing."</p> <p>definition, to be adapted for consistency to this NPA  "Actual Landing Distance. The landing distance for the reported meteorological and runway surface conditions, runway slope, airplane weight, airplane configuration, approach speed, use of autoland or a Head-up Guidance System, and ground deceleration devices planned to be used for the landing. It does not include any safety margin and represents the best performance the airplane is capable of for the conditions."</p>
response	<p>Not accepted.</p> <p>Definitions are needed for the terminology in use in the Regulation and related AMC/GM. The "Required" landing distance is self-defined as being that required by the rules. The "actual" landing distance is a general concept that is used sometimes to explain landing performance but would require a more consistent definition of that proposed in the comment, which is not necessary, as the concept is not used in the Regulation.</p>
comment	<p>98 <span style="float: right;">comment by: <i>Stefan</i></span></p> <p>Someone is already thinking to use the option to replan during the flight a diversion to shorter airports (not defined before the flight as alternate, therefore not applying the full factors) adopting a reduced safety factor.</p> <p>Many real life examples can be proposed but, without mentioning specific airports: your initial scheduled destination is A but before departure it starts raining at A, the flight therefore is rescheduled to B with alternate airport C. As soon as airborne, the flight requests a diversion to A because now, with the reduced safety factors, this airport is operable even if with runway wet.</p> <p>Something like this could be included somehow in the regulation to bind operators (and CAA) to monitor such info? If a trend then is noted on a specific airport, an action should be required by CAA and ideally by the operator.</p>



response Not accepted.

Regulations are not drafted with the implicit assumption of misuse. General provisions for oversight and enforcement exist and are applied by competent authorities.

comment 99 comment by: *Stefan*

I was not able to find any reference in the Air Ops and to this NPA about the emergency conditions: the 15% margin would apply also in these conditions? FAA says clearly say no, worth probably to specify in the NPA than just leave it as a generic statement (aka "captain can do what he deems necessary in the interest of safety").

response Not accepted.

The authority of the pilot in command to take any action he/she considers necessary in the interest of safety in an emergency situation is stated in the essential requirements of the Basic Regulation.

comment 100 comment by: *CAA Norway*

CAT.OP.MPA.303

*CAT.OP.MPA.303*

*Comment/Question* 1:

Reference is made to the term “Approved landing distance data at the time of arrival for landing distance assessment”.

Does this mean certified performance data, or can it comprise non-certified data in one form of another (advisory data, supplementary information etc.)

CAA Norway has identified a need to add a definition of “Approved”, and how the term should be applied in this context. See comment to Chapter 3.1.1, Definitions.

*Rationale:*

The term “approved” must be clearly defined. An ICAO compliant definition (as proposed) would be preferable.

A clarification of the term in context is necessary because the definition refers to ‘a contracting State’.

Since the data should be approved in accordance with AMC CS 25.1592, the natural “contracting State” would be the ‘State of design’.

However, since, apparently there is no regulatory requirement to produce certified data for contaminated runways, the proposed paragraph could be read as “approved by the State of the operator” if the data provided are supplementary, advisory or other forms of non-certified data.

If the latter is the case (i.e. the intention is ‘State of the operator’), will that be EASA since the basis is CS 25, or will it be left to the National Authorities during the approval process of the AOC holders’ OM B?

If it is left to the national authorities, what would then the competency requirements be for the part of the national authorities dealing with the subject?



*Comment/Question 2*

There is a need to include a statement/clarification as to the applicability of the requirements in CAT.OP.MPA.303 in relation to steep approach operations, reference CAT.POL.A245, 345 and short landing operations, reference CAT.POL.A.250, 350. Special provisions could be made for operations where there is a specific public interest.

*Rationale:*

These types of operation require a tighter control of speed and profile than normal approaches, and availability of approved data for landing distance at the estimated time of arrival for landing distance assessment may be even less readily available than for normal operation.

Further, the reason for having these types of operations is, in many cases, a clear public interest in sustaining both scheduled operations with performance class A and air ambulance flights with performance class B aeroplanes to aerodromes where an extension of declared distances are either physically or economically extremely difficult, and where operations under present rules have not shown any safety issues related landing overruns during normal operations. (In Norway we have this situation with more than 500.000 landing operations over the last couple of decades.)

This is elaborated upon in comments to AMC 1 CAT.OP.MPA.303.

response

Accepted.

## Comment1:

EASA acknowledges the difficulty for certain aircraft types to be provided with performance data that are compliant with the new proposed standard of CS 25.1592. Alternatives based on existing manufacturer data will be offered for those cases

## Comment 2:

Assumptions to derive landing distances in case of steep approaches will be added in CS-25.

comment

130

comment by: ESDU, IHS Markit

Page 22

CAT.OP.MPA.303 In flight check.

The principle of an in-flight assessment of the “landing distance” required is strongly endorsed. However, paragraph (a) should be more explicit in identifying the timing for this check.

- AMC1 CAT.OP.MPA.300 Approach and landing conditions – aeroplanes (page 51) draws attention to what is intended.
- Historically, the ‘top of descent’ has been used.
- GM1 CAT.OP.MPA.303 (page 53) says ‘usually around top of descent’.
- AMC1 CAT.OP.MPA.301 (page 51) states ‘no more than 30 minutes before the expected landing time’.
- GM1 CAT.OP.MPA.303 In flight check (page 22) does suggest that a ‘quick decision .... just prior to landing’ is allowed, although such a decision is inherently risky. However, an early check when the runway condition is deteriorating also adds risk.

In general the NPA should provide better guidance on the risks and the decision making process. The whole point of specifying top of descent for a check is to avoid late decision



	<p>making and go-arounds from the landing configuration which inherently will be less controlled and more dangerous. The guidance as written is confusing and contradictory. Also, it is noted that the text has not been amended for helicopters. Is this intended?</p>
response	<p>Partially accepted.</p> <p>The concern expressed in the comment is understood, however, as a matter of fact a pilot report from the preceding aircraft may be obtained just prior to landing and therefore the flight crew should be prepared to deal with it at that moment. The GM is meant to make sure that the flight crew is prepared to this eventuality by having done the relevant considerations beforehand. These elements should be anyway addressed by proper training. However, further explanations will be considered to improve the AMC and the GM to this respect.</p> <p>Finally It is not intended to amend the corresponding rule for helicopters as they are not concerned by the new runway condition reporting format.</p>
comment	<p>199 <span style="float: right;">comment by: <i>Dassault-Aviation</i></span></p> <p>Dassault-Aviation</p> <p>Comment: For in-service aircraft, Dassault-Aviation proposes to remove the reference to approved data in CAT OP MPA 303 and associated AMC and to recognize the acceptability of existing data in order to limit the burden associated with developing and producing new data packages.</p>
response	<p>Accepted.</p> <p>The approach followed by EASA in the implementation of the TALPA ARC recommendations is in line with ICAO. It is however recognised the difficulty for certain aircraft types to be provided with performance data compliant with the new proposed standard of CS 25.1592. Alternatives will be developed for those cases.</p>
comment	<p>225 <span style="float: right;">comment by: <i>ERAA</i></span></p> <p>New CAT.OP.MPA.303 (a) p. 22: What is meant by 'approved landing distance data at the time of arrival for landing distance assessment'? Is it envisaged that an authority shall 'approve' landing distance data? - Under CS-25.1592 p. 32 (b) a reference is made to performance information that 'may be used to assist operators', which would point to advisory status of the data. - Which means of retardation are considered? Is the landing distance factored?</p>
response	<p>Noted.</p> <p>See response to comment 292.</p>
comment	<p>246 <span style="float: right;">comment by: <i>General Aviation Manufacturers Association / Hennig</i></span></p> <p>GAMA notes that an enroute check of landing distance at time of arrival is an operational requirement per CAT.OP.MPA.303.</p>



Operational requirements are different than the airworthiness certification standards which are dependent on the type certification basis of an airplane model for applicability. Therefore, it is understood that this operational requirement to provide performance information in accordance with AMC 25.1592, or equivalent, is applicable to both existing models where CS 25.1592 is not part of the certification basis, as well as future models, where CS 25.1592 is part of the model's certification basis. It is a significant burden for an OEM to generate and certify new performance information as well as a departure from the intent of AC 25-32 where existing, approved data would remain accepted.

Furthermore, some ongoing certification programs have specific wet runway Certification Review Items (CRI) applied to them which are not consistent with AMC 25.1592 which would result in increased burden. Data created in accordance with prior amendments of 25.1591, or in accordance with wet runway CRIs, should remain acceptable.

GAMA requests that EASA confirm that existing Smooth Wet Runway CRI is considered an acceptable data basis for providing wet runway operational material as an alternative to CS 25.1592/AMC 25.1592.

Additionally, GAMA requests that EASA allow existing time of arrival performance information to remain as is and require the proposed data standards for new certification models only.

response Accepted.

EASA recognises the difficulty for certain aircraft types to be provided with performance data compliant with the new proposed standard of CS 25.1592. Alternatives will be developed for those cases.

comment 270

comment by: *FNAM*

Attachment [#1](#)

**The FNAM is asking for the removal of the implementing rule CAT.OP.MPA.303 and all its AMC and GM. Moreover, regarding the IR CAT.OP.MPA.300, the FNAM is asking for the removal of the reference to paragraph CAT.OP.MPA.303 in order to ensure consistency. Besides, we suggest that the AMC1 CAT.OP.MPA.300 remains as it was written before the modifications brought by this NPA.**

**Generally speaking, the FNAM is asking for the removal of all references to paragraph CAT.OP.MPA.303 and its AMC and GM that have been added through this NPA.**

**Furthermore, in order to document the impact of such a measure on the various activities of all the stakeholders potentially impacted by this new requirement, the FNAM is asking for a 3 months' extension of the period of consultation of this NPA so that all concerned operators may develop their own arguments.**

**This additional period of consultation would allow:**

**- a simplification of the methodology described in the AMC1 so that it can be applicable in the cockpit**



- a reevaluation of the Landing Distance Factors (LDF) which seem pulled out of the hat (contrary to what was stipulated in the explanatory note of this NPA, the factors defined in the AMC1 CAT.OP.MPA.303 (a) and (b)(1) and (c)(1) are not explicated in the FAA Advisory Circular (AC) 25-32)

### 1/ Over conservative factors defined in the AMC1

Regarding the AMC1, the FNAM would like some clarification regarding the meaning of “or equivalent” in the sentence “in accordance with AMC 25.1592, or equivalent”. **Indeed, it should be confirmed that airplanes certified before the release of the AMC 25.1592 and airplanes certified before the release of CS 25 (e.g. JAR 25 certification or catch-up of previous national certifications) are deemed to be equivalent.**

Besides, some factors described in the AMC1 are a misfit (cf. table in Annex 1):

- For dry runways, there is no case where there is no demonstrated Landing Distance. Therefore, the FNAM is wondering why for a RWYCC of 6, the LDF is equal to 1.67 whereas the corresponding factor to apply in-flight defined in the IR CAT.OP.MPA.303 is equal to 1.15. There are inconsistencies between the IR CAT.OP.MPA.303 and its AMC1.
- Moreover, on wet runways, the factors described in the AMC1 are outliers and not consistent with the spirit of the AirOps regulation. Indeed, if we apply the data certified in the AFM ( $1.15.LD_{Dry}$  for most old certified aircrafts) the factor that needs to be applied is equal to  $(1.15)^2$ , which means 1.32, and not 2.6. Equally, if there is no certified data on wet runway condition, the FNAM does not understand the discrepancy between the 2.6 factor described in this AMC1 and the application of CAT.POLA.235 that requires a wet factor of 1.15 on which CAT.OP.MPA.303 supplement another safety margin of 1.15. This equals to the same  $(1.15)^2$ , which means 1.32, total factor.
- In other cases, some factors seems to be outliers since they are far too complex to implement and lead to inapplicable landing distances.

### 2/ Additional workload for pilots at a critical phase of flight

This measure may appear dangerous for flight safety because it brings an additional workload for pilots at a critical moment: the approach preparation. Indeed, with an unusual representation for pilots, they are required to do 2 complex calculations which are not matching the usual Charts presentation in the AFM and the FCOM, when such Charts exist, which is not the case for most old generation airplanes:

- Ensure that  $1.15.LD_{Demonstrated} \leq LDA$  or  $LDF.LD_{Demonstrated}$  on dry runway  $\leq LDA$
- Compute the most unfavorable runway condition that may be accepted in order to conduct a safe landing

In practice, this is unrealistic and may cause critical over workload in the cockpit during the approach.





### 3/ Measure only conceived for modern turbojets

If this measure concerns all performance class A aeroplanes, it seems to have only been conceived for modern turbojets such as A320, B737-800, etc. It clearly does not take into account turbopropellers such as Beech1900 nor old ones such as Fokker 50, ATR 42-500 old generation. This measure does not take into account old Business Aviation turbojets such as the Falcon 50.

First, these aircrafts do not have devices allowing the computation of performance landing distance assessment.

Secondly, for most old airplanes, the certified data contained in the AFM do not include landing distances for wet / contaminated runways, requiring the use of the LDFs which have been demonstrated to be over conservative.

As a conclusion, if modern turbojets may not be impacted by this new constraint, no RIA has been made to measure the impact on smaller / older aircrafts, including old turbojets.

### 4/ Current status of the regulation

Until now, the logic has been to ensure first at dispatch that the demonstrated certified landing distance, depending on the runway condition, the altitude, the wind, the temperature, was below 0.6.LDA (Landing Distance Available) for turbojet-powered aeroplanes or 0.7.LDA for turbopropeller-powered aeroplanes with the following particularity for wet runways: in the absence of demonstrated data, the landing distance chosen on a wet runway is the landing distance necessary on a dry runway increased by 15%.

Then during the flight, the commander, already taking into account ICAO recommendations, has to ensure that the landing weight satisfies all the constraints depending on the real conditions such as:

- The demonstrated landing distance is below the LDA
- The go-around limitation during the approach is taken into account
- Etc.

In essence, at dispatch, the landing distance depending on the conditions at the estimated time of arrival has to be below 0.6.LDA or 0.7.LDA. This condition was taken into account in the accessibility of an adequate aerodrome during pre-flight planning.

### 5/ New additional constraints on landing distance through the IR CAT.OP.MPA.303

The IR CAT.OP.MPA.303 adds additional constraints before the approach phase. The commander shall ensure that:

At the estimated time of arrival weather conditions  $1.15.LD_{\text{Demonstrated}} \leq LDA$

When demonstrated landing distances ( $LD_{\text{Demonstrated}}$ ) do exist for the expected conditions, the landing distance to be taken into account is therefore  $1.15.LD_{\text{Demonstrated}}$ .

If this data is not available, the landing distance to be taken into account is  $LDF.LD_{\text{Demonstrated}}$  with LDF the landing distance factor defined in the AMC1 CAT.OP.MPA.303 (a) and (b)(1) and (c)(1).



Besides, in addition to the above, the commander shall compute during the approach preparation, the most unfavorable runway condition that may be accepted in order to conduct a safe landing. To that extend, the IR CAT.OP.MPA.303 requires 2 complex calculations during a critical phase of flight, while not requested before in flight.

NB : More, this 1.15 factor appears confusing, as similar to the 1.15 factor required at dispatch in case of wet / contaminated runway when demonstrated landing distances for such conditions are not available.

#### **6/ Margin added to already existing margins**

The implementing rule CAT.OP.MPA.303 is adding a margin on already existing margins.

Indeed:

- *A minima*, with this new requirement, the commander has to add, in real conditions, a 15% margin on the certified landing distance, whereas the certified landing distances are already taking into account safety margins
- The regulation EU n° 139/2014 (IR-ADR) applying to aerodromes, is already imposing RESA to prevent runway excursions

#### **7/ Complex computing methodology**

The method to compute landing distances described in the IR.CAT.OP.MPA.303 and in its AMC1 is complex and may appear dangerous.

Indeed:

- The logic to compute the constraint on the runway length necessary at dispatch:  $LD \leq k.LDA$  (with  $k$  a factor) is contrary to the new constraint on the necessary runway length, in real conditions, computing method:  $k'.LD \leq LDA$  (with  $k'$  a factor) which is source of error
- This computing method may appear dangerous because it does not match the operating practices. Indeed, usually, the commander computes the maximum operational landing weight depending on all the constraints, among which the runway length, the landing distance, the go-around limitation during the approach, etc. on an aggregated basis, and he makes sure that the real landing weight is below this computed mass

Thus, this new intermediate calculation, described in the IR CAT.OP.MPA.303 and in its AMC1 is not matching current operational practices and is not a usual representation for pilots.

#### **8/ No impact assessment conducted whereas it is necessary**

This measure is ludicrous. No impact assessment on this new measure has been conducted regarding:



- The old generation airplanes for which the performance information for landing distance assessment are not available in the AFM
- The runway lengths computed according to the AMC1 CAT.OP.MPA. 303 (a) (b)(1) and (c)(1)
- The number of runway excursions that would have been avoided if this measure, which leads in most of the cases to distances much longer than most of the existing runways, had been implemented

### 9/ Lack of common sense

This measure is contrary to common sense. Indeed, if in-flight the conditions taken into account at dispatch are not satisfied anymore, what should the commander do? Does he have to divert to a smaller and with reduced facilities aerodrome? Besides, current requirements are already compliant with the ICAO recommendations. No ICAO requirement is asking for in-flight additional margins, and above all, with such an absurd methodology.

Furthermore, this measure creates discrepancies between European operators and the other ones without knowing what will happen for TCO holders: it is reasonable to think that TCO holders will unlikely propose alternative means of compliance warranting the same level of safety.

### 10/ Conclusion

For all these reasons, as stated above:

The FNAM is asking for the removal of the implementing rule CAT.OP.MPA.303 and all its AMC and GM. Moreover, regarding the IR CAT.OP.MPA.300, the FNAM is asking for the removal of the reference to paragraph CAT.OP.MPA.303 in order to ensure consistency. Besides, we suggest that the AMC1 CAT.OP.MPA.300 remains as it was written before the modifications brought by this NPA. Generally speaking, the FNAM is asking for the removal of all references to paragraph CAT OP.MPA.303 and its AMC and GM that have been added through this NPA.

response

Partially accepted.

1.

On the comment on paragraph (a):

Assumptions to derive landing distances in case of steep approaches will be added in CS-25.

On the comment on paragraph (b):

The generic factors have been established during the work of the TALPA ARC as the result of a Monte Carlo statistical analysis of operational landing distances on different runway surfaces, based on the use of:

- 5 sample FAR 25 turbojet types (in 6 landing configurations)
- 3 sample FAR 25 turboprop types (in 8 landing configurations), and
- 12 sample flight conditions

They have been accepted as the resulting factors being those with a 99% reliability. EASA acknowledges the difficulty for certain aircraft types to be provided with performance data compliant with the new proposed standard of CS 25.1592 and the fact the in certain cases the generic factors may be too penalising. For such cases alternatives to the generic factors will be offered.



2.

The computation of the landing distance at time of arrival has to be carried out using data and methodologies that have to be provided in the OM in a manner that is easy to use and observes human factor principles.

It is then not required to perform a second calculation for the most unfavourable runway condition but rather to consider which deterioration may be acceptable. As a matter of fact a pilot report from the preceding aircraft may be obtained just prior to landing and therefore the flight crew should be prepared to deal with it at that moment. The GM is meant to make sure that the flight crew is prepared to this eventuality by having done the relevant considerations beforehand. These elements should be anyway addressed by proper training.

3.

See point 1.

4. and 5.

For the most unfavourable condition see point 2. The 1.15 required in CAT.OP.MPA.303 is applicable to the landing distance at time of arrival and is not a double application of the 1.15 factor for wet runways, which is meant to be applied at dispatch.

6.

The certified distance for the time of arrival is based on different assumptions and therefore needs the application of the 1.15 factor.

7.

See point 2. And 6.

8.

EASA has acknowledged the impact on old designs, as explained in point 1. This will be taken into account also in the RIA.

9.

The application of a factor is a consequence of how the data for landing distance at time of arrival are derived. If a factor is necessary it needs to be indicated at rule level

10.

The proposal of CAT.POL.A.303 will be kept with a number of amendment as explained above and additional information and clarifications at AMC/GM level.

comment

292

comment by: *Wideroe Flyveselskap AS*

CAT.OP.MPA.303 (a) p. 22:

Question to EASA:

What is meant by 'approved landing distance data at the time of arrival for landing distance assessment'? Is it envisaged that an authority shall 'approve' landing distance data? - Under CS-25.1592 p. 32 (b) a reference is made to performance information that 'may be used to assist operators', which would point to advisory status of the data. - Which means of retardation are considered? Is the landing distance factored?



response Accepted.  
An AMC will clarify the nature of the data.

comment 310 comment by: *Textron Aviation*  
3. New CAT.OP.MPA.303 is added:  
(a) For performance class A aeroplanes, no approach to land shall be...  
  
Performance Class A (ME turboprops with MTOW >5700 kg or >9 pax) includes a number of aircraft types that were not certified to 14 CFR Part 25 or CS-25 airworthiness standards. As recognized here for Class B & C, data is not available for these aircraft as no relevant airworthiness standards exist.  
  
The TALPA ARC recognized this situation, and also noted that many of the recommendations for Part 25 aircraft would not translate well to small Part 23 aircraft. In the absence of a specific identified safety issue, TALPA ARC recommended that the enroute assessment be applicable only to multi-engine turbojets and large (commuter category) turboprops, and not applicable to small turboprops.  
  
It is therefore recommended that CAT.OP.MPA.303 be applicable to a subset of Performance class A aeroplanes, consisting of multi-engine turbojets, and turbo-propeller powered aircraft with a MTOM exceeding 8616 kg and more than 19 passengers.

response Accepted.  
Alternatives will be developed for those cases.

comment 336 comment by: *NetJets Europe*  
NetJets supports the new text as it helps to clarify the in-flight check of landing distance at time of arrival

response Noted.

**3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-CAT — CAT.POL.A.105**

p. 23

comment 226 comment by: *ERAA*  
CAT.POL.A.200 (c) p. 23:  
What is meant by ‘applicable standards on certification’?

response Noted.  
See response to comment 293.



**3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-CAT — CAT.POL.A.200**

p. 23

comment	8	comment by: <i>KLM</i>
	AMC1 CAT.POL.A.200 Table 1 Not in line with Annex 15 Snowtam and so not workable within cockpit.	
response	Accepted.  Annex 15 has also been revised by ICAO, with regard to the SNOWTAM format, in line with the changes introduced in the other Annexes. References to annex 15 will be added.	
comment	293	comment by: <i>Wideroe Flyveselskap AS</i>
	CAT.POL.A.200 (c) p. 23:  Question to EASA:  What is meant by ‘applicable standards on certification’?	
response	Noted.  Explanations are provided in GM1 CAT.POL.A.200.	

**3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-CAT — CAT.POL.A.215**

p. 23-24

comment	2	comment by: <i>KLM</i>
	page 24 (d) it says at least required navigation performance 5(RNP5)  this has to be RNAV5 as there is no valid notation that says RNP5.	
response	Accepted.  A consistency check will be carried out to correct other similar occurrences.	
comment	50	comment by: <i>AIRBUS</i>
	<b>SUBJECT :</b> Nomination of en-route alternates  <b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b> 3.1.3 Part-CAT 7. CAT.POL.A.215 (c)	



**2. PROPOSED TEXT / COMMENT:**

Amend CAT.POL.A.215 (c):

„ The net flight path shall permit the aeroplane to continue flight from the cruising altitude to an aerodrome where a landing can be made in accordance with ~~CAT.POL.A.22530 or CAT.POL.A.2305, as appropriate~~CAT.OP.MPA.303. The net flight path shall clear vertically, by at least 2 000 ft, all terrain and obstructions along the route within 9.3 km (5 NM) on either side of the intended track in accordance with the following (...)“

**3. RATIONALE / REASON / JUSTIFICATION:**

The current requirement in CAT.POL.A.215 (c) states that the nomination of en-route alternates should be based on the dispatch criteria for landing performance. This seems inappropriate for several reasons:

Aeroplane mass at time of arrival at the en-route alternate is likely to be above the maximum certificated landing mass, for which no dispatch landing performance data for application of CAT.POL.A.230 and 235 may be furnished in the flight manual.

Overweight procedures may be accounted for in time of arrival data only.

A diversion to an en-route alternate is likely to be for reasons involving an emergency in which case time of arrival performance will be used for selection of the diversion airport by the commander. Unnecessarily large margins on the selection of en-route alternates may exclude reasonable aerodromes along the route.

response

Not accepted.

CAT.POL.A.215(c) is normally applied at dispatch with a route analysis as explained in the related AMC1. The intent of the rule is to ensure that, in case of loss of one engine, the aeroplane is still able to clear the obstacles and reach an alternate where a safe landing can be made. These criteria orientates the flight planning based on the forecast available at the time of dispatch, i.e. the only information available at that time. A calculation with CAT.OP.MPA.303, in order to be meaningful, is supposed to be done with the latest information available at time of arrival.

comment

51

comment by: AIRBUS

**SUBJECT :** Net en-route flight path data

**1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:**

3.1.3 Part-CAT

7. CAT.POL.A.215

(c) 5

**2. PROPOSED TEXT / COMMENT:**

The NPA proposes addition of an option to derive the net flight path from gross OEI data, if the net has not been furnished in the AFM. It is understood that this option applies to aeroplanes certificated before it was required to consider the net flight path. It should be noted that making such a derivation from tabulated data would necessarily be approximate since it involves the reduction of the gradient at all points of the drift-down flight path.

response

Noted.

comment

132

comment by: ESDU, IHS Markit



Page 23  
 CAT.POL.A.215 En-route – one engine inoperative. Paragraph (c)  
 For clarity and consistency with (c)(5) this should begin - “The en-route net flight path shall permit the aeroplane.....”.

response Accepted.

**3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-CAT — CAT.POL.A.220**

p. 24

comment 3 comment by: *KLM*  
 page 24 8 (b) here is also mentioned RNP5 which is not a valid RNP notation and this has to be changed to RNAV5

response Accepted.  
 A consistency check will be carried out to correct other similar occurrences.

comment 5 comment by: *KLM*  
 CAT POL A 220 en idem dito 420.  
 Delete requirement  
 If the navigational accuracy does not meet at least RNP 5.  
 Reason: not conform Annex 6 and RNP 5 is even not existing

response Partially accepted.  
 The navigation specification will be changed to RNAV 5 consistently with other similar cases.

comment 133 comment by: *ESDU, IHS Markit*  
 Page 24  
 CAT.POL.A.220(a) En-route....two engines inoperative.  
 The proposal amends the rule to state:  
 At no point along the intended track shall an aeroplane having three or more engines be more than 90 minutes, with all engines operating at cruising power or thrust, as appropriate, at standard temperature in still air,.....

We do not agree with the change from “all engines long range cruising speed” to “all engines operating at cruising power or thrust”. This seems to undermine the basis of the 90 minute EROPS threshold limit and so reduces safety. By allowing speeds other than long range cruise speed an aircraft can achieve a greater range at the expense of greater fuel usage. If, for example, the long range cruise speed is 270 kts, and then, following engine failure the aircraft descends and cruises at 330 kts, the 90 minute flight will take it further, thereby subverting the intent of the original regulation with no technical justification being offered. There seems no point in writing a regulation and then permitting a ‘get-out’ clause.

response Not accepted.





The proposed change, while achieving harmonisation with the corresponding FAA rule, in whose context there is no evidence of safety issues related to the application of this criterion, will allow operational flexibility to those operators that are able to substantiate the use of a speed other than the long-range cruising speed to comply with the entire CAT.POL.A.220 rule.

**3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-CAT — CAT.POL.A.230**

p. 25

comment 52

comment by: AIRBUS

**SUBJECT :** Operations with a Reduced Landing Field Length Factor

**1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:**

3.1.3 Part-CAT

9. CAT.POL.A.230

(a) (3)

And 3.3.3 Part-CAT

8. AMC1 CAT.POL.A.230

**2. PROPOSED TEXT / COMMENT:**

Amend paragraph (a) of CAT.POL.A.230:

“notwithstanding (a)(1) and (a)(2) above, for aeroplanes having a maximum certified take-off mass (MCTOM) of 45 360 kg or less and a maximum operational passenger seating configuration (MOPSC) of 19 or less, used in non-scheduled on-demand commercial air transport (CAT) operations, within 80 % of the LDA when the aeroplane is approved for eligibility and CAT.POL.A.255 is complied with.”

Append the following to AMC1 CAT.POL.A.230:

“ELIGIBILITY FOR REDUCED REQUIRED LANDING DISTANCE OPERATIONS

The AFM should state whether the aeroplane is eligible for operations with reduced required landing distances. When the factors prescribed by CAT.POL.A.230(a)(1) and (a)(2) are the basis for compliance with certifications standards such as CS 25.1309 the aeroplane should not be operated with reduced required landing distances.”

**3. RATIONALE / REASON / JUSTIFICATION:**

Airbus does not oppose the principle of the alleviation on field length factors proposed for business jet operations. It should however be ensured that the usual field length factors of 60% and 70% for turbojets and turboprops respectively have not been the basis for demonstration of compliance with CS25, notably CS 25.1309. Whether this is the case or not can only be declared by the manufacturer, so a statement of eligibility for reduced field length factor operations in the AFM should be a prerequisite.

response Accepted.

An aircraft eligibility criterion based on an AFM statement will be added.

comment 53

comment by: AIRBUS

**SUBJECT :** Incorrect references



	<p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b> 3.1.3 Part-CAT 13. CAT.POL.A.330 (g)</p> <p><b>2. PROPOSED TEXT / COMMENT:</b> Correct (g) as follows: „If the operator is unable to comply with (f)(2) for the destination aerodrome, the aeroplane shall only be dispatched if an alternate aerodrome is designated that permits full compliance with (a) to (f).“</p>
response	<p>Accepted.</p> <p>References will be corrected.</p>
comment	<p>101 <span style="float: right;">comment by: CAA Norway</span></p> <p>Supported.</p>
response	<p>Noted.</p>
comment	<p>134 <span style="float: right;">comment by: ESDU, IHS Markit</span></p> <p>Page 25, CAT.POL.A.230 Landing – dry runway Page 27 CAT.POL.A.255 Approval of reduced required landing distance operations.</p> <p>We do not agree with the proposal to reduce the required landing distances for aeroplanes not exceeding 45,360 kg or 19 passengers. We do not agree with the proposal because the justification for it is not adequately safety based.</p> <p>Any arbitrary decrease in landing distance available is, by definition, an increase in risk. The justification of maintaining safety while harmonising with FARs is only valid if the FAA adoption of the FARs was based on specific safety measures. The Appendix Report No NLR-CR-2014-206 states that the FAA landing factor was not determined by a safety assessment. The mitigation measures listed may be beneficial to improve the consistency of landings, but they are largely aspects of commonly applied airmanship, available to everyone, including the pilots of large aeroplanes.</p> <p>If an operator of an aircraft that is over 45360kg and/or has more than 19 passenger seats asked for a rule change to allow them to use factors based on 80% of landing distance and agreed to apply the required mitigations, what would be the argument to deny the request? Restricting the use of the factors based on 80% of landing distance available to aircraft with 19 seats or less is really saying that - equivalent safety has not been shown, but when the accidents happen they will have fewer fatalities and hence they will be of less concern to the general public.</p> <p>The group of aeroplanes identified for this concession (business/corporate aircraft) is already responsible for a higher proportion of overrun accidents per flying hour than other aeroplanes, so this change proposal does not make logical sense.</p>



	<p>It also defies logic that the proposal to permit lower ‘landing distance required’ factors than for larger CAT aeroplanes does not make mandatory the use of approach path guidance. The use of such systems could result in a safety benefit that might justify some reduction in the distance factors.</p>
response	<p>Partially accepted.</p> <p>A number of mitigating measures proposed to attain an equivalent level of safety are not qualitative, but rather precise barriers against certain risks, such as prohibiting operations on contaminated runways, operations with tailwind and approaches outside of stabilised criteria. Furthermore it is not the individual measure that achieves the result but rather the combination of all. As regards the mass threshold initially proposed for these operations, it will be changed to an aircraft eligibility statement in the AFM.</p>
comment	<p>244 <span style="float: right;">comment by: <i>General Aviation Manufacturers Association / Hennig</i></span></p> <p>The General Aviation Manufacturers Association (GAMA) appreciates the agency proposing establishing a mechanism for operators to establish a landing mass on dry runways of 80 percent of the landing distance available (LDA) for business jets operations that comply with CAT.POL.A.255.</p> <p>The 80 percent allowance builds in experience gained in commercial on-demand business aviation operations in the United States in accordance with 14 CFR 135.4, Eligible-On-Demand (EOD) operations which have shown not only to increase operational flexibility but enhance safety.</p> <p>GAMA, however, recommends that the agency update the maximum certified take-off mass (MCTOM) proposed in the NPA (i.e., 45 360 kg) to align with new business jet products on the market. As the agency knows, there are several new business jet with an MCTOM above 45 360 kg including the Bombardier Global 7000 and 8000 as well as the Gulfstream G650ER (see, rulemaking underway in RMT.0695 for additional background). GAMA recommends that EASA increase the allowable MCTOM to accommodate these new business jets for 80 percent LDA operations.</p> <p>The RMT.0695 draft NPA proposes to increase the MCTOM for non-ETOPS business jet operations to 60 000 kg as the new threshold. GAMA recommends that the agency align the MCTOM in the runway performance regulation to establish a common set of thresholds between the two rules to ensure all business jet operators in Europe can benefit from the increased safety and operational flexibility that the 80 percent LDA runway achieves in concert with the requirements in CAT.POL.A.255.</p>
response	<p>Partially accepted.</p> <p>The aircraft eligibility for these operations will be changed in order to be established on the basis of certification criteria.</p>
comment	<p>245 <span style="float: right;">comment by: <i>General Aviation Manufacturers Association / Hennig</i></span></p> <p>GAMA notes that the data basis for dry runway time of arrival landing performance is different from what is shown in CS 25.125. The manufacturer certifying two different sets of</p>



	<p>landing performance could be a potential source of confusion for operators and would be an additional burden for the OEM that does not seem to have been considered fully in the analysis.</p> <p>The development and maintenance of two different sets of dry runway landing performance will require separate AFMSs and databases which will add unnecessary complexity and cost for what is considered a minimal increase of safety given the existing dry runway dispatch requirements in CAT.POL.A.230.</p> <p>GAMA recommends that the agency limit the proposed required time of arrival assessments to non-dry runways only as there should be sufficient margin from dispatch requirements in CAT.POL.A.235.</p>
response	<p>Not accepted.</p> <p>The current standard for landing distance on dry runways at time of dispatch is not suitable for in-flight checks at time of arrival. This unfortunately leads to two different data sets for dry and wet runways. However it should be noted that the operational requirement for in-flight check at time of arrival, for the case of dry runways may be limited to simply confirm the dispatch calculation.</p>
comment	<p>281 <span style="float: right;">comment by: <i>General Aviation Manufacturers Association / Hennig</i></span></p> <p>EASA proposes to update CAT.POL.A.230 with respect to destination and alternate aerodromes by striking the existing (f) and updating the existing requirement in (g) (which is now changed to a new (f)).</p> <p>The agency, as part of this change, updates the requirement for the alternate aerodrome and limits the compliance for the alternate to not include (e). This seems to be an editorial error.</p> <p>GAMA recommends that the agency determine if the elimination of having to comply with (e) was intentional or editorial.</p>
response	<p>Noted.</p> <p>The CAT.POL.A.230 rule will be completely re-drafted for consistency with other rules and will be checked against eventual omissions.</p>
comment	<p>311 <span style="float: right;">comment by: <i>Textron Aviation</i></span></p> <p>9. <u>CAT.POL.A.230 is amended as follows:</u>  (f) If the operator is unable to comply with (e)(2) for the destination aerodrome, the aeroplane shall be only dispatched if an alterate aerodrome is designated that allows full compliance with (a) to (d).</p> <p>It's not clear why this was changed to (d). Is compliance with (e) not necessary for the alternate?</p>
response	<p>Accepted.</p> <p>The intent of the rule with respect to alternates will be clarified.</p>



comment	337	comment by: <i>NetJets Europe</i>
	<p>NetJets supports the new provision.</p> <p>Just one further comment related to the maximum mass. It is our understanding that this new provision is meant to include business aviation type operations. Please note that there are business aviation aeroplane types that are currently operating and others that are in the certification/production phase that will have MCTOMs above the 45 360kg. We believe that this mass limitation for other requirements like the Non-ETOPS 180 min may be being reviewed in a different RMT and we suggest that this is monitored for consistency.</p>	
response	Noted.	

**3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-CAT — CAT.POL.A.235**

p. 26

comment	24	comment by: <i>Gabriel Arroyo</i>
	<p>New paragraph CAT.POL.A.235, coming from a copy-paste of CAT.POL.A.230, is in this place difficult to read and understand. A clearer wording shall be appreciated. For instance, “If the operator is unable to comply with the CAT.POL.A.235 (a) to (e) requirements for the weight and runway conditions expected at the estimated time of arrival, the aeroplane may be dispatched if two alternate aerodromes are designated that permit full compliance with either CAT.POL.A.230(a) to (e) or CAT.POL.A.235 (a) to (e)”</p>	
response	<p>Accepted.</p> <p>Wording and intent of the rule will be clarified.</p>	

comment	27	comment by: <i>Gabriel Arroyo</i>
	<p>CAT.POL.A.235 states that “when the appropriate weather reports and/or forecasts indicate that the runway at the estimated time of arrival may be wet...”. Some doubts could arise about the way in which a forecast should be interpreted. There is no guide material similar to GM2 CAT.OP.MPA.185 “Planning minima for IFR flights” which instructions about how to take into account the different wordings used in a TAF/TREND regarding planning minima.</p>	
response	<p>Not accepted.</p> <p>The requirement established in CAT.OP.MPA.185 explicitly calls for consideration of a time window of one hour before and one hour later for the planning minima, hence the need for guidance on the interpretation of the forecast.</p> <p>The same does not happen in the particular provision on weather report/forecast of CAT.POL.A.235, furthermore this has not been changed by the NPA. In any case a new provision requiring an in-flight check of landing performance, based on the latest information available at the time of arrival, is introduced.</p>	

comment	28	comment by: <i>Gabriel Arroyo</i>
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	<p>· CAT.POL.A.235 appears to refer only to the destination aerodrome. It could happen that the runway is forecasted to be dry in the aerodrome destination, but wet in the destination alternate. The question is how should be addressed this subject regarding alternate planning?</p>
response	<p>Accepted.</p> <p>The rule is intended to apply to destination alternates as well and will be clarified in this respect.</p>

comment	<p>103 <span style="float: right;">comment by: CAA Norway</span></p> <p>CAT.POL.A.235</p> <p>CAA-N proposes to delete the requirement to consider contamination for the purpose of landing distance dispatch calculation in accordance with approved contaminated landing distance data or equivalent.</p> <p><i>Rationale:</i></p> <p>Since the estimated time of arrival usually will be somewhere between two and fourteen hours, depending amongst other factors, the estimated flying time, later than the time when the dispatch calculations are performed, the quality/accuracy of the expected runway surface conditions at the estimated time of arrival will be questionable at best. This because the conditions are liable to change based on improvement actions taken by the aerodrome operator, and the fact that meteorological conditions can change at short notice. This is not only applicable to a situation with showery conditions, but also in a situation when there is a possibility of rapid temperature changes, such as at temperatures around freezing and time of day around sunrise or sunset.</p> <p>Furthermore, the at the time of take-off landing performance data as outlined in ICAO Annex 8, 11th edition – July 2016, amendment 108-B, paragraph 2.2.7.3 does only call for; <i>The at time of take-off landing performance data need only to be determined with standard day temperature and level, dry landing surfaces for landplanes,</i></p> <p><b>Safety</b> is considered to be assured through the detailed requirement for an “in-flight check of the landing distance at the time of arrival – aeroplanes”, CAT.OP.MPA.303, with associated AMC and Guidance Material.</p> <p><b>Operational common sense suggests</b></p> <p>A) That it could be wise to take on extra fuel to allow for possible aerodrome closure for contaminant clearance with associated traffic congestions. This could be reflected in a GM on fuel policy.’</p> <p>B) That it could be wise to perform a preliminary “in-flight check of the landing distance at the time of arrival” according to CAT.OP.MPA.303 prior to take off, especially if the estimated time of landing is reasonably close. This could also be handled through a GM.</p> <p>Thus, a removal of this requirement would increase harmonisation with the US FAR 121.195. Dispatch calculations will be simplified because there would be only two different cases.</p> <ol style="list-style-type: none"> <li>a) Dispatch to a runway forecasted to be dry</li> <li>b) Dispatch to a runway forecasted be other than dry (wet or contaminated).</li> </ol>
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**Proposed new text for CAT.POL.A.235 – Landing other than dry runway (alternatively wet or contaminated runway.**

(a) When the appropriate weather reports and/or forecasts indicate that the runway at estimated time of arrival may not be dry (alternatively, wet or contaminated), the LDA shall be at least 115 % of the required landing distance determined in accordance with CAT.POL.A.230.

(b) DELETED

(c) Retained, but renumbered

(d) DELETED

(e) For (old c) above, the criteria of CAT.POL.A.230 shall be applied accordingly.

(f) If the operator is unable to comply with CAT.POL.A.230(e)(1) for a destination aerodrome where a landing depends upon a specified wind component, the aeroplane may be dispatched if two alternate aerodromes are designated that permits compliance with CAT.POL.A.230(a) to (e).

**Consequences:**

For dispatch towards forecasted WET runway conditions, there are no changes, as the possibility to use a distance shorter than prescribed in (a) may still be used.

For dispatch towards runways anticipated to be not dry or wet, i.e. contaminated, the 15 % margin on top of the dry runway requirement (CAT.POL.230) is retained.

**Alternative proposal if dispatch towards runways forecasted to be contaminated at the estimated time of arrival, and in accordance with approved data is retained.**

Change (d) as follows:

(d) A landing distance on a contaminated runway shorter than required by (b), but not less than required by CAT.POL.A.230(a), may be used if the AFM includes specific additional information about landing distances on contaminated runways.

**Rationale:**

The term “specially prepared winter runways” has been proposed to be deleted as, Runway Condition Code will be used as the basis for the calculation. A runway contaminated by compacted ice or snow, which has been prepared by chemical or mechanical means to provide better friction, will be reported as a higher Runway Condition Code, than ice or compacted snow based on criteria, which has to be developed as part of the rulemaking task for PART ADR in collaboration with the rulemaking group for the Part OPS. An in depth rationale for the deletion of this term, is found in CAA-N comments to AMC 25.1591.

**Additional Proposals:**

A) Develop a GM on how to use information from both weather forecasts and SNOWTAM in the fuel planning process to consider the need for extra fuel required to cover possible closures for runway clearance and preparation procedures and associated extra holding time caused by any associated congestion.

B) Develop a GM on the advisability to perform a preliminary “in-flight check of the landing distance at the time of arrival” according to CAT.OP.MPA.303 prior to take off, especially if the estimated time of landing is reasonably close.

This should be a task for the rulemaking group, Part OPS.

response

Partially accepted.



The requirements of CAT.POL.A.235 will be completely re-drafted, consistently with those proposed in CAT.OP.MPA.303 and CAT.POL.A.230, partly endorsing the suggestions of this comment. It should be noted, however, that most of the concerns expressed in the comment will be addressed in the rulemaking task RMT.0704 by introducing the concept of operations on “specially prepared winter runways”, which will be referenced appropriately in the Regulation for air operations.

comment	<p>245 ❖ comment by: <i>General Aviation Manufacturers Association / Hennig</i></p> <p>GAMA notes that the data basis for dry runway time of arrival landing performance is different from what is shown in CS 25.125. The manufacturer certifying two different sets of landing performance could be a potential source of confusion for operators and would be an additional burden for the OEM that does not seem to have been considered fully in the analysis.</p> <p>The development and maintenance of two different sets of dry runway landing performance will require separate AFMSs and databases which will add unnecessary complexity and cost for what is considered a minimal increase of safety given the existing dry runway dispatch requirements in CAT.POL.A.230.</p> <p>GAMA recommends that the agency limit the proposed required time of arrival assessments to non-dry runways only as there should be sufficient margin from dispatch requirements in CAT.POL.A.235.</p>
response	<p>Not accepted.</p> <p>The current standard for landing distance on dry runways at time of dispatch is not suitable for in-flight checks at time of arrival. This unfortunately leads to two different data sets for dry and wet runways. However it should be noted that the operational requirement for in-flight check at time of arrival, for the case of dry runways may be limited to simply confirm the dispatch calculation.</p>

comment	<p>256 comment by: <i>Norwegian Air (Norwegian Air Norway, Norwegian Air International, Norwegian Air UK and Norwegian Air Shuttle)</i></p> <p><b>CAT.POL.A.235 Landing — wet and contaminated runways</b></p> <p>(a) When the appropriate weather reports and/or forecasts indicate that the runway at the estimated time of arrival may be wet <b>or contaminated</b>, the LDA shall be at least 115 % of the required landing distance, determined in accordance with CAT.POL.A.230.</p> <p><i>The 1.92 (or 1.64 for turboprop) factor is conservative with regards to dispatch performance. As it is impossible to forecast contaminated runway conditions with constantly changing conditions it makes no sense calculating weight for the adverse conditions. A mandatory inflight check using the “at the time of landing” performance data will safeguard the landing calculations, even if the conditions require a higher factor than 1.92/1.64 (meaning worse than expected at the time of dispatch).</i></p> <p><del>(b) When the appropriate weather reports and/or forecasts indicate that the runway at the estimated time of arrival may be contaminated, the LDA shall be at least the landing distance determined in accordance with (a), or at least 115 % of the landing distance determined in</del></p>
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~~accordance with approved contaminated landing distance data or equivalent, whichever is greater. The operator shall specify in the operations manual if equivalent landing distance data are to be applied.~~

*We propose to delete this paragraph as it is impossible to forecast contaminated runway conditions. Flight times can vary from less than 1 hour to 10+ hours. The 1.92/1.64 factor should normally provide enough margin. The mandatory inflight check will safeguard that the required landing distance for the actual landing mass + 15% is within LDA.*

**(c)** A landing distance on a wet runway shorter than that required by (a), but not less than that required by CAT.POL.A.230(a), may be used if the AFM includes specific additional information about landing distances on wet runways. **The criteria of CAT.POL.A.230 shall be applied accordingly.**

*Paragraph (e) is moved up, provided (b) and (d) are deleted.*

~~(d) A landing distance on a specially prepared contaminated runway shorter than that required by (b), but not less than that required by CAT.POL.A.230(a), may be used if the AFM includes specific additional information about landing distances on contaminated runways.~~

*Further, we propose to delete paragraph (d) together with (b). However, if deleting paragraph (b) is too radical, we propose to alter paragraph (d) to the following:*

A landing distance on a ~~specially prepared~~ contaminated runway shorter than that required by (b), but not less than that required by CAT.POL.A.230(a), may be used if the AFM includes specific additional information about landing distances on contaminated runways.

*If the AFM has the data prescribed, a RWYCC should be enough to do the calculation regardless of how the runway is treated.*

~~(e) For (b), (c) and (d), the criteria of CAT.POL.A.230 shall be applied accordingly, except that CAT.POL.A.230(a) shall not be applied to (b) above.~~

*Paragraph is moved up to (c).*

~~(f) For (b) and (d)~~ **(a)** above, if the operator is unable to comply with CAT.POL.A.230(e)(1) for a destination aerodrome where a landing depends upon a specified wind component, the aeroplane may be dispatched if two alternate aerodromes are designated that permit full compliance with CAT.POL.A.230(a) to (e).

*This will include WET runways in the alternates alleviation, as current regulation opens for.*

response

Partially accepted.

This rule will be re-drafted consistently with the changes proposed in CAT.POL.A.230 for dry runways and clarifying the intent of the rule with respect to alternate aerodromes.

comment

267

comment by: *Conrad*

Reference:



## 3. Proposed Amendments

## 3.1 Draft Regulation - 3.1.2. Part-CAT

## 10. CAT.POL.A.235 Landing - wet and contaminated runways

Suggested Change:

CAT.POL.A.235 Landing - wet and contaminated runways

(a) (unchanged)

~~(b)~~ (this paragraph should be deleted)~~(c)~~ (b) A landing distance on a wet runway shorter than that required by (a), but not less than that required by CAT.POL.A.230(a), may be used if the AFM includes specific additional information about landing distances on wet runways.

The criteria of CAT.POL.A.230 shall be applied accordingly. ((c) becomes (b), the former (e) is included)

~~(d)~~ (this paragraph should be deleted)~~(e)~~ (this paragraph moves to (b))~~(f)~~ (c) For ~~(b) and (d)~~ (a) above, if the operator is unable to comply with CAT.POL.A.230(e)(1) for a destination

aerodrome where a landing depends upon a specified wind component, the aeroplane may be

dispatched if two alternate aerodromes are designated that permit full compliance with CAT.POL.A.230(a) to (e).

((f) becomes (c))

Rationale:

It is questionable, whether due to weather reports/forecast an operator can predict if a runway at the time of arrival will be contaminated.

Moreover, it is impossible to judge some hours in advance, which exact runway conditions to expect at time of arrival.

Especially in dynamic weather situations this is just guesswork.

Contaminated runway conditions might range from "Compacted Snow" (close to "Good") down to Ice. How would you decide, what to expect at landing? Always going to the conservative side will impact your operation.

Furthermore, if you planned on e.g. Slush on landing runway, this might reduce your takeoff weight and thus, reduce the

amount of extra fuel you can carry. Extra fuel however opens up options for other alternates. It is impossible to predict, if a destination airport (eg. on the US east coast in wintery conditions) won't be closed down

by the time you arrive. Planning for alternates is what you do in that case. Thus, extra fuel is necessary and you wouldn't

want to restrict it by planning for e.g. Slush runways in the first place.

Correctly guessing which runway condition to expect at time of landing, might only work for very short flights.

The FAA approach is to only account for Wet at dispatch.

With the "At-time-of-landing" assessment now made mandatory, it is ensured, that landings won't be done at conditions

that exceed the performance capabilities of the aircraft.



	<p>The "At-time-of-landing" assessment was made mandatory precisely for the fact, that runway conditions could deteriorate during the flight. Thus, a dispatch to wet runways would be sufficient.</p>
response	<p>Accepted.</p> <p>This rule will be re-drafted consistently with the changes proposed in CAT.POL.A.230 for dry runways and clarifying the intent of the rule with respect to alternate aerodromes.</p>
comment	<p>284 <span style="float: right;">comment by: <i>General Aviation Manufacturers Association / Hennig</i></span></p> <p>The agency introduces a new (f) in CAT.POL.A.235, Landing - wet and contaminated runways. The new text states that "For (b) and (d) above, if the operator is unable to comply with CAT.POL.A.230(e)(1) for a destination aerodrome where a landing depends upon a specified wind component, the aeroplane may be dispatched if two alternative aerodromes are designated that permit full compliance with CAT.POL.A.230(a) to (e)."</p> <p>The reference to (e)(1) seems to be a typo or error, because (e)(1) is the most favorable runway and still air, and does not consider a wind component.</p> <p>GAMA recommends that the agency determine if this reference should be to CAT.POL.A.230(e)(2) instead.</p>
response	<p>Accepted.</p> <p>This rule will be completely re-drafted consistently with the changes proposed in CAT.POL.A.230 for dry runways and clarifying the intent of the rule with respect to alternate aerodromes.</p>
comment	<p>303 <span style="float: right;">comment by: <i>Finnish Transport Safety Agency</i></span></p> <p>CAT.POL.A.235 p. 26</p> <p>Point (f) states: <i>For (b) and (d) above, if the operator is unable to comply with CAT.POL.A.230(e)(1) for a destination aerodrome where a landing depends upon a specified wind component, the aeroplane may be dispatched if two alternate aerodromes are designated that permit full compliance with CAT.POL.A.230(a) to (e).</i></p> <p>Is the intention that when dispatching the aeroplane in accordance with point (f), the possible contamination at the alternate aerodromes is not taken into account? The point requires only full compliance with CAT.POL.A.230(a) to (e) and not CAT.POL.A.235.</p>
response	<p>Accepted.</p>



The requirement is intended to include dispatch on contaminated runways and will be clarified in this respect.

comment	<p>312 <span style="float: right;">comment by: <i>Textron Aviation</i></span></p> <p>10. <u>CAT.POL.A.235</u> is amended as follows:          (f) For (b) and (d) above, if the operator is unable to comply with CAT.POL.A.230(e)(1) for a destination aerodrome...</p> <p>Should this be (e)(2)? Dispatching in accordance with (e)(1) does not require a specified wind component.</p>
response	<p>Accepted.</p> <p>The intent of the rule with respect to destination and alternate aerodromes will be clarified.</p>

comment	<p>338 <span style="float: right;">comment by: <i>NetJets Europe</i></span></p> <p>in paragraph d) what is the definition of a 'specially prepared winter runway'? If it the same as the definition in CS25, then we suggest that it is included in the AIR OPS definitions.</p>
response	<p>Accepted.</p> <p>A definition will be added.</p>

comment	<p>349 <span style="float: right;">comment by: <i>US FAA</i></span></p> <p><b>Comment summary</b></p> <p>Item:</p> <p>(a) (a) When the appropriate weather reports and/or forecasts indicate that the runway at the estimated time of arrival may be wet, the LDA shall be at least 115 % of the required landing distance, determined in accordance with CAT.POL.A.230.</p> <p>As currently written CAT.POL.A.235 may be interpreted as applying to CAT.POL.A.230 (a) (3) and therefore that it is acceptable to schedule wet runway operations based on a 1.15 factor applied to a landing distance based on 80% as called out in (a)(3) only.</p> <p>This is not the intent and is inconsistent with CAT.POL.A.255 (b)(2)(iv)(B).</p> <p><b>Suggested resolution</b></p> <p>Add the italicized text below to CAT.POL.A.235(a)</p> <p><b>CAT.POL.A.235 Landing — wet and contaminated runways</b>          (a) When the appropriate weather reports and/or forecasts indicate that the runway at the estimated time of arrival may be wet, the LDA shall be at least 115 % of the required landing distance, determined in accordance with CAT.POL.A.230 <i>(a) (1) or (a)(2) or CAT.POL.A.255 (b)(2)(iv)(B) as appropriate.</i></p>
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response

Partially accepted.

Operations with reduced required landing distance are entirely dealt with in the newly proposed provisions CAT.POL.A.255 and 355 under a “prior approval” regime. However, as the rule CAT.POL.A.235 is being entirely re-drafted, consistency with other rules will be ensured.

**3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-CAT — CAT.POL.A.250**

p. 26-27

comment

1

comment by: *Gheorghe Oprea*

Dear EASA team,  
Please clarify what means "Short landing operations" and which is the purpose of this approval and explain the purpose of "Approval of reduced required LDA". If I will obtain Short landing operations doesn't means that I can land within a reduced LDA?  
Or, if I obtain approval of reduced LDA, doesn't means that I will land on short runway (anyway from my point of view it will be difficult to obtain approval for short landing due to the fact that in CAT.POL.A.230(c) is stated that even will comply with CAT.POL.A.250 we have to comply also with CAT.POL.A.230(a)).  
Regards,  
Gheorghe Oprea

response

Noted.

“Short landing operations” are those requiring approval under CAT.POL.A.250 where the approved operator is allowed to use in the landing performance calculation the length of the declared safe area in addition to the LDA.  
“Reduced required landing distance operations” are those proposed by the NPA to be approved under CAT.POL.A.255” where the approved operator is allowed to land within 80% of the LDA.  
The two types of operations cannot be conducted at the same time.

comment

174

comment by: *UK CAA*

	<p><b>Page No:</b> 26</p> <p><b>Paragraph No:</b> CAT.POL.A.250 Approval of short landing operations</p> <p><b>Comment:</b> As is the case for the Class B proposals, steep approach operations should not be permitted when using reduced required landing distance factors.</p> <p><b>Justification:</b> As the NLR Safety Study itself says (on page 15), the special procedures of steep approaches are outside the scope of this analysis, consequently, they should be precluded for all reduced required landing distance permissions.</p>
response	<p>Accepted.</p> <p>Steep approach operations are not intended to be combined with reduced required landing distance operations. This is clarified in CAT.POL.A.255.</p>
comment	<p>193 <span style="float: right;">comment by: <i>Dassault-Aviation</i></span></p> <p>Dassault-Aviation</p> <p>Page 27: CAT.POL.A.255(b)(2)(vi)</p> <p>Comment: This requirement could be alleviated with only one pilot qualified and trained for these operations, indeed the only critical point of the reduced landing distance operations is during the landing phase for the pilot flying. We recommend the following requirement:  "the flight crew is composed of at least one qualified and trained commander having recency in reduced required landing distance operations. if the commander is the only pilot qualified, trained and having recency for these operations, he shall be the pilot flying".</p>
response	<p>Not accepted.</p> <p>The proposed requirements on crew composition and training are considered an important element to achieve an equivalent level of safety in this kind of operations.</p>

**3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-CAT — CAT.POL.A.255**

p. 27-28

comment	<p>22 <span style="float: right;">comment by: <i>Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</i></span></p> <p>CAT.POL.A.255</p> <p>Regarding approval of reduced required landing distance operations the phrase “non-scheduled on-demand commercial air transport (CAT) operations” might need to be defined.</p>
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	The mentioned phrase exist in Article 2 (6) but only for the purpose of flight and duty time limitations. For reasons of clarity EASA should consider to rephrase or define “non-scheduled on-demand commercial air transport (CAT) operations” in the context of performance.
response	Accepted.  A GM explaining the intent of this wording will be added.

comment	34 comment by: <i>Joachim J. Janezic (Institute for Austrian and International Aviation law)</i>  <b><u>Ad CAT.POL.A.255(a):</u></b> The distinction between scheduled and non-scheduled operation is not justifiable. On the one hand in the past all distinctions between those two types of operations were abolished and it doesn't make any sense to re-introduce such distinction. On the other hand the passengers of scheduled operations and non-scheduled operations should enjoy the same level of safety. But if reduced required landing distance operations are considered to be safe, then the distinction is not justifiable.
response	Not accepted.  The applicability of the proposed rule has been built around the concept of eligible on-demand operations to achieve harmonisation with the FAA on this specific type of CAT operations.

comment	36 comment by: <i>Joachim J. Janezic (Institute for Austrian and International Aviation law)</i>  <b><u>Ad CAT.POL.A.255(b):</u></b> A new paragraph c should be added, so that a combination of par. (b)(1) [i.e. risk assessment] and par. (b)(2) [criteria] is possible. For example the general criteria of par. (b)(2) are fulfilled but the reduced required landing distance operations should be eligible for steep approaches. In such case a risk assessment – restricted to the special issues of a steep approach - should be conducted, whereas in general the meeting of the criteria in par. (b)(2) is sufficient.
response	Not accepted.  Steep approach operations, as well as other special approach procedures outside of stabilised approach criteria, are not intended to be combined with reduced required landing distance operations. Each one of these options, under the conditions prescribed by the relevant rule, may be used by an operator to benefit of some flexibility under appropriate mitigating conditions, but they are not meant to be combined.

comment	38 comment by: <i>Joachim J. Janezic (Institute for Austrian and International Aviation law)</i>  <b><u>Ad CAT.POL.A.255(b)(2)(i):</u></b>
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	<p>The exclusion of steep approaches in general is too restrictive because some airports in the alps have a combination of steep approach and short runway [Sion, Chambery, London City, Lugano, Althenrhein, Bolzano].</p> <p>We suggest, that steep approaches are permitted in case the AFM of the aircraft used provides special performance data (such as GL5000, F900B and F7X).</p>
response	<p>Not accepted.</p> <p>Steep approach operations, as well as other special approach procedures outside of stabilised approach criteria, are not intended to be combined with reduced required landing distance operations. Each one of these options, under the conditions prescribed by the relevant rule, may be used by an operator to benefit of some flexibility under appropriate mitigating conditions, but they are not meant to be combined.</p>
comment	<p>39 comment by: <i>Joachim J. Janezic (Institute for Austrian and International Aviation law)</i></p> <p><b><u>Ad CAT.POL.A.255(b)(2)(iv)(C):</u></b></p> <p>It would be better (and in line with (A), (B), and (D)) to change the wording to: "no <u>forecasted</u> contaminated runway..."</p>
response	<p>Accepted.</p>
comment	<p>40 comment by: <i>Joachim J. Janezic (Institute for Austrian and International Aviation law)</i></p> <p><b><u>Ad CAT.POL.A.255(b)(2)(viii):</u></b></p> <p>It should be clarified that this rule addresses the competent authority of the aerodrome (and not the competent authority issuing the approval for the operator). Not only because they know best about the local specialities, but also because otherwise it is not guaranteed that all competent authorities grant approvals for the same airport under the same conditions...</p>
response	<p>Accepted.</p> <p>The authority certifying the aerodrome will be indicated in the rule.</p>
comment	<p>44 comment by: <i>Joachim J. Janezic (Institute for Austrian and International Aviation law)</i></p> <p><b><u>AD CAT.POL.A.255(b)(2)(iv):</u></b></p> <p>1. Please determine in an AMC what you exactly expect from the ALAP. 2. Please clarify that this ALAP is just a part of the dispatch (and not of the flight watch) process. It "sounds" as if there was a special programme to be established by the operator whereas in fact there are simply 4 items to be checked during dispatch.</p>
response	<p>Accepted.</p> <p>Clarifications on the intent and the content of the ALAP will be provided.</p>





comment	<p>135</p> <p style="text-align: right;">comment by: ESDU, IHS Markit</p> <p>Page 25, CAT.POL.A.230 Landing – dry runway Page 27 CAT.POL.A.255 Approval of reduced required landing distance operations.</p> <p>We do not agree with the proposal to reduce the required landing distances for aeroplanes not exceeding 45,360 kg or 19 passengers. We do not agree with the proposal because the justification for it is not adequately safety based.</p> <p>Any arbitrary decrease in landing distance available is, by definition, an increase in risk. The justification of maintaining safety while harmonising with FARs is only valid if the FAA adoption of the FARs was based on specific safety measures. The Appendix Report No NLR-CR-2014-206 states that the FAA landing factor was not determined by a safety assessment. The mitigation measures listed may be beneficial to improve the consistency of landings, but they are largely aspects of commonly applied airmanship, available to everyone, including the pilots of large aeroplanes.</p> <p>If an operator of an aircraft that is over 45360kg and/or has more than 19 passenger seats asked for a rule change to allow them to use factors based on 80% of landing distance and agreed to apply the required mitigations, what would be the argument to deny the request? Restricting the use of the factors based on 80% of landing distance available to aircraft with 19 seats or less is really saying that - equivalent safety has not been shown, but when the accidents happen they will have fewer fatalities and hence they will be of less concern to the general public.</p> <p>The group of aeroplanes identified for this concession (business/corporate aircraft) is already responsible for a higher proportion of overrun accidents per flying hour than other aeroplanes, so this change proposal does not make logical sense.</p> <p>It also defies logic that the proposal to permit lower ‘landing distance required’ factors than for larger CAT aeroplanes does not make mandatory the use of approach path guidance. The use of such systems could result in a safety benefit that might justify some reduction in the distance factors.</p>
response	<p>Noted.</p> <p>See response to comment 134.</p>
comment	<p>136</p> <p style="text-align: right;">comment by: ESDU, IHS Markit</p> <p>Page 27 – CAT.POL.A.255(b)(2). The word ‘forecasted’ is not commonly used in modern English. ‘Forecast’, ‘forecasting’ and ‘forecaster’ are the forms of the word commonly in use. Examples of usual and expected use in the English language, that are relevant to this NPA, are: “No tailwind is forecast” “No tailwind was forecast” “No tailwind had been forecast” “The forecast for today does not include a tailwind” “It is expected that no tailwind will be forecast for tomorrow”.</p> <p>These are all correct usage. We recommend that “forecasted” be replaced by “forecast” throughout the text.</p>



response	Accepted.
comment	<p>137 <span style="float: right;">comment by: ESDU, IHS Markit</span></p> <p>Page 27 CAT.POL.A.255(b)(2)(iv)(D) Approval of Reduced Required Landing Distance Operations Under paragraph (D), what is the definition of ‘no forecasted adverse weather conditions’?</p>
response	<p>Noted.</p> <p>“Adverse weather conditions are explained in a GM.</p>
comment	<p>175 <span style="float: right;">comment by: UK CAA</span></p> <p><b>Page No:</b> 27</p> <p><b>Paragraph No:</b> CAT.POL.A.255 Approval of reduced required landing distance operations (b)</p> <p><b>Comment:</b> CAA UK does not support the principle of extrapolating the conclusions of the NLR study to a wider population of aircraft operators who do not have an FDM programme. Therefore an FDM programme should be a mandatory condition for each operator requiring this approval.</p> <p><b>Justification:</b> The competent authority needs quantitative evidence about the current level of safety of each operator before granting an approval for further reducing the safety margins. Also, the data from an FDM programme is the only credible evidence to support the required risk assessment. Finally, the operator needs an effective monitoring process to assess the effectiveness of the new mitigating measures on a continued basis and close the SMS loop. The only reliable tool to deliver such evidence is a Flight Data Monitoring programme, specifically tailored to monitor the risk of runway excursions for each operator. Therefore the implementation of an FDM programme should be a requirement for those operators wishing to conduct reduced landing distance operations.</p> <p><b>Proposed Text: Amend to read:</b></p> <p>(b) To obtain the approval, the operator shall provide evidence that:  <del>(1) a risk assessment has been conducted by the operator to demonstrate that a level of safety equivalent to that intended by CAT.POL.A.230(a)(1) or CAT.POL.A.230(a)(2), as applicable, is achieved; or</del>  <b>(1) an FDM programme specifically tailored to monitor the risk of runway excursions has been implemented and integrated in the operator’s SMS</b>  <del>(2) the following conditions are met:</del>  <b>(2) One of the following conditions are met:</b>  <b>(a) a risk assessment has been conducted by the operator to demonstrate that a level of safety equivalent to that intended by CAT.POL.A.230(a)(1) or CAT.POL.A.230(a)(2), as applicable, is achieved; or</b>  <b>(b) the following conditions are met:</b>  (i) special-approach procedures, such as steep approaches, planned screen heights higher than 60 ft or lower than 35 ft, low-visibility operations, planned operations outside stabilised approach criteria, are prohibited;</p>



(ii) short landing operations in accordance with CAT.POL.A.250 are prohibited;

(iii) an adequate training, checking and monitoring process for the flight crew is established;

(iv) an aerodrome landing analysis programme (ALAP) is established by the operator to ensure that the following conditions are met:

(A) no tailwind is forecasted at the expected time of arrival;

(B) if the runway is forecasted to be wet at the expected time of arrival, the landing distance at dispatch shall either be determined in accordance with CAT.OP.MPA.303(a) or be at least 115 % of the landing distance required by CAT.POL.A.230(a)(3), whichever is longer;

(C) no expected contaminated runway conditions exist at the expected time of arrival; and

(D) no forecasted adverse weather conditions exist at the expected time of arrival;

(v) all the equipment affecting landing performance is operative before commencing the flight;

(vi) the flight crew is composed of at least two qualified and trained pilots having recency in reduced required landing distance operations;

(vii) the commander shall make the final decision to conduct reduced required landing distance operations and may decide not to do so when they consider this to be in the interest of safety; and

(viii) additional aerodrome conditions, if specified by the competent authority, taking into account aeroplane type characteristics, orographic characteristics in the approach area, available approach aids, missed-approach and balked-landing considerations.

response Partially accepted.

The aircraft categories for which FDM is mandatory are established in ORO.AOC.130 on the basis of more general criteria which are not meant to be revised by this proposal. When FDM is available, it should be used also for the purposes of CAT.POL.A.255. Moreover it is recommended to be used on a voluntary basis also when it is not required by ORO.AOC.130. However, alternative means for data collection will be considered and the analysis of operator's performance in relation to unstable approaches and long landings will be included in the risk assessment.

comment

176

comment by: UK CAA

**Page No:** 27

**Paragraph No:** CAT.POL.A.255

**Comment:** Reduced landing distance factors - wet runways: The reduced factor rule is potentially currently applicable to runways 'forecasted to be wet'. For normal despatch calculation, the wet despatch factor is 52% ( $1/(1.15*1.67)$ ) for jets and 60% ( $1/(1.15*1.43)$ ) for turboprops.

The check against the wet TOA calculation is appropriate, but is only required if the CAT.POL.A.255(b)(2) is followed which is currently optional (and may not necessarily be limiting anyway). Even then, if the runway is grooved or has PFC, the check may be simply



	<p>confirming that the runway meets the criteria used for dispatch. Either way, the reduced factor effect would be retained.</p> <p>It is recommended that further work on the applicability of the reduced factor to wet runways needs to be done, or the proposals limited to the dry case only.</p> <p><b>Justification:</b> The NLR Safety Assessment does not demonstrate for the wet runway condition that that the mitigating measures restore the equivalent level of safety to the normal (wet) despatch criteria.</p>
response	<p>Not accepted.</p> <p>The use of reduced required landing distance in accordance with CAT.POL.A.255 is not supposed to be cumulated with any performance credit for grooved or PFC wet runways.</p>
comment	<p>177 <span style="float: right;">comment by: UK CAA</span></p> <p><b>Page No:</b> 27</p> <p><b>Paragraph No:</b> CAT.POL.A.255</p> <p><b>Comment:</b> Fitment of additional retardation devices other than wheel brakes: The NLR Safety Study quantifies the benefit from various systems in terms of sustaining reduced landing distance factors i.e. ground spoilers and thrust reversers. Such items are fitted at the option of the manufacturer. Therefore, there should be a requirement that such equipment should be fitted and operable on the aircraft before reduced factors could be authorised.</p> <p>Specifically, the benefits of reverse thrust is often quoted, but its fitment is optional at the aircraft design stage, so it cannot be relied upon in a operational safety analysis, unless there is a requirement that reduced factors can only be applied if they are fitted. Nevertheless if it is fitted, then the credit given in the current approved field length distances (to which the reduced factor will be applied) is limited to the one-engine inoperative condition. Hence in normal operations with all-engine-operating, there is an additional safety margin available because of the better stopping capability with all-engines providing reverse.</p> <p><b>Justification:</b> Use of reverse thrust is necessary to meet the assumptions in the safety justification for reduced factors.</p> <p><b>Proposed Text:</b> It is suggested that an additional condition to CAT.POL.A.255(b) is included:-</p> <p><b>(x) the aircraft must be equipped with ground spoilers, anti-skid and thrust reversing systems,</b></p>
response	<p>Not accepted.</p> <p>A variety of aircraft types and circumstances were considered in the NLR study. These aircraft varied in size and in installed stopping devices. The 6-8 passenger jet used in the analysis did not have thrust reversers or ground spoilers installed and the deceleration mainly came from the brakes. The 14 passenger turbo-prop also did not have ground spoilers installed. Only the</p>



larger business jets had thrust reversers and ground spoilers. Thrust reversers are most effective on contaminated runways rather than on dry/wet runways. However reduced landing distance operations are not allowed on contaminated runways.

Moreover the study includes several of the conditions suggested in the comment, and further to other comments an aircraft eligibility criterion, based on AFM statement will be introduced.

comment	<p>204 <span style="float: right;">comment by: <i>Embraer S.A.</i></span></p> <p>Embraer agrees with EASA-proposed inclusion of requirement CAT.POL.A.255. Nonetheless, Embraer does not see why the applicability of this requirement should be limited to MCTOM of 45,360 kg as one of the purposes of the Airplane Performance Review in the NPA is to attain harmonization with FAA's operational requirements (14CFR Part 91, 14CFR Part 135). In FAA's requirements there is no limit on airplane weight (MCTOM) for the consideration of a reduced landing factor (1/0.60 → 1/0.80). Embraer understands that only the passenger seat configuration (MOPSC) limitation is adequate to achieve the objective of this NPA.</p>
response	<p>Accepted.</p> <p>The mass threshold will be changed to an aircraft eligibility criterion based on an AFM statement.</p>
comment	<p>219 <span style="float: right;">comment by: <i>DGAC France</i></span></p> <p>DGAC has some concerns about a generic approval that is not limited to a list of specific airports identified by the operator.</p> <p>DGAC believes that the relevance and efficiency of the crew training and recency conditions depend upon the airports characteristics.</p> <p>Besides, as for condition (b)(2)(viii), considering the variability of airports that may be concerned, it would be difficult for a National Authority to assess and identify all the airports characteristics that may lead to a reduction of the level of safety when combined with reduced required landing distance operations.</p> <p>Therefore, if the possibility of a generic approval is maintained, DGAC suggests that Part-ARO authorises and recommends to the National Authorities to limit this approval to a list of specific airports identified by the operator.</p>
response	<p>Partially accepted.</p> <p>The conditions required for the prior approval of these operations are meant to be effective independently of the aerodrome because they are mitigating the risks related to having a short runway. However it will be specified that training has to be conducted at aerodromes that are representative of the intended operations.</p>
comment	<p>220 <span style="float: right;">comment by: <i>DGAC France</i></span></p> <p>CAT.POL.A.255(b)(2)(i) --</p> <p>Considering that under standard operations, non-stabilised approach is precluded, the wording "planned operations outside stabilised approach criteria" should be replaced for better clarity and consistency by "particular approaches approved under CAT.OP.MPA.115(a)" as it is written in CAT.POL.A.355(b)(2).</p>



response Accepted.

comment 244 ❖ comment by: *General Aviation Manufacturers Association / Hennig*

The General Aviation Manufacturers Association (GAMA) appreciates the agency proposing establishing a mechanism for operators to establish a landing mass on dry runways of 80 percent of the landing distance available (LDA) for business jets operations that comply with CAT.POL.A.255.

The 80 percent allowance builds in experience gained in commercial on-demand business aviation operations in the United States in accordance with 14 CFR 135.4, Eligible-On-Demand (EOD) operations which have shown not only to increase operational flexibility but enhance safety.

GAMA, however, recommends that the agency update the maximum certified take-off mass (MCTOM) proposed in the NPA (i.e., 45 360 kg) to align with new business jet products on the market. As the agency knows, there are several new business jet with an MCTOM above 45 360 kg including the Bombardier Global 7000 and 8000 as well as the Gulfstream G650ER (see, rulemaking underway in RMT.0695 for additional background). GAMA recommends that EASA increase the allowable MCTOM to accommodate these new business jets for 80 percent LDA operations.

The RMT.0695 draft NPA proposes to increase the MCTOM for non-ETOPS business jet operations to 60 000 kg as the new threshold. GAMA recommends that the agency align the MCTOM in the runway performance regulation to establish a common set of thresholds between the two rules to ensure all business jet operators in Europe can benefit from the increased safety and operational flexibility that the 80 percent LDA runway achieves in concert with the requirements in CAT.POL.A.255.

response Partially accepted.

The aircraft eligibility for these operations will be changed in order to be established on the basis of certification criteria

comment 277 comment by: *FNAM*

**The FNAM thanks the EASA for allowing the use of an 80% landing factor for business aviation operators conducted with performance class A aeroplanes. Indeed, this regulatory proposal will allow more flexibility for business operators, facilitate the access to certain regional aerodromes and eliminate a competitive disadvantage for European operators.**

The FNAM is asking for the removal of the implementing rule CAT.OP.MPA.303 and all its AMC and GM. Moreover, regarding the IR CAT.OP.MPA.300, the FNAM is asking for the removal of the reference to paragraph CAT.OP.MPA.303 in order to ensure consistency. Besides, we suggest that the AMC1 CAT.OP.MPA.300 remains as it was written before the modifications brought by this NPA.

Generally speaking, the FNAM is asking for the removal of all references to paragraph CAT.OP.MPA.303 and its AMC and GM that have been added through this NPA.



Furthermore, in order to document the impact of such a measure on the various activities of all the stakeholders potentially impacted by this new requirement, the FNAM is asking for a 3 months' extension of the period of consultation of this NPA so that all concerned operators may develop their own arguments.

This additional period of consultation would allow:

- A simplification of the methodology described in the AMC1 so that it can be applicable in the cockpit
- A reevaluation of the Landing Distance Factors (LDF) which seem pulled out of the hat (contrary to what was stipulated in the explanatory note of this NPA, the factors defined in the AMC1 CAT.OP.MPA.303 (a) and (b)(1) and (c)(1) are not explicated in the FAA Advisory Circular (AC) 25-32)

response

Noted.

For the part of the comment on CAT.OP.MPA.303, see response to comment 268.

comment

339

comment by: *NetJets Europe*

NetJets supports the introduction of CAT.POL.A.255.

Refer also to comment number 337 circa the MCTOM of 45360 kg.

response

Noted.

See response to comment 337.

comment

350

comment by: *US FAA*

### ***CAT.POL.A.255 (a) and CAT.POL.A.355 (a)***

#### **Comment summary**

While this is an operational regulation, the margin with this reduced landing distance factor is directly related to the method of certification used in creating the AFM dry runway landing data.

If the parameters used during certification and computation of the AFM dry runway landing distance are consistent with the normal operating environment such as glide slope and rate of sink at touchdown then it is reasonable for the specific airplane may be approved for reduced landing distance operation.

If the parameters are not consistent with normal operation, i.e. steeper glide path, higher assumed touchdown rate etc. than operationally reasonable then the specific airplane should not be approved for reduced landing distance operation.

Another item which varies between AFM's is inclusion of slope and OAT. This should also be a consideration when determining if an individual airplane's AFM is appropriate for a reduced landing distance factor.

If there is no slope or OAT accountability in the then the reduced landing distance factor should not be allowed.



	Suggested resolution
	<p>CAT.POL.A.255 (a) to add the following italicized text:</p> <p>For aeroplanes having a maximum certified take-off mass (MCTOM) of 45 360 kg or less and a maximum operational passenger seating configuration (MOPSC) of 19 or less, used in non-scheduled on-demand commercial air transport (CAT) operations <i>and whose AFM states that reduced landing distance operation is acceptable</i>, landing operations with a landing mass of the aeroplane allowing a full stop landing within 80 % of the landing distance available (LDA) require prior approval by the competent authority.</p> <p>CAT.POL.A.355 (a) to add the following italicized text:</p> <p>(a) Operations with a landing mass of the aeroplane allowing a full stop landing within 80 % of the landing distance available (LDA) on the intended runway require <i>a AFM states that reduced landing distance operation is acceptable and</i> prior approval by the competent authority. Such approval shall be obtained for each runway on which operations with reduced required landing distance are conducted.</p>
response	<p>Partially accepted.</p> <p>An aircraft eligibility criterion based on an AFM statement will be introduced in CAT.POL.A.255.</p>

**3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-CAT — CAT.POL.A.330**

p. 28

comment	<p>104</p> <p>Comment: Typo in new (g), (d) should read (f) in two locations.</p>	comment by: CAA Norway
response	<p>Accepted.</p> <p>References will be corrected.</p>	
comment	<p>138</p> <p>Page 28 CAT.POL.A.330 Landing – dry runways. Comment as for CAT.POL.A.230. We do not agree with the proposal to reduce the required landing distances for aeroplanes not exceeding 45,360 kg or 19 passengers. We do not agree with the proposal because the justification for it is not adequately safety based.</p>	comment by: ESDU, IHS Markit





response

Noted.

See response to comment 234.

comment

207

comment by: Embraer S.A.

Considering the proposed changes in requirement CAT.POL.A.330, paragraphs (f) and (g) present wrong references, which are related to the previous version.

response

Accepted.

References will be corrected.

**3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-CAT — CAT.POL.A.355**

p. 29-30

comment

16

comment by: DGAC France

In order to avoid any confusion, CAT.POL.A.335(a) should be modified as followed:

*a) When the appropriate weather reports and/or forecasts indicate that the runway at the estimated time of arrival may be wet, the LDA shall be equal to or exceed the required landing distance, determined in accordance with CAT.POL.A.330(a) multiplied by a factor of 1.15.*

Indeed, according to CAT.POL.A.355 (6)(iii), the landing distance at dispatch, when the runway is forecasted to be wet, should either be determined in accordance with CAT.OP.MPA.303(b) or be at least 115% of the landing distance required by CAT.POL.A.330(b) (i.e.  $1.15 \times 1.25 \times \text{ALD}$ ), whichever is longer.

But when there is no data available for the in-flight assessment, CAT.OP.MPA.303(b) implies to use, for wet runway, the landing distance required by CAT.POL.A.335 which means the landing distance required by CAT.POL.A.330 multiplied by 1.15. Therefore, we might consider that we can use the landing distance required by CAT.POL.A.330(b) multiplied by 1.15 factor. Finally, when applying the “whichever is longer” given in CAT.POL.A.355 (6)(iii), we could end up in comparing the same figure as both the two following possibilities:

1/	CAT.OP.MPA.303(b),	i.e.	CAT.POL.A.335,	i.e.	115% of	CAT.POL.A.330(b)
2/	115	%	of			CAT.POL.A.330(b)
would	give	the	same	result:		$1.15 \times 1.25 \times \text{ALD}$ .

Besides, even if the issue is not exactly the same since CAT.POL.A.303(a) is less confusing, we suggest for an overall consistency, to modify also CAT.POL.A.235(a) as followed:

*(a) When the appropriate weather reports and/or forecasts indicate that the runway at the estimated time of arrival may be wet, the LDA shall be at least 115 % of the required landing distance, determined in accordance with CAT.POL.A.230(a)(1) or (2)*

response

Accepted.

comment

23

comment by: Swedish Transport Agency, Civil Aviation Department  
(Transportstyrelsen, Luftfartsavdelningen)

	<p>The Swedish Transport Agency question whether the proposed text is necessary or if it should be handled on a derogation basis should it be needed.</p>
response	<p>Noted.</p> <p>The Agency considers that a Regulation should not be written in such a way that exemptions or derogations would be needed systematically to cope with cases where compliance with one or more requirements cannot be achieved.</p>
comment	<p>139 <span style="float: right;">comment by: ESDU, IHS Markit</span></p> <p>Page 29 CAT.POL.A.355 Approval of reduced landing distance operations. Comment as for CAT.POL.A.255. We do not agree with the proposal to reduce the required landing distances for aeroplanes not exceeding 45,360 kg or 19 passengers. We do not agree with the proposal because the justification for it is not adequately safety based.</p>
response	<p>Noted.</p> <p>See response to comment 234.</p>
comment	<p>140 <span style="float: right;">comment by: ESDU, IHS Markit</span></p> <p>Page 29 CAT.POL.A.355 Approval of reduced ..landing distance operations. Paragraph (6)(i), (iii), (iv). ‘forecasted’ should be replaced by ‘forecast’.</p>
response	<p>Accepted.</p>
comment	<p>141 <span style="float: right;">comment by: ESDU, IHS Markit</span></p> <p>Page 29 CAT.POL.A.355 Approval of Reduced Required Landing Distance Operations Steep approaches and short landing operations should be separately and explicitly prohibited, just as they are in CAT.POL.A.255(2)(i) &amp; (ii). The proposed CAT.POL.A.355 text could be understood to mean that short landing operations are only prohibited when combined with certain kinds of approach. If the reduced landing factors are used, steep approaches and short landing operations should all be prohibited because Class B aircraft have lower performance capability and poorer equipment installations compared with Class A.</p>
response	<p>Not accepted.</p> <p>In accordance with CAT.POL.A.345, in order to conduct steep approach operations, the aircraft must be certified and specific performance shall be provided in the AFM. These specific AFM data already take into account any increase on the landing distance due to steep approach procedures, such as a higher approach speed. Besides, CAT.POL.A.355 proposal requires an efficient control of the touchdown area with a clear identification of the</p>



designated area and specific go-around instructions, in case touch down is not achieved within those limits. These measure prevents inaccuracies in the air distance before the touchdown.

comment

178

comment by: UK CAA

**Page No:** 30**Paragraph No:** CAT.POL.A.355(b)(7)(ii)

**Comment:** The ‘additional’ requirement “operational procedures and instructions are established to ensure that the deceleration devices are correctly used by the flight crew;...” does not add any value to the reduced factored landing procedures.

**Justification:** This aspect of the operation of the aircraft should be standard operating practice throughout the operator’s entire operations, not just when using reduced factor provisions. Consequently, it is not a ‘mitigating measure’ for the purposes of using reduced landing distance factors. A more relevant requirement would be that the devices are functioning before landing.

**Proposed Text:** Amend to read:

(7) operational procedures and instructions are established to ensure that:

- (i) all the equipment affecting landing performance and landing distance is operative before commencing the flight;
- (ii) the deceleration devices are **operable before landing and** correctly used by the flight crew; and
- (iii) landing on contaminated runways is prohibited;

response

Not accepted.

The mitigating measure related to the functionality of aircraft equipment is introduced by not allowing the dispatch of the aircraft with such equipment inoperative and by introducing specific enhanced maintenance programme to increase reliability of those systems. Should such equipment or system become inoperative in-flight the situation will have to be dealt with according to the abnormal/emergency procedures established in the operations manual and to the commander’s judgement. Additional guidance will be provided in this respect.

comment

279

comment by: FNAM

**The FNAM is asking for the removal of the implementing rule CAT.OP.MPA.303 and all its AMC and GM. Moreover, regarding the IR CAT.OP.MPA.300, the FNAM is asking for the removal of the reference to paragraph CAT.OP.MPA.303 in order to ensure consistency. Besides, we suggest that the AMC1 CAT.OP.MPA.300 remains as it was written before the modifications brought by this NPA.**

**Generally speaking, the FNAM is asking for the removal of all references to paragraph CAT OP.MPA.303 and its AMC and GM that have been added through this NPA.**



Furthermore, in order to document the impact of such a measure on the various activities of all the stakeholders potentially impacted by this new requirement, the FNAM is asking for a 3 months’ extension of the period of consultation of this NPA so that all concerned operators may develop their own arguments.

This additional period of consultation would allow:

- A simplification of the methodology described in the AMC1 so that it can be applicable in the cockpit
- A reevaluation of the Landing Distance Factors (LDF) which seem pulled out of the hat (contrary to what was stipulated in the explanatory note of this NPA, the factors defined in the AMC1 CAT.OP.MPA.303 (a) and (b)(1) and (c)(1) are not explicated in the FAA Advisory Circular (AC) 25-32)

response Noted.

See response to comment 268.

**3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-CAT — CAT.POL.A.420**

p. 30-31

comment 142

comment by: ESDU, IHS Markit

Page 30

CAT.POL. A.420(a) En-route .... two engines inoperative.

At no point along the intended track shall an aeroplane having three or more engines be more than 90 minutes, with all engines operating at cruising power or thrust, as appropriate, at standard temperature in still air,.....

We do not agree with the change from “all engines long range cruising speed” to “all engines operating at cruising power or thrust”. This seems to undermine that basis of the 90 minute EROPS threshold limit and so reduces safety. By allowing speeds other than long range cruise speed an aircraft can achieve a greater range at the expense of greater fuel usage. If, for example, the long range cruise speed is 270 kts, then following the engine failures the aircraft descends and cruises at 330 kts, 90 minutes will take it further, thereby subverting the intent of the original regulation with no technical justification being offered. There seems no point in writing a regulation and then permitting a ‘get-out’ clause.

response Not accepted.

The proposed change, while achieving harmonisation with the corresponding FAA rule, in whose context there is no evidence of safety issues related to the application of this criterion, will allow operational flexibility to those operators that are able to substantiate the use of a speed other than the long-range cruising speed to comply with the entire CAT.POL.A.420 rule.

**3. Proposed amendments — 3.2. Draft CSs (draft EASA Decision) — CS-25 Book 1 — 3.2.1. Certification Specifications — CS 25.1591**

p. 31-32



comment	6	comment by: <i>KLM</i>
	<p>CS 25.1591 item 4 Not in line with ANNEX 15 amendment 39B (snowtam) Different definitions gives interpretation issues.</p> <p>Item 6.2 Table description not in line snowtam Water must be Standing water Compacted snow and Slush difference based on OAT or dept unknown in snowtam format. OAT not mentioned within snowtam. Makes this table not accessible within the cockpit.</p> <p>Wet (slippery wet) Term not in Annex 6</p>	
response	<p>Accepted.</p> <p>A consistency check and harmonisation with ICAO terminology will be carried out.</p>	
comment	227	comment by: <i>ERAA</i>
	<p>CS-25.1592 p. 32: Widerøe operates all landings on the 830 metre runways as ‘steep approach’ 4.5 degrees from a 35 feet screen height.</p>	
response	<p>Noted.</p> <p>See response to comment 294.</p>	

**3. Proposed amendments — 3.2. Draft CSs (draft EASA Decision) — CS-25 Book 1 — 3.2.1. Certification Specifications — CS 25.1592**

p. 32

comment	54	comment by: <i>AIRBUS</i>
	<p><b>SUBJECT :</b> Title of CS25.1592</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b> 3.2.1 CS-25 Book 1 2. New CS 25.1592</p> <p><b>2. PROPOSED TEXT / COMMENT:</b> Change the title to read: „Landing Performance Information for Time of Arrival Landing Performance assessment and for Operations on Wet Slippery or Contaminated Runways at Time of Takeoff“</p> <p><b>3. RATIONALE / REASON / JUSTIFICATION:</b> The current title does not clearly state that the performance data mandated under this paragraph covers both Landing performance for dispatch to slippery wet and contaminated runways, and</p>	



response	<p>Landing performance data for time of arrival for all runway states, including dry and wet. The proposal may be cumbersome, but it is explicit on the intention. If combination of both aspects in a single paragraph is unclear, it could be considered to separate dispatch and in-flight in two sections, but that seems not desirable in terms of consistency with the FAA and the ICAO approach, and in terms of maintaining a single associated AMC.</p> <p>Partially accepted.</p> <p>The title of CS 25.1592 will be kept, however the applicability will be clearly specified in the first paragraph.</p>
comment	<p>55 <span style="float: right;">comment by: AIRBUS</span></p> <p><b>SUBJECT :</b> CS25.1592 (a)</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b>  3.2.1 CS-25 Book 1  2. New CS 25.1592 (a)</p> <p><b>2. PROPOSED TEXT / COMMENT:</b>  Change (a) to read:  “(a) Information applicable to aeroplanes operated on dry and wet runways for landing performance assessment at time of arrival and and supplementary landing performance information applicable to aeroplanes operated on slippery wet runways or runways contaminated with standing water, slush, snow or ice for use both at dispatch and time of arrival must be furnished by the applicant.”</p> <p><b>3. RATIONALE / REASON / JUSTIFICATION:</b>  The text of subparagraph (a) does not clearly distinguish the applicability of dry and wet runway landing performance under this paragraph from that specified under CS25.125. The proposed text clarifies that dry and wet data as specified here applies only to time of arrival assessments. The proposal also introduces the fact that slippery wet runway performance are covered by this paragraph.</p>
response	<p>Accepted.</p> <p>The applicability will be clarified.</p>
comment	<p>56 <span style="float: right;">comment by: AIRBUS</span></p> <p><b>SUBJECT :</b> CS25.1592 (b)</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b>  3.2.1 CS-25 Book 1  2. New CS 25.1592 (b)</p> <p><b>2. PROPOSED TEXT / COMMENT:</b>  Correct wording in CS 25.1592 (b):</p>



	“Performance information furnished by the applicant must be contained in the <b>aeroplane</b> flight manual (AFM). (...)”
response	Accepted.

comment	57 comment by: <i>AIRBUS</i>
	<p><b>SUBJECT:</b> CS25.1592 (c)</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b> 3.2.1 CS-25 Book 1 2. New CS 25.1592 (c)</p> <p><b>2. PROPOSED TEXT / COMMENT:</b> Correct wording in CS 25.1592 (c): “(…) It considers <b>Runway Condition Code</b> (see AMC 25.1592) and optionally runway surface conditions, winds, temperatures, average runway slope, pressure altitude, icing condition, planned final-approach speed, aeroplane mass and configuration, and deceleration devices used”</p> <p><b>3. RATIONALE / REASON / JUSTIFICATION:</b> The term braking action is not defined. More specifically, the AMC states that data should be provided as a function of RWYCC. Furthermore, furnishing data for runway states is optional, while providing it for RWYCC is mandatory. This is clarified by moving the RWYCC first and replacing the slash that could be read as an exclusive “or” with “and optionally”. It is proposed that the definition of RWYCC should be managed by reference to the AMC.</p>
response	Accepted.

comment	58 comment by: <i>AIRBUS</i>
	<p><b>SUBJECT:</b> CS25.1592</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b> 3.2.1 CS-25 Book 1 2. New CS 25.1592</p> <p><b>2. PROPOSED TEXT / COMMENT:</b> Add a new subparagraph at the end of CS 25.1592 copied from CS 25.1591(c): “(d) The AFM must clearly indicate the conditions and the extent of applicability for each contaminant used in establishing the contaminated runway performance information. It must also state that actual conditions that are different from those used for establishing the contaminated runway performance information may lead to different performance.”</p> <p><b>3. RATIONALE / REASON / JUSTIFICATION:</b> The content of CS 25.1591 (c) which is now applicable for takeoff only should be equally valid for landing. In particular, without this paragraph the publication of maximum contaminant depths for landing is no longer mandated.</p>
response	Not accepted.



AMC 25.1592 already explains and takes into account the rationale of the comment.

comment

179

comment by: UK CAA

**Page No:** 32, 41, 52 et seq.

**Paragraph No:** CS 25.1592 and associated AMC 25.1592.

**Comment:** As proposed, the time of arrival landing distance proposals should not be applicable to steep approaches. Although no specific mention is made of the landing approach angle in these paragraphs, CS 23.1592 as currently written implies that consideration is only being made to 'normal' landing operations and distances, and refers to the methodology used to show compliance with CS 25.125. For example, CS 1592(c) states "The landing distance to be used for landing performance assessment consists of the horizontal distance from the point at which the main gear of the aeroplane is 50 ft above the landing surface to the point where the aeroplane comes to a complete stop. It considers runway surface conditions/braking action, winds, temperatures, average runway slope...". However, CAT.POL.A.230(b) permits steep approaches with distances based on screenheights of less than 60ft and not less than 35ft.

Furthermore, it is understood that the generic factors presented in AMC1 CAT.OP.MPA 303(a) and (b)(1) and (c)(1) in Table 1 (page 52) were originally derived from a mathematical analysis based upon normal approach operations, so these should be restricted to those operations using the same criteria.

**Justification:** The derivation of the air distance and thus the overall landing distance will be dependent upon the approach angle used. The generic factors which are to be used in the absence of data provided in accordance with CS 25.1592 must have been shown to be valid for the approach angle to be used.

response

Accepted.

Assumptions to derive landing distances in case of steep approaches will be added.

comment

294

comment by: Wideroe Flyveselskap AS

CS-25.1592 p. 32:

Widerøe operates all landings on the 830 metre runways as 'steep approach' 4.5 degrees from a 35 feet screen height.

response

Noted.

A paragraph addressing steep approaches will be added.

comment

307

comment by: DGAC France

The word "supplementary" should be removed for better clarity since the provision of landing distances data on contaminated runway becomes mandatory with this amendment.





response	Not accepted.  The term “supplementary” in this context indicates the special status of this data, which is approved, but not demonstrated other than by computation.
comment	340 <span style="float: right;">comment by: <i>NetJets Europe</i></span>  NetJets supports the requirement for applicants to provide the Landing Distance Assessment performance data. This is essential to assist operators in complying with the new Part CAT requirements. As a note: there are some legacy aeroplane types that may have difficulty amending the performance to fulfil the requirements.
response	Noted.

**3. Proposed amendments — 3.2. Draft CSs (draft EASA Decision) — CS-25 Book 2 — 3.2.2. 3.2.2. Acceptable Means of Compliance — AMC 25.1591** p. 32-41

comment	21 <span style="float: right;">comment by: <i>Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</i></span>  <i>Existing CAT.POL.A.205 vs proposed new AMC 25.1591 para 7.3.4</i>  In the existing system with reported rwy friction values there is a possibility to assess the take-off performance with regard to rwy friction. In those parts of Europe where runways are contaminated with ice or compacted snow with shallow depths it would be beneficial if the certification provisions could take credit for the ADR-operators ability to improve the friction of a surface covered by compacted snow or ice, for example by sanding (c.f. PANS-ADR 1.1.3.16, 1.1.3.17). It would also be beneficial if a similar system would be applicable for operators that use aeroplanes for which the manufacturers do not provide data as per AMC 25.1591 para 7.3.4.  -----  <i>AMC 25.1591</i>  Further clarification is needed how to handle a situation when lower than expected RWYCCs are reported.  Due to the change in AMC 25.1591 GM1 CAT.POL.A.205 needs to be aligned.
response	Partially accepted.  The concerns expressed in this comment will be addressed in the rulemaking task RMT.0704 by introducing the concept of operations on “specially prepared winter runways”, which will be referenced appropriately in the Regulation for air operations.
comment	59 <span style="float: right;">comment by: <i>AIRBUS</i></span>



**SUBJECT :** Frost in AMC 25.1591

**1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:**

3.2.2 CS-25 Book 2  
1. CS 25.1591

**2. PROPOSED TEXT / COMMENT:**

Amend AMC 25.1591 2.0 to read:

„In line with International Civil Aviation Organization (ICAO) and Federal Aviation Authority (FAA) standards, a depth of more than 3 mm for contaminant accountability in take-off performance assessments is considered as a reasonable lower threshold. Below this depth of loose contaminant, or in case of a thin layer of frost, the runway is considered to be wet, for which AMC 25.1591 does not apply.“

Move the following definition from AMC 25.1592 to AMC 25.1591 4.0:

**„Frost**

Ice crystals formed from airborne moisture on a surface whose temperature is below freezing. Frost differs from ice in that frost crystals grow independently and, therefore, have a more granular texture.

Note 1: below freezing refers to air temperature equal to or lower than the freezing point of water (0 °C).

Note 2:— under certain conditions, frost can cause the surface to become very slippery, which is then reported appropriately as ‘reduced braking action’.“

**3. RATIONALE / REASON / JUSTIFICATION:**

The intent is to manage frost for takeoff. As a thin layer of frost carries the same penalty as a wet runway, so it is strictly outside the scope of the AMC, but as it is a winter contaminant it seems natural to deal with it in this AMC and provide the statement that it is considered equivalent to wet, along with 3mm or less depth of loose contaminants.

This creates a need to include the definition of frost in this AMC. As AMC 25.1592 does not duplicate the definitions already in AMC25.1591, it is thus appropriate to move the text from there.

response Accepted.

comment 60

comment by: AIRBUS

**SUBJECT :** Complete list of contaminants in AMC 25.1591

**1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:**

3.2.2 CS-25 Book 2  
1. CS 25.1591

**2. PROPOSED TEXT / COMMENT:**

Amend Table 1 of AMC 25.1591 5.0 to include:

Compacted Snow At or Below outside air temperature (OAT) -15°C	0 (see Note 4)	No	Yes	7.3, 7.4
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Compacted Snow Above outside air temperature (OAT) -15°C	0 (see Note 4)		No	Yes	7.3, 7.4
Dry Snow over Compacted Snow (see Note 3)	More than 10- up to 130	0.2	Yes	Yes	7.2, 7.3, 7.4
Wet Snow over Compacted Snow	More than 5- up to 30	0.5	Yes	Yes	7.1, 7.3, 7.4

**3. RATIONALE / REASON / JUSTIFICATION:**

It would be possible to manage all of these contaminants by equivalence with one of the contaminants previously defined, but listing all the reportable contaminants as distinct conditions with clearly associated performance assumptions brings clarity and prevents misinterpretation.

response Accepted.

comment 61

comment by: AIRBUS

**SUBJECT :** Default Wheel Braking Coefficients in AMC 25.1591

**1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:**

3.2.2 CS-25 Book 2  
1. CS 25.1591

**2. PROPOSED TEXT / COMMENT:**

Amend Table 2 of AMC 25.1591 7.3.1 to read:

Contaminant	Default Wheel Braking Coefficient $\mu$
Standing Water and Slush	For speeds below 85 % of the hydroplaning speed, 50 % of the wheel braking coefficient determined in accordance with CS 25.109(c), but not greater than 0.16 For speeds at 85 % of the hydroplaning speed and above, 0.05
Wet Snow above 3 mm depth	0.16
Dry Snow above 3 mm depth	0.16
Wet Snow over Compacted Snow	0.16
Dry Snow over Compacted Snow	0.16
Compacted Snow At or Below outside air temperature (OAT) -15 °C	0.20



Compacted Snow Above outside air temperature (OAT) -15 °C	0.16
Ice	0.07

**3. RATIONALE / REASON / JUSTIFICATION:**

It is proposed that the friction coefficient for standing water and slush for takeoff should be the same as that considered for landing in AMC25.1592.

It would be possible to manage all of these contaminants by equivalence with one of the contaminants previously defined, but listing all the reportable contaminants as distinct conditions with clearly associated performance assumptions brings clarity and prevents misinterpretation.

response Accepted.

comment

62

comment by: AIRBUS

**SUBJECT :** AMC 25.1591 8.3

**1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:**

3.2.2 CS-25 Book 2  
1. CS 25.1591

**2. PROPOSED TEXT / COMMENT:**

Delete last sentence in first paragraph of 8.3:

„This should be presented either as separate data appropriate to a defined runway contaminant or as incremental data based on the AFM normal dry or wet runway information. The take-off distance (TOD) should be determined in accordance with CS 25.113(b) and the take-off run (TOR) in accordance with CS 25.113(c)(2).“

Delete requirement to publish crosswind guidance:

„The applicant should provide crosswind guidance for operations on contaminated runways.“

Delete requirement to detail procedures and assumptions in the AFM:

“The AFM should provide:

the performance data for operations on contaminated runways;  
definitions of runway surface conditions; and  
the procedures and assumptions used to develop the performance data.”

**3. RATIONALE / REASON / JUSTIFICATION:**

AMC 25.1591 6.2.1 already states:

“Except as modified by the effects of contaminant as derived below, performance assumptions remain unchanged from those used for a wet runway, in accordance with the agreed certification standard. These include accelerate-stop distance definition, time delays, take-off distance definition, engine failure accountability and stopping means other than by wheel brakes (but see paragraph 7.4.3).”

This paragraph also includes the provisions for TOD and TOR on wet runway appropriately that were referenced by the addition to 8.3. This addition is thus not necessary.



Including a requirement to publish crosswind guidance for contaminated runways in the AMC 25.1591 means that such guidance should be published in the AFM. As there is currently no agreed method for producing such guidance, it is mostly based on experience and simulation using assumptions defined by individual manufacturers. It does not seem appropriate to publish such information in the AFM. Alternatively this statement should be amended with “in appropriate documentation”

The AFM does not seem to be the appropriate media to carry information such as the procedures and assumptions used to develop contaminated runway data.

response Accepted.

comment

106

comment by: CAA Norway

Comment

#### **4.8, Specially Prepared Winter Runway**

*Proposal 1:*

CAA-N proposes to delete the term “Specially Prepared Winter Runway» throughout the document, starting with item 4.8, in the Definitions.

*Rationale 1, Not in compliance with ICAO global reporting format:*

The term *specially prepared winter runway* is not in compliance with the new ICAO global reporting format since no runway condition code (RWYCC) can be assigned to the term. This fact is confirmed with the proposed Note 5 to Table 1 in paragraph 5. *Contaminant properties to be considered.* (Note 5 page 36 of 96)

*Note 5: No default model is proposed for specially prepared winter runways in this AMC. Such surfaces are specific and treatment may be of variable effectiveness. The procedures and methods should be approved by the competent authority of the state of operator.*

It is further confirmed by note to Table 2 in paragraph 7.0 *Effects of Contaminant, 7.3 Braking friction (All Contaminants, 7.3.1 Default Values,* at page 38 of 96:

Note: For a specially prepared winter runway surface no default friction value can be given due to the diversity of conditions that will apply.

*Proposal 2, NEED FOR EASA TO APPROVE PROCEDURES AND METHODS*

That EASA (RMT.0296 and RMT.0591) develop a method – compliant to ICAO global reporting format – for upgrading and downgrading of runway condition code (RWYCC) derived from the runway condition assessment matrix (RCAM) when a dry frozen surface of compacted snow and/or ice has been treated with sand or grit or has been mechanically or chemically treated.

*Rationale 2:*

The application of *specially prepared winter runway* as proposed requires that the State of the Operator; from Note 5 above:

*The procedures and methods should be approved by the competent authority of the state of operator.*

and the State of the aerodrome; extract from proposed new paragraph 7.3.4 *Specially Prepared Winter Runway Surface,* at page 39 of 96:

Appropriate procedures and methods should be approved by the competent authority of the state of aerodrome.



approve procedures and methods. This implies that procedures and methods are in need of harmonization across State borders. However, the definition of a specially prepared winter runway calls only for national procedures; (page 34 of 96):

A runway, with a dry frozen surface of compacted snow and/or ice which has been treated with sand or grit or has been mechanically or chemically treated to improve runway friction. The runway friction is monitored and reported on a regular basis in accordance with national procedures.

Consequently; to become a consistent method there is a need for EASA to approve procedures and methods for *specially prepared winter runway*, or *effectively to develop such procedures and methods that the goal can be achieved by using ICAO compliant terminology and concept to achieve the same purpose*, i.e. to have performance credits on specially prepared surfaces without using the term “Specially Prepared Winter Runways.

*Proposal 3: The need to develop a method for take-off performance calculation, using ICAO compliant terminology, while giving suitable credit to prepared surfaces, reference proposal 2 above:*

Add procedure to calculate take-off performance from a surface of ice or compact snow with sand, grit or mechanical or chemicals.

For the acceleration phase, use No Drag increase.

For the deceleration phase, use friction values from Table 1 from AMC 25.1592 for the reported runway condition code (typically 2 or 3).

A description of this issue should be written under a new heading/title in para 7.3.4.

*Rationale 3:*

Provided that the term “Specially Prepared Winter Runways” is deleted from AMC 25.1591, there is still a need to have take-off data, which takes account of the effect of preparation as outlined above.

Unless, a method for giving a performance credit for treating a surface of ice or compact snow with sand, grit or mechanical or chemicals, method using ICAO compliant terms, operational consequences may be large for some operators.

response

Not accepted.

The concept of operations on specially prepared winter runways will be developed in the aerodrome rules, along with the necessary procedures and requirements for their approval. Consequent references and guidance will be added to the rules for air operations.

comment

113

comment by: CAA Norway

## Chapter 7

### 7.3.1 Table 2

#### *Comment/Proposal*

Editorial review necessary to ensure all terms used are ICAO Compliant, specifically:



The text in the first column in Table 2 should be identical with the text in the second column in AMC 25.1592, 6.2 Transition Distance, Table 1 which again should be identical with the text in ICAO PANS-Aerodromes (Doc 9981) e.g. the text used in ICAO State letter AN 4/27-16/28 dated 5 May 2016, Table 3 – Assigning a runway condition code (RWYCC) and Table 5 – Runway condition assessment matrix (RCAM). Minor editorial changes identified post issuing the State letter should be corrected:

Column heading: Runway surface condition description

Footnote 1: Also applicable for  $-15^{\circ}\text{C}$  Lower outside air temperature

### 7.3.1 Default Values (Table 2)

#### *Comment*

Default value for COMPACTED SNOW higher than  $-15^{\circ}\text{C}$  outside air temperature or preferably runway surface temperature is not listed.

#### *Proposal:*

This factor (0.16) is found in AMC 25.1592, and should be listed together with the provisions related to different types of anti-skid systems. This is necessary to provide take-off performance data for all relevant conditions.

#### *Rationale:*

In table 2 the Default Wheel Braking Coefficient  $\mu$  has been changed for all contaminants listed except for COMPACTED SNOW. However, for COMPACTED SNOW temperature has been introduced as a discriminator and a  $-15^{\circ}\text{C}$  (OAT) threshold value has been added. Table 2 has only a default value for COMPACTED SNOW below this value.

These values are the minimum conservative 'default' values; e.g they represent the effective braking coefficient of an anti-skid controlled braked wheel/tyre. Draft AMC 25.1592

*Comment/Proposal – Default Temperature value ( $-15^{\circ}\text{C}$ ) for compact snow.*

#### *Proposal:*

To initiate work to see if this temperature limit, possibly in conjunction with dew-point spread, may be raised to increase applicability of this Runway Condition Code

response Not accepted.

The  $-15^{\circ}\text{C}$  criterion is kept as a conservative value until research or supporting data will justify an alternative solution. However flexibility will be provided by the concept of specially prepared winter runways operations developed in RMT.0704.

comment

143

comment by: ESDU, IHS Markit

Page 37

Aquaplaning Speed.

It is not correct to say that the aquaplaning "speed is given by 9VP". The best that can be said is that 9VP has been used in the past to obtain an estimate of the aquaplaning speed. ESDU has researched the origins of this expression and have found that it is an approximation based on one series of tests obtained many decades ago. Also, the origin of the 85% factor could not be substantiated.



It is recommended that the following text be deleted from AMC 25.1591

-----

“For the purposes of estimating the effect of aquaplaning on contaminant drag, the aquaplaning speed, VP, is given by –  
 $V_p = 9\sqrt{P}$   
 where VP is the ground speed in knots and P is the tyre pressure in lb/in<sup>2</sup>.

For the purpose of estimating the effect of aquaplaning on wheel-to-ground friction, the aquaplaning speed VP given above should be factored with a coefficient of 0.85.”

-----

ESDU methods are already referenced in section 9 of this AMC 25.1591.  
 ESDU has developed a better methodology for the estimation of aquaplaning speeds.  
 The reference to the current method is:  
 ESDU 15003 - Planing of rib tread aircraft tyres

ESDU is prepared to create a draft revision of the AMC to reflect current knowledge and provide this to EASA for consideration. Please advise whether EASA would be prepared to consider such a proposal.

response

Partially accepted.

The 0.85 factor is re-instated to account for the hysteresis effect.  
 The new methodology developed by ESDU in the document 05011 has been considered by EASA, however further testing is necessary for its validation. While this process takes place EASA wishes to maintain the reference to the origin of the methods applied in AMC 25.1591 and 1592.

comment

144 comment by: ESDU, IHS Markit

Page 38  
 Table under paragraph 7.3.1. Default Values  
 The table is headed ‘Default Wheel Braking Coefficient’, but the second line of the first paragraph of text refers to ‘friction values’. “Friction values” is also used in the two notes below the table. The terminology needs to be consistent.

The first block of the table says ‘use  $\mu = 0.05$ ’, but the second block from bottom of the table uses 0.07 (for ice); is this difference intentional?  
 The information given in this table is not justified within the document. Below the table it says “(See reference 10)”. This refers to an ESDU Data Item that has been withdrawn in favour of better methodology that provides for a more rational understanding of the effects.  
 Reference 10 should be replaced by:  
 ESDU 05011 - Summary of the model for performance of an aircraft tyre rolling or braking on dry or precipitate contaminated runways.

ESDU is prepared to create a draft revision of the AMC to reflect current knowledge and provide this to EASA for consideration. Please advise whether EASA would be prepared to consider such a proposal.

response

Partially accepted.





The comments on the text and the table will be taken into account. The new methodology developed by ESDU in the document 05011 has been considered by EASA, however further testing is necessary for its validation. While this process takes place EASA wishes to maintain the reference to the origin of the methods applied in AMC 25.1591 and 1592.

comment

145

comment by: ESDU, IHS Markit

Para 7.3.3. Use of Ground Friction Measurement Devices.

This issue is addressed in “*Report in Support of EASA.2011.OP.13 (Continuous Friction Measuring Equipment)*”, November 2012, that was produced by ESDU at EASA’s request. ESDU believes that the statement here that no correlation exists between aircraft stopping capability and ground friction measuring devices is not correct.

ESDU would welcome the opportunity to assist EASA with further refinements of AMC 25.1591 to reflect current knowledge.

response

Noted.

The EASA rulemaking task RMT.0704 intends to define standards for CFME for both functional and operational measurements, however it was agreed to address this subtask at a more global level (ICAO) where the Aerodrome Panel has tasked the Friction Task Force (FTF) to take over this activity. ESDU contribution to the work of the FTF is welcome.

comment

146

comment by: ESDU, IHS Markit

Page 40

9.0 References. The references in this section are no longer valid because most of the items have been withdrawn. They have been superseded by later methods. The changes are listed in the following table.-

NPA 2016-11 Reference	Subject	Corrected Reference
(1) ESDU 83042	Spray, Aquaplaning Speed	ESDU 83042, ESDU 15003
(2) ESDU 98001	Skin Friction	ESDU 98001
(3) ESDU 90035	Fluid Displacement Drag Forces	ESDU 05011, ESDU 10015
(4) ESDU Memo. 97	Drag from forward Spray	ESDU 83042, ESDU 15003
(5) ESDU Memo 96	Operation in Slush	ESDU 05011
(6) ESDU Memo 95	Spray - impact forces	ESDU 83042
(7) NASA TP-2718	Water Spray	ESDU 83042, ESDU 15003
(8) AIAA, Vol 36, No.5	G. van Es, Dry Snow	ESDU 05011, ESDU 10015, ESDU 11004
(9) NLR TR98165	G. van Es, Dry Snow	
(10) ESDU 72008	Planing	ESDU 15003



The references in Section 9 should be changed to:

9 References

Sources containing methods for determining the effects of tyre performance and effects on dry, wet and contaminated runways.

1. ESDU 05011. Summary of the model for performance of an aircraft tyre rolling or braking on dry or precipitate contaminated runways.
2. ESDU 10015. Model for performance of a single aircraft tyre rolling or braking on dry and precipitate contaminated runways.
3. ESDU 11004. Decelerating forces on multiple-wheel undercarriages rolling or braking on precipitate contaminated runways
4. ESDU 15003. Planing of rib tread aircraft tyres
5. ESDU 83042. Estimation of spray patterns generated from the sides of aircraft tyres running in water or slush.
6. ESDU 98001. Estimation of airframe skin-friction drag due to impingement of tyre spray.
7. Van Es, G.W.H., 'Rolling Resistance of Aircraft Tires in Dry Snow', National Aerospace Laboratory NLR, Technical Report TR-98165, Amsterdam, 1998.
8. FAA AC 25-31, 'Take-off Performance Data for Operations on Contaminated Runways', 22 December 2016.
9. ICAO Doc 10064, 'Aeroplane Performance Manual' (to be published).

ESDU is prepared to create a draft revision of the AMC to reflect current knowledge and provide this to EASA for consideration. Please advise whether EASA would be prepared to consider such a proposal.

response

Partially accepted.

The new methodology developed by ESDU in the document 05011 has been considered by EASA, however further testing is necessary for its validation. While this process takes place EASA wishes to maintain the reference to the origin of the methods applied in AMC 25.1591 and 1592. The withdrawn items will be identified in the list. Some other references to existing documents will be updated to reflect the latest edition.

comment

194

comment by: *Dassault-Aviation*

Dassault- Aviation

Comment:

- a. AMC 25.1591 braking coefficients are different from AC 25-31, whereas AMC 25.1592 braking coefficients are consistent with AC 25-32 (as a reminder, AC 25-31 and AC 25-32



response	<p>braking coefficients are identical). This will create a new set of data different from current 25.1591 and different from AC 25-31.</p> <p>Not accepted.</p> <p>Some differences with the FAA AC 25-31 are intentional. See also the replies to comment 208 and 248.</p>
comment	<p>201 <span style="float: right;">comment by: Thomson Airways</span></p> <p>7.3.4. Specially Prepared Winter Runway Surface</p> <p>The limitation of ‘effective friction not greater than 0.16’ (7.3.4) is overly restrictive. Assuming this relates to the wheel braking coefficient then this limits the improvement to ‘Medium’. Many specially prepared winter surfaces exhibit a very good braking action, often in excess of wet performance. We would like to propose that effective friction levels of up to 0.20 may be used, operationally in conjunction with reliable friction measuring equipment at the aerodrome concerned. A wheel braking coefficient of 0.20 is the default value assumed for compacted snow cases below -15 degrees C.</p>
response	<p>Accepted.</p> <p>In line with the methods documented in CS-ADR, the maximum coefficient is increased to 0.20.</p>
comment	<p>208 <span style="float: right;">comment by: Embraer S.A.</span></p> <p>Regarding AMC 25.1591, Embraer understands that not all the changes proposed by EASA should be incorporated in the final version of the AMC. There are also other details that should be addressed by the NPA concerning this AMC.</p> <p>Embraer understands that airplane manufacturers should inform the procedures and assumptions used to develop the performance data for operation on contaminated runways only if operating procedures are different from those used for dry runways or if manufacturers elect to comply with requirement §25.1591 with assumptions other than those of AMC 25.1591. Furthermore, runway surface definitions are standardized in certification requirements and MoCs and thus need not be presented in the AFM, and could be presented in other operating manual instead.</p> <p>Embraer also understands that EASA should seek to harmonize braking friction coefficients values used for takeoff performance assessment on contaminated runways with those published by the FAA on AC 25.31, in line with EASA’s goal of increasing harmonization with FAA’s rules. Namely, the braking coefficients for runways covered with standing water and ice are different from those of AC 25.31 in the following respects:</p> <ul style="list-style-type: none"> <li>• Standing water: EASA proposes the use of a single equation for braking coefficient (<math>mBR=f(V)</math>), whereas the FAA proposes the use of requirement §25.109, which considers a set of equations in which <math>mBR=f(V, ptire)</math>.</li> </ul>



	<ul style="list-style-type: none"> <li>Ice: EASA proposes mBR=0.07 whereas the FAA adopts mBR=0.08.</li> </ul> <p>Also, in contrast to AC25.31, NPA 2016-11 does not address the case when the runway is covered with compacted snow and the air temperature is above -15°C.</p>
response	<p>Not accepted.</p> <p>The differences in the wheel braking coefficients have been adopted for the following reasons:</p> <ul style="list-style-type: none"> <li>For Slush and Standing Water at takeoff there is no reason to limit the coefficient at low speed to 0.16, as there is no need to maintain a hierarchy in the contaminants as for the RWYCCs at Landing. It would unnecessarily penalize performance.</li> <li>For ice Cold and Dry, a value of 0.07 was selected as for most aircraft in most conditions it permits the 15% operational margin to cover a degradation of the actual coefficient to 0.05, a value that was observed in in-service accidents and incidents. This would not be the case for 0.08. It is understood that the FAA may harmonize with the EASA value.</li> </ul>
comment	<p>209 <span style="float: right;">comment by: <i>Embraer S.A.</i></span></p> <p>4.3 - Embraer suggests using the same definition of Wet Snow provided on paragraph 6.3.2 of AC 25.32 for “Item 3.2.2 – 1 – 4.3”.</p>
response	<p>Not accepted.</p> <p>EASA has adopted the ICAO definitions.</p>
comment	<p>210 <span style="float: right;">comment by: <i>Embraer S.A.</i></span></p> <p>4.4 - Embraer suggests using the same definition of Dry Snow provided on paragraph 6.3.1 of AC 25.32 for “Item 3.2.2 – 1 – 4.4”.</p>
response	<p>Not accepted.</p> <p>EASA has adopted the ICAO definitions.</p>
comment	<p>211 <span style="float: right;">comment by: <i>Embraer S.A.</i></span></p> <p>5.1 - (Table 1) - In the “Slippery Wet” row of Table 1, include the reference “(see Note 4)” in the “Range of Depths” column.</p>
response	<p>Accepted.</p> <p>The reference will be included.</p>
comment	<p>228 <span style="float: right;">comment by: <i>ERAA</i></span></p> <p>AMC-SUBPART G 2.0 p. 33:</p>



	<p>Is the 3 mm reference to contamination depth or water equivalent depth. We propose to continue the current system with WED.</p>
response	<p>Noted.</p> <p>See response to comment 297.</p>
comment	<p>229 <span style="float: right;">comment by: ERAA</span></p> <p>P38 7.3.3 Use of Ground friction measurements devices</p> <p>Widerøe's Flyveselskap AS suggest that an aerodrome operator may use measured friction coefficient as one of several variables for assessing upgrading and downgrading of the RWYCC. This obviously requires that the aerodrome operator has necessary equipment, knowledge, procedures and training acceptable to the competent authority. Furthermore, the measured friction coefficient and type of measuring device should be included in the remark field of the RCR.</p> <p>The competent authority should establish procedures for approval of friction measuring devices and conditions for use.</p> <p>In example:</p> <p>Friction Measuring Device A is approved for:</p> <ul style="list-style-type: none"> <li>· Dry snow up to 25mm</li> <li>· Compact snow</li> <li>· Dry ice</li> <li>· Sanded ice</li> </ul> <p>Friction Measuring Device B is approved for:</p> <ul style="list-style-type: none"> <li>· Dry snow up to 25mm</li> <li>· Wet snow up to 10mm</li> <li>· Compact snow</li> <li>· Dry ice</li> <li>· Sanded ice</li> <li>· Wet ice – sanded</li> </ul> <p>Etc.</p> <p>Widerøe's Flyveselskap AS is supporting use of techniques and procedures for improvement of contaminated runways, provided the procedures and methods are approved by the competent authority of the state of the aerodrome.</p> <p>Experience with operation on sanded short field aerodromes is very good. A typical SNOWTAM issued by a reporter for a short field aerodrome situated on the coast of Northern Norway may state 3mm slush on ice, runway sanded, estimated braking action medium or medium to good.</p> <p>Another example is for an aerodrome situated inland with a dryer and colder climate where the sand is fixed to the ice by being heated before application on cold ice. This surface can be</p>



best described as “sand paper”. The corresponding SNOWTAM is issued by the reporter as ice, sanded, estimated braking action medium to good.

Below is examples of SNOWTAMS for 10 aerodromes in Northern Norway issued January 4, 2017.

>>> ENHV (HONNINGSVAG/VALAN RWY 08/26) <<<

SWEN0008 ENHV 01041010  
(SNOWTAM 0008  
A) ENHV  
B) 01041010 C) 08  
F) 79/79/79 G) XX/XX/XX H) 4/4/4  
N) ALL REPORTED TWYS/89  
R) ALL REPORTED APRONS/89  
T) CONTAMINATION/100/100/100/PERCENT.  
SAND APPLIED.  
50PCT FROZEN RUTS RIDGES ON RWY.

>>> ENBS (BATSFJORD RWY 03/21) <<<

SWEN0007 ENBS 01040716  
(SNOWTAM 0007  
A) ENBS  
B) 01040716 C) 03  
F) 479/479/479 G) XX/XX/XX H) 5/5/5  
N) NO  
R) NO  
T) CONTAMINATION/100/100/100/PERCENT.  
FROZEN SAND APPLIED.  
DRIFTING SNOW. TWY.A.BRA.4. APRON.A.BRA.4.  
.TWY.B.BRA.4 .APRON.B.BRA.4.

>>> ENVD (VADSO RWY 08/26) <<<

SWEN0010 ENVD 01040341  
(SNOWTAM 0010  
A) ENVD  
B) 01040341 C) 08  
F) 47/47/47 G) XX/XX/XX H) 5/5/4  
N) ALL REPORTED TWYS/47  
R) ALL REPORTED APRONS/47  
T) CONTAMINATION/100/50/50/PERCENT.  
SLIPPERY PORTIONS ON RUNWAY. SLIPPERY PORTIONS  
SECN C. SLIPPERY THRESHOLDS.



>>> ENKR (KIRKENES/HOYBUKTMOEN RWY 06/24) <<<

SWEN0028 ENKR 01041142  
(SNOWTAM 0028  
A) ENKR  
B) 01041142 C) 06  
F) 37/37/37 G) XX/XX/XX H) 5/5/5  
N) ALL REPORTED TWYS/479  
R) APRON GA APRON LUFTRANS/87 ALL REMAINING  
APRONS/479  
T) CONTAMINATION/100/100/100/PERCENT.  
FROZEN SAND APPLIED.  
ALL APRONS SANDED. TAXIWAYS SANDED.

>>> ENBV (BERLEVAG RWY 06/24) <<<

SWEN0008 ENBV 01041146  
(SNOWTAM 0008  
A) ENBV  
B) 01041146 C) 06  
F) 479/479/479 G) 8/8/8 H) 2/2/2  
N) ALL REPORTED TWYS/479  
R) ALL REPORTED APRONS/479  
T) CONTAMINATION/100/100/100/PERCENT.  
PATCHY CONTAMINANT ON RUNWAY. SLIPPERY THRESHOLDS.  
BA TWY 2/ APRON 2.

>>> ENHF (HAMMERFEST RWY 05/23) <<<

SWEN0018 ENHF 01040911  
(SNOWTAM 0018  
A) ENHF  
B) 01040911 C) 05  
F) 7/7/7 G) XX/XX/XX H) 5/5/5  
N) ALL REPORTED TWYS/87  
R) ALL REPORTED APRONS/87  
T) CONTAMINATION/10/10/10/PERCENT.  
PATCHY CONTAMINANT ON RUNWAY. PATCHY CONTAMINANT  
ON TAXIWAYS. PATCHY CONTAMINANT ON APRONS.  
SLIPPERY PORTIONS ON TAXIWAYS. SLIPPERY PORTIONS  
ON APRONS. SLIPPERY THRESHOLDS. ALL APRONS SANDED.  
TAXIWAYS SANDED.

>>> ENTC (TROMSO/LANGNES RWY 01/19) <<<

SWEN0018 ENTC 01041121  
(SNOWTAM 0018  
A) ENTC  
B) 01041121 C) 01  
F) 79/79/79 G) XX/XX/XX H) 4/4/4  
N) ALL REPORTED TWYS/479  
R) ALL REPORTED APRONS/479  
T) CONTAMINATION/100/100/100/PERCENT.  
FROZEN SAND APPLIED.  
SLIPPERY PORTIONS ON RUNWAY. SLIPPERY PORTIONS ON  
TAXIWAYS. SLIPPERY PORTIONS ON APRONS. SLIPPERY  
THRESHOLDS. WARM SAND APPLIED.

>>> ENDU (BARDUFLOSS RWY 10/28) <<<

SWEN0012 ENDU 01041348  
(SNOWTAM 0012  
A) ENDU  
B) 01041348 C) 10  
F) 37/37/37 H) 4/4/4  
N) A/37 A OVERRUN E/37 A OVERRUN W/37 B/37 C/37 D/47  
G/37 H/47 I/CLSD K/47 L/37 T/47 Y 1/37 Y 2/37  
Y 3/37  
R) DEICE/37 P 1/37 P 10/47 P 2/37 P 3/47 P 4/47  
P 5/47 P 6/37 P 7/47 P 8/47  
T) F/50/50/50/PCT.  
SLIPPERY PORTIONS ON RUNWAY. APRONS SANDED.  
TAXIWAYS SANDED. RWY SANDED NOT LOOSE.

>>> ENMH (MEHAMN RWY 17/35) <<<

SWEN0010 ENMH 01040408  
(SNOWTAM 0010  
A) ENMH  
B) 01040408 C) 17  
F) 87/87/87 G) XX/XX/XX H) 4/4/4  
N) ALL REPORTED TWYS/87  
R) ALL REPORTED APRONS/87





T) CONTAMINATION/100/100/100/PERCENT.  
SAND APPLIED.  
SLIPPERY PORTIONS ON TAXIWAYS. SLIPPERY PORTIONS  
ON APRONS. ALL APRONS SANDED. TAXIWAYS SANDED.

>>> ENSS (VARDO/SVARTNES RWY 15/33) <<<<

SWEN0007 ENSS 01040741  
(SNOWTAM 0007  
A) ENSS  
B) 01040741 C) 15  
F) 7/7/7 G) XX/XX/XX H) 3/3/3  
N) ALL REPORTED TWYS/78  
R) ALL REPORTED APRONS/78  
T) CONTAMINATION/100/100/100/PERCENT.

Extract of contaminant types, estimated friction and sanding for each SNOWTAM and assumed RWYCC as identified by RCAM is presented in the table below:

ICAO	Contaminant	Braking action	Treatment	RCAM RWYCC
ENHV	Ice/frozen ruts and ridges	Medium-Good	Sanded-loose	1
ENBS	Dry snow/ice/frozen ruts and ridges	Good	Sanded-fixed	Snow on top if ice = 0
ENVD	Dry snow/ice	Good/good/medium-good	Not sanded	Snow on top if ice = 0
ENKR	Rime or frost/ice	good	Sanded-fixed	1
ENBV	Dry snow/ice/frozen ruts and ridges	Medium-poor	Not sanded	Snow on top if ice = 0
ENHF	10% Ice	Good	Not sanded	6
ENTC	Ice/frozen ruts and ridges	Medium-Good	Sanded-fixed	1
ENDU	Rime or frost/ice	Medium-good	Sanded-fixed	1
ENMH	Compacted snow/ice	Medium-good	Sanded	1 or 3
ENSS	Ice	Medium	Not sanded	1

Analysis of these 10 SNOWTAMS clearly illustrates that sanding, and especially sanding techniques in cold weather using warm sand and possibly heaters, are effective for fixation of sand to the ice and that provisions for upgrading of the RWYCC to 4 should be implemented.



	<p>The analysis also illustrates well the challenge of dealing with multiple contaminants. This is discussed further in a comment to the AMC1 CAT.OP.MPA.311.</p> <p>The NPA AMC1 CAT.OP.MPA.311 Runway braking action reporting Table 2 – Association between AIREP and RWYCC describes that braking action medium, corresponding to the proposed RWYCC 3, results in “Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced.”</p> <p>No crew has reported noticeably reduced braking action, nor directional control degradation when operating on these 10 aerodromes at the time the SNOWTAM’s were issued. Hence, it can be assumed that the reported braking action as assessed by the reporter was correct. Consequently, it can be assumed that the RCAM is too conservative when compared to the established procedures for treatment of winter runway surface and reporting that is in force in Norway today.</p>
response	<p>Noted.</p> <p>See response to comment 297.</p>
comment	<p>230 <span style="float: right;">comment by: ERAA</span></p> <p>AMC-SUBPART G 7.3.4 p. 39: What is meant by ‘effective friction not greater than 0.16’?</p>
response	<p>Noted.</p> <p>See response to comment 297.</p>
comment	<p>248 <span style="float: right;">comment by: General Aviation Manufacturers Association / Hennig</span></p> <p>AMC 25.1591 Section 7.3.1 revises the ice value from 0.5 to 0.7 in Table 2. AMC 25.1592 Section 6.2 however, presents an ice value of 0.8 in Table 1. There does not appear to be a physics-based reason why different values are reasonable for different phases of operation. GAMA notes that the TALPA ARC recommended 0.08.</p> <p>GAMA views is essential that the agency achieve harmonisation of the braking coefficients between AMC 25.1591, 25.1592 and AC 25-31, 25-32.</p> <p>Therefore, GAMA recommends a common value for this runway condition and that this value be harmonised with FAA guidance in AC 25-32 at 0.08 for ice; i.e., 0.08 for both takeoff and landing.</p>
response	<p>Partially accepted.</p> <p>A single value will be provided, which is however considered to be 0.07. Such value is selected as for most aircraft in most conditions it allows the 15% operational margin to cover a degradation of the actual coefficient to 0.05, a value that was observed in in-service accidents</p>



and incidents. This would not be the case for 0.08. It is understood that the FAA may harmonize with the EASA value.

comment 254 comment by: *General Aviation Manufacturers Association / Hennig*

The agency states in AMC 25.1591, Section 8.3 that "The applicant should provide crosswind guidance for operations on contaminated runways." The agency, however, provides no additional guidance or information about this issue.

GAMA requests that EASA provide guidance on how crosswind guidance on contaminated runway material should be determined and what is acceptable.

response Partially accepted.

The statement on crosswind guidance is deleted from AMC 25.1591 as there is currently no agreed method for producing such guidance. It is mostly based on experience and simulation using assumptions defined by individual manufacturers.

comment 257 comment by: *Norwegian Air (Norwegian Air Norway, Norwegian Air International, Norwegian Air UK and Norwegian Air Shuttle)*

**3.2.2. CS-25 Book 2 AMC 25.1591 7.0 Effects of Contaminant**

*Table 2 should include the same contaminants as table table 1 in AMC 25.1592. It seems that compact snow with temperatures above -15C is missing. Also the comment that runway temperatures can be used if available is not included from the ICAO proposal. There is a general concern about the -15C limit. It seems rather low, with no rationale behind why this limit was picked. In Norway we have experienced that this limit should be closer to -8C.*

response Not accepted.

The -15 °C criterion is kept as a conservative value until research or supporting data will justify an alternative solution. However flexibility will be provided by the concept of specially prepared winter runways operations developed in the rulemaking task RMT.0704.

comment 283 comment by: *IATA*

Table 1:

IATA Comments: It would be good to know whether this table is in adherence with e.g. ICAO. In general it is advisable to make as much as possible references with ICAO material, in order to ensure global harmonization.

Or where EASA material is different from ICAO or FAA it is advisable to explain why it is appropriate to have a difference.

response Noted.

The table is in line with the ICAO Aeroplane Performance Manual (Doc 10064).

comment 297 comment by: *Wideroe Flyveselskap AS*



AMC-SUBPART G 2.0 p. 33:

Is the 3 mm reference to contamination depth or water equivalent depth? We propose to continue the current system with WED.

P38 7.3.3 Use of Ground friction measurements devices

Widerøe's Flyveselskap AS suggest that an aerodrome operator may use measured friction coefficient as one of several variables for assessing upgrading and downgrading of the RWYCC. This obviously requires that the aerodrome operator has necessary equipment, knowledge, procedures and training acceptable to the competent authority. Furthermore, the measured friction coefficient and type of measuring device should be included in the remark field of the RCR.

The competent authority should establish procedures for approval of friction measuring devices and conditions for use.

In example:

Friction Measuring Device A is approved for:

- Dry snow up to 25mm
- Compact snow
- Dry ice
- Sanded ice

Friction Measuring Device B is approved for:

- Dry snow up to 25mm
- Wet snow up to 10mm
- Compact snow
- Dry ice
- Sanded ice
- Wet ice – sanded

Etc.

Widerøe's Flyveselskap AS is supporting use of techniques and procedures for improvement of contaminated runways, provided the procedures and methods are approved by the competent authority of the state of the aerodrome.

Experience with operation on sanded short field aerodromes is very good. A typical SNOWTAM issued by a reporter for a short field aerodrome situated on the coast of Northern Norway may state 3mm slush on ice, runway sanded, estimated braking action medium or medium to good.

Another example is for an aerodrome situated inland with a dryer and colder climate where the sand is fixed to the ice by being heated before application on cold ice. This surface can be best described as “sand paper”. The corresponding SNOWTAM is issued by the reporter as ice, sanded, estimated braking action medium to good.

Below is examples of SNOWTAMS for 10 aerodromes in Northern Norway issued January 4, 2017.



>>> ENHV (HONNINGSVAG/VALAN RWY 08/26) <<<

SWEN0008 ENHV 01041010  
(SNOWTAM 0008  
A) ENHV  
B) 01041010 C) 08  
F) 79/79/79 G) XX/XX/XX H) 4/4/4  
N) ALL REPORTED TWYS/89  
R) ALL REPORTED APRONS/89  
T) CONTAMINATION/100/100/100/PERCENT.  
SAND APPLIED.  
50PCT FROZEN RUTS RIDGES ON RWY

>>> ENBS (BATSFJORD RWY 03/21) <<<

SWEN0007 ENBS 01040716  
(SNOWTAM 0007  
A) ENBS  
B) 01040716 C) 03  
F) 479/479/479 G) XX/XX/XX H) 5/5/5  
N) NO  
R) NO  
T) CONTAMINATION/100/100/100/PERCENT.  
FROZEN SAND APPLIED.  
DRIFTING SNOW. TWY.A.BRA.4. APRON.A.BRA.4.  
.TWY.B.BRA.4 .APRON.B.BRA.4.

>>> ENVD (VADSO RWY 08/26) <<<

SWEN0010 ENVD 01040341  
(SNOWTAM 0010  
A) ENVD  
B) 01040341 C) 08  
F) 47/47/47 G) XX/XX/XX H) 5/5/4  
N) ALL REPORTED TWYS/47  
R) ALL REPORTED APRONS/47  
T) CONTAMINATION/100/50/50/PERCENT.  
SLIPPERY PORTIONS ON RUNWAY. SLIPPERY PORTIONS  
SECN C. SLIPPERY THRESHOLDS.

>>> ENKR (KIRKENES/HOYBUKTMOEN RWY 06/24) <<<

SWEN0028 ENKR 01041142  
(SNOWTAM 0028  
A) ENKR  
B) 01041142 C) 06  
F) 37/37/37 G) XX/XX/XX H) 5/5/5



N) ALL REPORTED TWYS/479  
R) APRON GA APRON LUFTRANS/87 ALL REMAINING  
APRONS/479  
T) CONTAMINATION/100/100/100/PERCENT.  
FROZEN SAND APPLIED.  
ALL APRONS SANDED. TAXIWAYS SANDED.

>>> ENBV (BERLEVAG RWY 06/24) <<<

SWEN0008 ENBV 01041146  
(SNOWTAM 0008  
A) ENBV  
B) 01041146 C) 06  
F) 479/479/479 G) 8/8/8 H) 2/2/2  
N) ALL REPORTED TWYS/479  
R) ALL REPORTED APRONS/479  
T) CONTAMINATION/100/100/100/PERCENT.  
PATCHY CONTAMINANT ON RUNWAY. SLIPPERY THRESHOLDS.  
BA TWY 2/ APRON 2.

>>> ENHF (HAMMERFEST RWY 05/23) <<<

SWEN0018 ENHF 01040911  
(SNOWTAM 0018  
A) ENHF  
B) 01040911 C) 05  
F) 7/7/7 G) XX/XX/XX H) 5/5/5  
N) ALL REPORTED TWYS/87  
R) ALL REPORTED APRONS/87  
T) CONTAMINATION/10/10/10/PERCENT.  
PATCHY CONTAMINANT ON RUNWAY. PATCHY CONTAMINANT  
ON TAXIWAYS. PATCHY CONTAMINANT ON APRONS.  
SLIPPERY PORTIONS ON TAXIWAYS. SLIPPERY PORTIONS  
ON APRONS. SLIPPERY THRESHOLDS. ALL APRONS SANDED.  
TAXIWAYS SANDED.

>>> ENTC (TROMSO/LANGNES RWY 01/19) <<<

SWEN0018 ENTC 01041121  
(SNOWTAM 0018  
A) ENTC  
B) 01041121 C) 01  
F) 79/79/79 G) XX/XX/XX H) 4/4/4  
N) ALL REPORTED TWYS/479  
R) ALL REPORTED APRONS/479  
T) CONTAMINATION/100/100/100/PERCENT.



FROZEN SAND APPLIED.  
SLIPPERY PORTIONS ON RUNWAY. SLIPPERY PORTIONS ON  
TAXIWAYS. SLIPPERY PORTIONS ON APRONS. SLIPPERY  
THRESHOLDS. WARM SAND APPLIED.

>>> ENDU (BARDUFOSS RWY 10/28) <<<

SWEN0012 ENDU 01041348  
(SNOWTAM 0012  
A) ENDU  
B) 01041348 C) 10  
F) 37/37/37 H) 4/4/4  
N) A/37 A OVERRUN E/37 A OVERRUN W/37 B/37 C/37 D/47  
G/37 H/47 I/CLSD K/47 L/37 T/47 Y 1/37 Y 2/37  
Y 3/37  
R) DEICE/37 P 1/37 P 10/47 P 2/37 P 3/47 P 4/47  
P 5/47 P 6/37 P 7/47 P 8/47  
T) F/50/50/50/PCT.  
SLIPPERY PORTIONS ON RUNWAY. APRONS SANDED.  
TAXIWAYS SANDED. RWY SANDED NOT LOOSE.

>>> ENMH (MEHAMN RWY 17/35) <<<

SWEN0010 ENMH 01040408  
(SNOWTAM 0010  
A) ENMH  
B) 01040408 C) 17  
F) 87/87/87 G) XX/XX/XX H) 4/4/4  
N) ALL REPORTED TWYS/87  
R) ALL REPORTED APRONS/87  
T) CONTAMINATION/100/100/100/PERCENT.  
SAND APPLIED.  
SLIPPERY PORTIONS ON TAXIWAYS. SLIPPERY PORTIONS  
ON APRONS. ALL APRONS SANDED. TAXIWAYS SANDED.

>>> ENSS (VARDO/SVARTNES RWY 15/33) <<<

SWEN0007 ENSS 01040741  
(SNOWTAM 0007  
A) ENSS  
B) 01040741 C) 15  
F) 7/7/7 G) XX/XX/XX H) 3/3/3  
N) ALL REPORTED TWYS/78  
R) ALL REPORTED APRONS/78  
T) CONTAMINATION/100/100/100/PERCENT.



Extract of contaminant types, estimated friction and sanding for each SNOWTAM and assumed RWYCC as identified by RCAM is presented in the table below:

ICAO	Contaminant	Braking action	Treatment	RCAM RWYCC
ENHV	Ice/frozen ruts and ridges	Medium-Good	Sanded-loose	1
ENBS	Dry snow/ice/frozen ruts and ridges	Good	Sanded-fixed	Snow on top if ice = 0
ENVD	Dry snow/ice	Good/good/medium-good	Not sanded	Snow on top if ice = 0
ENKR	Rime or frost/ice	good	Sanded-fixed	1
ENBV	Dry snow/ice/frozen ruts and ridges	Medium-poor	Not sanded	Snow on top if ice = 0
ENHF	10% Ice	Good	Not sanded	6
ENTC	Ice/frozen ruts and ridges	Medium-Good	Sanded-fixed	1
ENDU	Rime or frost/ice	Medium-good	Sanded-fixed	1
ENMH	Compacted snow/ice	Medium-good	Sanded	1 or 3
ENSS	Ice	Medium	Not sanded	1

Analysis of these 10 SNOWTAMS clearly illustrates that sanding, and especially sanding techniques in cold weather using warm sand and possibly heaters, are effective for fixation of sand to the ice and that provisions for upgrading of the RWYCC to 4 should be implemented.

The analysis also illustrates well the challenge of dealing with multiple contaminants. This is discussed further in a comment to the AMC1 CAT.OP.MPA.311.

The NPA AMC1 CAT.OP.MPA.311 Runway braking action reporting Table 2 – Association between AIREP and RWYCC describes that braking action medium, corresponding to the proposed RWYCC 3, results in “Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced.”

No crew has reported noticeably reduced braking action, nor directional control degradation when operating on these 10 aerodromes at the time the SNOWTAM’s were issued. Hence, it can be assumed that the reported braking action as assessed by the reporter was correct. Consequently, it can be assumed that the RCAM is too conservative when compared to the established procedures for treatment of winter runway surface and reporting that is in force in Norway today.

AMC-SUBPART G 7.3.4 p. 39:

Question to EASA?





	<p>What is meant by ‘effective friction not greater than 0.16’?</p>
response	<p>Partially accepted.</p> <p>The concerns expressed in the comment and the possibility to upgrade RWYCC will be dealt with in the aerodrome rules where the rulemaking task RMT.0704 is introducing the concept of operations on “specially prepared winter runways”, which will be referenced appropriately in the Regulation for air operations.</p> <p>‘effective friction not greater than 0.16’ means the assumption that is made, in the relevant paragraph of AMC CS25-1592 on the provision of performance data, for the actual braking action encountered on specially prepared winter runways.</p>
comment	<p>309 <span style="float: right;">comment by: <i>DGAC France</i></span></p> <p>The term Special Prepared Winter Runway is not an ICAO term and is not defined properly. These conditions shall be accounted for in the process for assessing the RWYCC of the runway and do not be left at the discretion of the aircraft operator which has no mean to check the relevance or recency of a “special prepared winter runway”.</p> <p>DGAC considers that the current definition can bring confusion and should be developed in a set of procedures describing what an aerodrome operator has to provide to demonstrate significant improvement of friction relevant for aircraft/aeroplane operations on compacted snow and ice surfaces that have been treated with sand or gravel in such a way that a significant improvement of friction may be demonstrated. This pertains to aerodrome regulations not to aircraft operations</p> <p>Besides, this concern involves more than one State, which implies that at least EASA needs to have procedures in place for an implementation on a regional basis. The reference should for this reason not be national procedures, but EASA or preferably ICAO procedures to achieve to implement one consistent method within EASA.</p> <p>Hence all paragraphs relating to “special prepared Winter Runway” should be deleted because they are not relevant for this regulation.</p>
response	<p>Not accepted.</p> <p>The concept of operations on specially prepared winter runways will be developed in the aerodrome rules by the rulemaking task RMT.0704, along with the necessary procedures and requirements for their approval. Consequent references and guidance will be added to the rules for air operations.</p>
comment	<p>313 <span style="float: right;">comment by: <i>Textron Aviation</i></span></p> <p>Pg. 37 - using 50% of the reported contaminant depth when determining both the acceleration and the stop portion of the accelerate-stop distance. This will result in a conservative computation of the resultant take-off distance...</p>



While it is recognized that this statement was taken from FAA AC 25-31, it is not entirely correct. Taking account of less than the full contaminant drag will not always result in a conservative computation of takeoff distance. Takeoff performance on contaminated runways can often be limited by the accelerate-go distance which is greatly affected by the presence of contaminant drag, particularly following engine failure. Not properly accounting for contaminant drag can result in published takeoff performance for conditions in which acceleration to  $V_{LOF}$  cannot be achieved. This is likely a much greater concern with small aircraft that sit lose to the ground than it is for large airliners.

response Accepted.

The wording will be clarified to reflect the comment.

comment 328

comment by: *Bombardier*

**3.2.2 CS-25 Book 2, AMC 25.1591 Amendment, section 7.1**

EASA defines a new criteria for the calculation of slush drag on takeoff: 100% of reported depth on the acceleration portion but 50% only on the deceleration portion. BA always used 100% reported depth for both acceleration and stopping portions of the takeoff. During the TALPA ARC, it was determined that this approach was acceptable considering the low probability of engine failure at  $V_1$  on takeoff.

BA requests EASA to reconsider this position based on the TALPA ARC position.

response Not accepted.

Section 7.1 of the AMC 25.1591 explains the reasons why the use of 100% of the reported contaminant depth may not be reliable enough. However, the new standard will apply only to new designs.

comment 329

comment by: *Bombardier*

**3.2.2 CS-25 Book 2, AMC 25.1591 Amendment, section 7.1.1**

BA understands that EASA want to standardize the aquaplaning speed with the (landing) AC25-32 standard but this now forces new takeoff performance models.

BA asks that the previous factor of 1.0 (instead of 0.85) remains applicable for takeoff calculations as they proved to be acceptable in service.



response Not accepted.

The aquaplaning speed is used for two purposes in the derivation of performance data for runways covered by fluid contaminants:

- For the determination of the speed above which the contaminant drag is reduced. This affects both the acceleration (go) and the deceleration (stop). The assumption of a factor of 1.0 on the aquaplaning speed is thus conservative for this aspect, as the reduction of drag is assumed to occur at a higher speeds.
- For the determination of the speed above which the wheel to ground friction coefficient drops to the aquaplaning value of 0.05. For the determination of this speed, a factor of 0.85 is suggested to account for the fact that the speed of dropping out of aquaplaning during deceleration is typically below the speed of aquaplaning onset during acceleration, as calculated by the formula  $9vP$ . Such an adjustment was initially considered in JAA AMJ25X1591 (point 3.5 a.) and then dropped out of the AMC25.1591 adopted at amendment 2 of CS25 without an exhaustive justification in the NPA 25G-334.

It is then proposed in the NPA 2016-11 to reinstate this factor in order to appropriately account for the hysteresis effect.

comment 330 comment by: *Bombardier*

**3.2.2 CS-25 Book 2, AMC 25.1591 Amendment, section 7.3.1**

New takeoff performance braking coefficient models will change all takeoff performance on contaminated runways. BA understands that EASA want to standardize the AC25-32 (landing) braking coefficients.

BA asks that the previous braking coefficients remain applicable for takeoff calculations as they proved to be acceptable in service.

response Not accepted.

The new standards will apply only to new designs.

comment 341 comment by: *NetJets Europe*

NetJets supports the revised definitions to ensure consistency across the industry and to ensure that applicants all use the

response Noted.

comment 353 comment by: *US FAA*

**Comment summary**

Paragraph before table refers to friction values. Should be wheel braking coefficients.

**Suggested resolution**



	Change 'friction values' to 'wheel braking coefficient values'	
response	Accepted.	
comment	360	comment by: US FAA
	<p><b>Comment summary</b> Definitions/Runway surface condition descriptors There have been 3 recent regulatory efforts on the reporting of runway conditions: FAA, ICAO, EASA. All three use slightly different runway surface definitions/descriptions. None of these differences are significant and do not add value to any of the products.</p> <p><b>Suggested resolution</b> We recommend that EASA, ICAO, and FAA work together to harmonize on one set of runway surface definitions/descriptors.</p>	
response	Noted.	
	EASA has been working to align as much as possible with the new ICAO standards in the pursuit of global harmonisation.	

**3. Proposed amendments — 3.2. Draft CSs (draft EASA Decision) — CS-25 Book 2 — 3.2.2. 3.2.2. Acceptable Means of Compliance — AMC 25.1592** p. 41-49

comment	63	comment by: AIRBUS
	<p><b>SUBJECT :</b> Title of AMC 25.1592</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b> 3.2.2 CS-25 Book 2 2. New CS 25.1592</p> <p><b>2. PROPOSED TEXT / COMMENT:</b> Amend title of the AMC 25.1592: <b>„The Derivation and Methodology of Performance Information for Landing Distance Assessment on Slippery Wet and Contaminated Runways at Dispatch and on all Runway Conditions at Time of Arrival“</b></p> <p><b>3. RATIONALE / REASON / JUSTIFICATION:</b> In line with the proposal to clarify the title of CS25.1592, this title brings clarity regarding the scope of this AMC.</p>	
response	Accepted.	
	Clarifications will be also added in the text of the AMC.	



comment	64	comment by: AIRBUS
	<p><b>SUBJECT :</b> Purpose of AMC 25.1592</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b> 3.2.2 CS-25 Book 2 2. New CS 25.1592 1.0</p> <p><b>2. PROPOSED TEXT / COMMENT:</b> Amend AMC 25.1592 1.0: „(...) before flight when planning to land on runways that are slippery wet or contaminated by standing water, slush, snow, ice or other contaminants; and”</p> <p><b>3. RATIONALE / REASON / JUSTIFICATION:</b> Clarify the scope of this AMC</p>	
response	Accepted.	

comment	65	comment by: AIRBUS
	<p><b>SUBJECT :</b> AMC 25.1592 Limitations of Data</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b> 3.2.2 CS-25 Book 2 2. New CS 25.1592 2.0</p> <p><b>2. PROPOSED TEXT / COMMENT:</b> Add excerpt form last paragraphs from original AMC 25.1591 2.0 to end of AMC 25.1592 2.0: „(...) It is intended that the use of aeroplane performance data for contaminated runway conditions produced in accordance with CS 25.1592 should include recommendations associated with the operational use of the data. Where possible, this operational guidance should be provided by the applicant or its production co-ordinated with the applicant to ensure that its use remains valid. Operators are expected to make careful and conservative judgments in selecting the appropriate performance data to use for operations on contaminated runways. Particular attention should be paid to the presence of any contaminant in the critical high speed portion of the runway. In considering the maximum depth of runway contaminants it may be necessary to take account of the maximum depth for which the engine air intakes have been shown to be free of ingesting hazardous quantities of water in accordance with CS 25.1091(d)(2).”</p> <p><b>3. RATIONALE / REASON / JUSTIFICATION:</b> Whenever the applicant chooses to provide data for contaminant type and depth, the information in these paragraphs is applicable. In any case, depth limits for loose contaminants apply for landing, whether performance is published for contaminants or for RWYCCs.</p>	
response	Accepted.	

comment	66	comment by: AIRBUS
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**SUBJECT :** AMC 25.1592 Definitions

**1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:**

- 3.2.2 CS-25 Book 2  
2. New CS 25.1592 4.0

**2. PROPOSED TEXT / COMMENT:**

Consequent to the movement of the definition of frost and the change to the definition of RWCC suggested for AIROPS, change 4.0:

„In addition to those terms defined in AMC 25.1591 above, the following runway conditions should be considered.

**4.1 Frost**

Ice crystals formed from airborne moisture on a surface whose temperature is below freezing. Frost differs from ice in that frost crystals grow independently and, therefore, have a more granular texture.

Note 1: below freezing refers to air temperature equal to or lower than the freezing point of water (0 °C).

Note 2: — under certain conditions, frost can cause the surface to become very slippery, which is then reported appropriately as ‘reduced braking action’.

**4.2 Runway Condition Code (RWYCC)**

A number that describes the effect of the runway surface condition(s) on aeroplane deceleration performance and lateral control.

Note: the purpose of RWYCC is to permit an operational aeroplane landing performance calculation by the flight crew. Procedures for the determination of the runway condition code are described in ICAO Doc 9981 ‘PANS — Aerodromes’.”

**3. RATIONALE / REASON / JUSTIFICATION:**

Consequential changes.

response Accepted.

comment 67

comment by: AIRBUS

**SUBJECT :** AMC 25.1592 Assumptions

**1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:**

- 3.2.2 CS-25 Book 2  
2. New CS 25.1592 5.0

**2. PROPOSED TEXT / COMMENT:**

Align text regarding conservative wind accountability in AMC 25.1592 5.0 with the text in CS25.105(d) and CS25.125(f):

“(…) The effect of each of the parameters affecting landing distance should be provided, by taking into account the following:

(…)

operational correction factors for winds within the established operational limits of the aeroplane, for not more than 50 % of nominal wind components along the take-off path opposite to the direction of landing, and not less than 150 % of nominal wind components along the take-off path in the direction of landing;



response	<p>(...)”</p> <p><b>3. RATIONALE / REASON / JUSTIFICATION:</b> The text proposed in the NPA for conservative wind accountability could be misread to mean that the operational envelope should be restricted rather than that winds for the entire envelope be covered with conservative factors.</p> <p>Accepted.</p>
comment	<p>68 <span style="float: right;">comment by: AIRBUS</span></p> <p><b>SUBJECT :</b> AMC 25.1592 Icing conditions</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b> 3.2.2 CS-25 Book 2 2. New CS 25.1592 5.0</p> <p><b>2. PROPOSED TEXT / COMMENT:</b> Reformulate: „(...) icing conditions, if required to provide the landing distances required under CS 25.125 (a)(2)applies. in icing conditions“</p> <p><b>3. RATIONALE / REASON / JUSTIFICATION:</b> Simplify and clarify.</p>
response	<p>Accepted.</p>
comment	<p>69 <span style="float: right;">comment by: AIRBUS</span></p> <p><b>SUBJECT :</b> AMC 25.1592 6.0</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b> 3.2.2 CS-25 Book 2 2. New CS 25.1592 6.0</p> <p><b>2. PROPOSED TEXT / COMMENT:</b> Amend paragraph in AMC 25.1592 6.0 below Figure 1: “The landing distance for dispatch on contaminated runways and time-of-arrival landing performance assessment may be determined analytically from the landing performance model developed to show compliance with CS 25.125. For the purposes of determining the landing distance for dispatch on contaminated runways and time-of-arrival assessments, the model should be modified as described in the following sections.” Move the next paragraph to the end of section 5.0: “Changes in the aeroplane’s configuration, speed, power, and thrust used to determine the landing distance for dispatch and time-of-arrival landing performance assessments should be made using procedures established for operation in service. These procedures should: be able to be consistently executed in service by crews of average skill; use methods or devices that are safe and reliable; and</p>



include allowance for any time delays that may reasonably be expected in service (see Section 6.2. below).”

Delete last paragraph of 6.0:

„The procedures and assumptions used to develop the operational landing distances should be documented in the AFM.“

### 3. RATIONALE / REASON / JUSTIFICATION:

The section 6.0 is fully applicable both to the landing distances to be used at dispatch and to those to be used at time of arrival. This must be stated in the paragraph.

The reference to operational procedures does not describe how to derive the landing distances and as such is more closely assimilated to the basic assumptions discussed in section 5.0.

The requirement to document the procedures in the AFM is already in section 8.3 and is thus redundant with that section.

response Accepted.

comment 70

comment by: AIRBUS

**SUBJECT :** AMC 25.1592 6.1

### 1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:

3.2.2 CS-25 Book 2

2. New CS 25.1592 6.1

### 2. PROPOSED TEXT / COMMENT:

Remove specific reference to time of arrival in AMC 25.1592 6.1:

„(...) However, the air distance determined under CS 25.125 may not be appropriate for use when making time-of-arrival operational landing performance assessments. The air distances determined under CS 25.125 may be shorter than the distance that the average pilot is likely to achieve in normal operations.

(...)

Unless the air distance used for compliance with CS 25.125 is representative of an average pilot flying in normal operations (see flight test demonstration below), the air distance used for operational time-of-arrival landing performance assessments should be determined analytically as the distance traversed over a time period of 7 sec at a speed of 98 % of the recommended speed over the landing threshold, also referred to as the final-approach speed (VAPP).“

### 3. RATIONALE / REASON / JUSTIFICATION:

The discussion of the airborne distance in AC25-32 from which this is taken focuses on the time-of-arrival assessment, but the distance described in this AMC is intended to be used for both dispatch on contaminated or slippery wet runway and at time of arrival. The use of the qualifier “operational” may include dispatch, and captures the opposition with the certification methods used to determine the distance in compliance with CS 25.125.

response Accepted.





comment

71

comment by: AIRBUS

**SUBJECT :** AMC 25.1592 Table 1**1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:**

3.2.2 CS-25 Book 2

2. New CS 25.1592 6.2

**2. PROPOSED TEXT / COMMENT:**

Amend Table 1 under AMC 25.1592 6.2:

1	— Ice	0.07 "2"
0	— Wet ice	Not applicable (no operations in RWYCC = 0 conditions)
	— Water on top of compacted snow	
	— Dry snow or wet snow over ice	
	— Heavy frost of noticeable depth	

**3. RATIONALE / REASON / JUSTIFICATION:**

The default friction coefficient for RWYCC 1 (Ice) is inconsistent with the one defined in AMC 25.1591 Table 2. It is understood that it should read 0.07 for both cases.

In line with the note 2 of the definition of frost, it is proposed to primarily classify the condition of heavy frost as RWYCC 0. This is consistent with the definition in FAA AC1505200-30D:

"1.12.9 Frost consists of ice crystals formed from airborne moisture that condenses on a surface whose temperature is below freezing. Frost differs from ice in that the frost crystals grow independently and therefore have a more granular texture. Note: Heavy frost that has noticeable depth may have friction qualities similar to ice and downgrading the runway condition code accordingly should be considered. If driving a vehicle over the frost does not result in tire tracks down to bare pavement, the frost should be considered to have sufficient depth to consider a downgrade of the runway condition code."

response

Accepted.

comment

72

comment by: AIRBUS

**SUBJECT :** AMC 25.1592 6.3**1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:**

3.2.2 CS-25 Book 2

2. New CS 25.1592 6.3

**2. PROPOSED TEXT / COMMENT:**

Change the second paragraph under AMC 25.1592 6.3:

"(...) The calculation of the final stopping configuration distance should be based on the braking coefficient associated with the runway surface condition or Runway Condition Code (RWYCC), including the effect of hydroplaning, if applicable. (...)"

**3. RATIONALE / REASON / JUSTIFICATION:**

The term “pilot braking action report” is not defined. Furthermore it may not be desirable to give the impression that it is acceptable to base a performance assessment on only a pilot report, potentially even to upgrade from the basic assessment made by the aerodrome personnel.

response Accepted.

comment

73

comment by: AIRBUS

**SUBJECT :** AMC 25.1592 Contaminant Drag

**1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:**

- 3.2.2 CS-25 Book 2
  - 2. New CS 25.1592 7.0

**2. PROPOSED TEXT / COMMENT:**

Add another bullet point to the list of reasons under AMC 25.1592 7.0 why applying the reported depth directly in the performance assessment may be optimistic:

“(…)

Contaminated conditions are reported from 25% coverage in one third. Total coverage of the runway with significant depths of contaminant may thus be as little as just above 8%.

“(…)”

**3. RATIONALE / REASON / JUSTIFICATION:**

The reasons given under 7.0 for not using more than 50% of the reported depth for the computation all assume an even depth over the length and width to be used, but that is not systematically given. In the scenario proposed in this new reason, even 50% of the depth would be an optimistic assumption

response Accepted.

comment

74

comment by: AIRBUS

**SUBJECT :** AMC 25.1592 Table 2

**1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:**

- 3.2.2 CS-25 Book 2
  - 2. New CS 25.1592 7.0

**2. PROPOSED TEXT / COMMENT:**

Delete column of maximum depth:

“(…)”

<b>Loose contaminant</b>	<b><del>Maximum depth</del></b>	<b>Specific gravity</b>
Standing Water	<del>15 mm</del>	1.0
Slush	<del>15 mm</del>	0.85
Dry Snow	<del>130 mm</del>	0.2
Wet Snow	<del>30 mm</del>	0.5



	<p>Table 2 — Maximum depth and Specific gravity of loose contaminants (...)”</p> <p><b>3. RATIONALE / REASON / JUSTIFICATION:</b> There is no reason to limit contaminant depth at landing below a value that would be demonstrated to be acceptable under CS 25.1583(k), since there is no issue with acceleration.</p>
response	Accepted.
comment	<p>75 <span style="float: right;">comment by: AIRBUS</span></p> <p><b>SUBJECT :</b> AMC 25.1592 8.1</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b> 3.2.2 CS-25 Book 2 2. New CS 25.1592 8.1</p> <p><b>2. PROPOSED TEXT / COMMENT:</b> Amend first paragraph under AMC 25.1592 8.1: “Performance information for dry, wet, slippery wet and contaminated runways, derived in accordance with Sections 5.0–7.0 of this AMC, should be accompanied by appropriate statements (...)”</p> <p>Delete last sentence of first bullet under AMC 25.1592 8.1: „(...)” operation on runways contaminated with water, slush, snow, ice or other contaminants implies uncertainties with regard to runway friction and contaminant drag and, therefore, to the achievable performance and control of the aeroplane during landing since the actual conditions may not completely match the assumptions on which the performance information is based; where possible, every effort should be made to ensure that the runway surface is cleared of any significant contamination; (...)”</p> <p><b>3. RATIONALE / REASON / JUSTIFICATION:</b> Performance information developed under this AC applies to all of these runway conditions.</p> <p>The correct clearing of the runway is not under the direct responsibility or control of the operator or the flight crew and thus it is not useful to state in the AFM. This sentence should be removed.</p>
response	Accepted.
comment	<p>76 <span style="float: right;">comment by: AIRBUS</span></p> <p><b>SUBJECT :</b> AMC 25.1592 8.3</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b> 3.2.2 CS-25 Book 2 2. New CS 25.1592 8.3</p>





	<p>However, “runway surface condition” is a well defined term (defined in the subsequent section (103d)), meaning the actual descriptive condition of a runway, like slippery when wet, slush, ice, etc. Thus, the current wording insinuates, that the RWYCC describes directly the descriptive condition.</p> <p>This, however is not the case, for two reasons:  1. one RWYCC can correlate to multiple runway surface conditions, and  2. the RWYCC, due to down/up-grading, might not match the actual runway surface condition at all</p> <p>The runway contaminant type and depth (i.e. "runway surface condition") can give a RWYCC, but a RWYCC can never give contaminant type and depth. The RCAM can and must not be read backwards! However, the proposed definition of the RWYCC insinuates that backward reading was possible.</p>
response	<p>Accepted.</p> <p>See also response to comment 109.</p>
comment	<p>114 <span style="float: right;">comment by: CAA Norway</span></p> <p><b>AMC 25.1592</b></p> <p><i>Comment 1, Applicability.</i>  Clarification is needed as for the applicability to steep approach and short landing operations.</p> <p><i>Rationale:</i>  For these types of operations, a tight control of speed and profile is necessary to ensure safe operations. For example, a long transition segment is not compatible with steep approaches.</p> <p><i>Comment 2, Default values, Compacted snow.</i>  CAA Norway proposes to challenge the temperature limit of -15 C to consider compacted snow to be considered as RWYCC 3. We propose to introduce the Temperature – Dew-point spread as an additional parameter to temperature.</p> <p><i>Rationale</i>  We are of the opinion that the 20 % reduction in friction value (from 0.20 to 0.16) for this contaminant is significant and should be properly justified. We cannot see such a justification. Consequently, we propose that more work is performed in to provide provided such justification and to investigate whether the discriminating temperature of – 15 C could be raised, possibly in combination with a relative humidity parameter, for example dew-point spread. This, because practical experience, not only from aviation, indicates that a high relative humidity makes for a more slippery surface than a low relative humidity regardless of temperature.  More work is needed on this issue</p>
response	<p>Partially accepted.</p>



Comment 1 is accepted. Assumptions to derive landing distances in case of steep approaches will be added in CS-25.

Comment 2 is not accepted. The -15 °C criterion is kept as a conservative value until research or supporting data will justify an alternative solution. However flexibility will be provided by the concept of specially prepared winter runways operations developed in RMT.0704.

comment

115

comment by: CAA Norway

Attachment [#2](#)**Chapter 6***Comment/proposal:*

6.2 Transition Distance, last sentence within brackets at page 45 of 96 delete *pilot-reported braking action* and insert *reported RWYCC*; corrected text to read:

(see Table 1 below for the wheel braking coefficient of the full braking configuration of each runway surface condition and reported RWYCC).

*Rationale:*

Table 1, first column lists RWYCC. These are not the pilot-reported braking action AIREP. Consequently, the text proposed is not consistent with the Table 1 that it refers to.

*Comment/proposal:*

AMC 25.1592 6.2 Transition Distance,

Table 1, second column; keep text in heading, replace text where not compliant with text used in the PANS-Aerodromes (Doc 9981) as written in ICAO State letter AN 4/27-16/28 dated 5 May 2016, Table 3 – Assigning a runway condition code (RWYCC) and Table 5 – Runway condition assessment matrix (RCAM), footnote 1 included. Footnote 1 is also applicable the text *-15 °C and Lower air temperature* and should be inserted.

*Rationale:*

Second column in Table 1 – Correlation between wheel braking coefficient and RWYCC is not ICAO global reporting format compliant. To be compliant and also for consistency purposes to avoid confusion the text used in the column should mirror the text written in PANS-Aerodromes (Doc 9981) e.g. the text used in ICAO State letter AN 4/27-16/28 dated 5 May 2016, Table 3 – Assigning a runway condition code (RWYCC) and Table 5 – Runway condition assessment matrix (RCAM). Minor editorial changes identified post issuing the State letter is identified in the comment above.

*Comment/Proposal*

AMC 25.1592 6.2 Transition Distance,

Table 1, footnote 3.

The hydroplaning speed referred to  $V_p = 9\sqrt{P}$  (the mathematical formula is not visual in the comment field. Please see the attached file to view the complete formula), where  $V_p$  is the ground speed in kt and  $P$  is the tire pressure in lb/in<sup>2</sup> represent the classical hydroplaning speed equation. This equation, known as Horne's equation after Walter B. Horne, a researcher at NASA who proposed it in 1963, is representative for hydroplaning speed of a cross-ply tire and not representative for the hydroplaning speed for modern aeroplane tyres.



The 15-year-old report the NLR-TP-2001-216 - *Safety aspects of aircraft performance on wet and contaminated runways* G.W.H. van Es, A.L.C. Roelen, E.A.C. Kruijssen and M.K.H. Giesberts document that hydroplaning speed for a radial tire is about 27 per cent lower than for a cross-ply tire of the same pressure. Footnote 3 should identify this significant difference in hydroplaning speed as accurately as current knowledge allows.

*Rationale:*

A difference in hydroplaning speed of 27 per cent is considered significant. For safety reasons this difference, adjusted for knowledge gained since the report was published in 2001, should be reflected in footnote 3.

response Accepted.

comment

148

comment by: ESDU, IHS Markit

Page 41

AMC 25.1592

1.0 Purpose

The text in the existing, published AMC 25.1591, para 2.0 (Technical Limitations of data) contains information that is relevant to the landing case, but it has been omitted in the drafting of 25.1592. i.e. Should the following be included in AMC 25.1592?

“Provided it is recognised that the observation and reporting of the type and depth of contaminants (water, slush, dry snow and wet snow) is limited in terms of the accuracy and timeliness with which it can be made and relayed to the flight crew. Furthermore, shallow depths of contaminants do not generally reduce wheel braking friction below that of a wet runway, except in unfavourable circumstances for which lower than expected runway condition codes (RWYCCs) are reported (see AMC 25.1592). In line with International Civil Aviation Organization (ICAO) and Federal Aviation Authority (FAA) standards, a depth of more than 3 mm for contaminant accountability in LANDING performance assessments is considered as a reasonable lower threshold. Below this depth, the runway is considered to be wet, for which AMC 25.1591 does not apply.”

response Not accepted.

The mentioned text does not apply as wet runway performance is within the scope of AMC 25.1592. However it is correct to mention in the applicability paragraph that, similarly to AMC 25.1591, when data are provided for contaminant type and depth, the information in these paragraphs is applicable. In any case, depth limits for loose contaminants apply for landing, whether performance is published for contaminants or for RWYCCs.

comment

149

comment by: ESDU, IHS Markit

Page 41

AMC 25.1592

2.0 Applicability of data.

2<sup>nd</sup> sentence



	<p>Replace “...assessments may be different than the landing.....” with “.....assessments may be different to the landing.....”                  The word “only” should be removed from the final sentence. The information in the AMC is not limited to contaminated surfaces only.</p>
response	<p>Partially accepted.</p> <p>The first comments is accepted.                  The second is not accepted because, data of AMC 25.1592 for contaminated runways are intended for use both at dispatch and at time of arrival, while data for dry and wet runways are intended only for use at time of arrival.</p>
comment	<p>150 <span style="float: right;">comment by: ESDU, IHS Markit</span></p> <p>Page 42                  AMC 25.1592                  4.1 Frost. Frost is considered here for landing. Why does it not appear in AMC 25.1591 for take-off?</p>
response	<p>Accepted.</p> <p>It will be added.</p>
comment	<p>151 <span style="float: right;">comment by: ESDU, IHS Markit</span></p> <p>Page 43                  AMC 25.1592                  6.0 Derivation of Landing Distance.                  This appears to reproduce some of the information from CS25.125 and FAA AC25-7 (Flight Test Guide), but deviates from it by being less specific. For example, the certification rules are very specific about time delays between crew actions, but here the use of terms such as ‘operations in service’ and ‘crews of average skill’ suggest something different. If this is intentional the differences should be clarified. If this is not intended to be different, then care is needed to be entirely consistent with the certification rules.</p>
response	<p>Not accepted.</p> <p>The intent of this text, taken from FAA AC 25-32 paragraph 8.1.3, is to ensure that the distances published for the in-flight landing performance assessment can be achieved consistently by trained airline pilots with normal approach guidance and aiming points. The text in CS25.125 indicates that the distances established under that paragraph are representative of those achieved by airline pilots in operations:  <i>“(3) Changes in configuration, power or thrust, and speed, must be made in accordance with the established procedures for service operation.                  (4) The landing must be made without excessive vertical acceleration, tendency to bounce, nose over or ground loop.                  (5) The landings may not require exceptional piloting skill or alertness.”</i>                  The flight test guide however allows test flights in conditions that are more challenging than in standard operations, to be used as a basis for establishing the AFM landing distances. The differences between CS 25.125 and AMC 25.1592 paragraph 6.0 are meant to highlight that in particular the airborne distance included in the distances at time of landing should be</p>





consistent with the way the aircraft is actually flown in service. How this can be achieved is detailed in the following paragraphs, highlighting in particular that, airborne distances resulting from the application of the parametric method described in AC25-7C are not appropriate for the in-flight assessment.

comment	153	comment by: ESDU, IHS Markit
	<p>Page 46          AMC 25.1592 Table 1 – RWYCC 1. Why is the wheel braking coefficient here 0.08, when AMC25.1591 uses either 0.05 or 0.07?</p>	
response	<p>Accepted.</p> <p>Values will be harmonised at 0.07. See also reply to comment 248.</p>	
comment	154	comment by: ESDU, IHS Markit
	<p>Page 46          AMC 25.1592 Note 2. Whilst the coefficients of 0.625 and 0.375 appear broadly reasonable, where do they come from? What is the supporting evidence for them?</p>	
response	<p>Noted.</p> <p>The coefficients are derived from the relationships of default anti-skid efficiencies for these systems in AMC 25.109.</p>	
comment	155	comment by: ESDU, IHS Markit
	<p>Page 47          AMC 25.1592          6.3 Final Stopping ...Distance.          The runway condition code (RWYCC) splits wheel braking coefficient into six, presumably conservative, values. For any particular landing the braking coefficient to use is determined by the airport or a pilot. This seems logical, provided that the correlation between any coded wheel braking coefficient and an actual aircraft capability is correctly understood by the aircraft manufacturer. There is no guidance on how this might be achieved. The understanding and methods vary significantly between different OEMs. What documentation has been used to establish the conservatism of the scheduled values?          TALPA-ARC presents something that at first glance appears to be a completely satisfactory closed loop system, when in fact it is heavily dependent on interpretive analysis that is not mandated by regulation. There is a general weakness in this regulatory area, in that there are no regulations governing any aspect of performance data reduction and analysis and presentation, which historically have been agreed to various different standards by a regulatory authority and the individual aircraft manufacturer.</p>	
response	<p>Noted.</p> <p>The methods used by OEMs to build the performance model used for determining landing performance data are subject to review by EASA in the type certification process. These include a number of conservatisms which are also introduced in the computation of the</p>	



landing distance at time of arrival. While methods may differ between OEMs, this is no different from what is commonly being done in the determination of other existing performance limitations such as the Accelerate-Stop-Distance (ASD).

comment	<p>195 <span style="float: right;">comment by: <i>Dassault-Aviation</i></span></p> <p>Dassault-Aviation</p> <p>Page 45 text:          “If the air distance is based on a time of 7 sec at a speed of 98 % of the recommended speed over the runway threshold, this air distance is considered valid for downhill runway slopes up to 2 %”</p> <p>Comment:          This statement differs with paragraph 8.2.7 of AC 25-32 which considers that 7s/0.98 air distance is valid for downhill runway slopes up to 1 %. Dassault supports EASA proposition which simplifies implementation of TALPA.</p>
response	<p>Noted.</p>
comment	<p>212 <span style="float: right;">comment by: <i>Embraer S.A.</i></span></p> <p>Embraer concurs with EASA concerns regarding the need for a time-of-arrival reassessment of landing performance. However, Embraer understands that addressing these concerns in AMC §25.1592 simultaneously with flight-planning issues is not the most suitable approach. Embraer understands a better approach would be to split the two scenarios (flight-planning and time-of-arrival) into two different requirements with their corresponding AMCs:</p> <ul style="list-style-type: none"> <li>• the proposed requirement §25.1592, dealing only with landing on contaminated runways for flight planning;</li> <li>• a separate requirement, §25.XXXX, addressing EASA concerns regarding time-of-arrival landing performance assessment; this proposed requirement and its AMC would refer to other requirements (§25.109, §25.125, §25.1592) as necessary.</li> </ul> <p>As EASA is also pursuing harmonization with FAA rules, NPA 2016-11 should also discuss the applicability of its methods to autoland and low-visibility scenarios, as the FAA has done in paragraph 8.2.6 of its AC 25.32.</p>
response	<p>Partially accepted.</p> <p>The applicability of AMC.25.1592 will be clarified as being valid at time of arrival for dry and wet runways and in all cases (dispatch and time of arrival) for contaminated runways, but it is preferred to keep all the information for landing in the same AMC.</p>
comment	<p>213 <span style="float: right;">comment by: <i>Embraer S.A.</i></span></p>



	6.0 - Embraer suggests to amend the last sentence as follow: "If the procedures and assumptions required to attain the performance data are different that the usual for dry runway, they must be presented in AFM."
response	Partially accepted.  The sentence will be deleted as it is out of the AFM scope.
comment	214 <span style="float: right;">comment by: <i>Embraer S.A.</i></span>
	8.2 - Embraer suggests to amend the first sentence as follow: "In addition to performance information appropriate to operating on a contaminated runway, the AFM should also include recommended procedures associated with this performance information if such procedures are specific to the aeroplane."
response	Accepted.
comment	215 <span style="float: right;">comment by: <i>Embraer S.A.</i></span>
	<p>8.3 - In item 8.3 of AMC 25.1592, the following paragraph generated doubts: "Where data is provided for a range of contaminant depths, e.g. greater than 3, 6, 9, 12, 15 mm, then the AFM should clearly indicate how to define data for contaminant depths within the range of the contaminant depths provided."</p> <ul style="list-style-type: none"> <li>• Interpretation 1: the intent of the item would be to require AFM to clearly correlate each set of data to the associated contaminant depth. If this is so, we suggest to change the wording to "Where data is provided for a range of contaminant depths, e.g. greater than 3, 6, 9, 12, 15 mm, then the AFM should clearly correlate each set of data to the associated contaminant depth".</li> <li>• Interpretation 2: the intent of the item would be to require AFM to present guidance on how to obtain data associated to contaminant depths between two figures. E.G.: AFM presents data for 3 and 6 mm and operator wants to define data for 4.5 mm. If this is so, we suggest to change the wording to "Where data is provided for a range of contaminant depths, e.g. greater than 3, 6, 9, 12, 15 mm, then the AFM should clearly indicate how to define data for contaminant depths that falls within two values of the contaminant depths provided".</li> </ul> <p>Embraer also suggests to amend the sentence "the procedures and assumptions used to develop the performance data" as follow: "If the procedures and assumptions required to attain the performance data are different that the usual for dry runway, they must be presented in AFM."</p>
response	Accepted.  The intent of point 8.3 is the one described in Option 1 in the comment. A suitable wording will be used to clarify this intent. Regarding the last suggestion of the comment, the mentioned sentence will be deleted.



comment	<p style="text-align: right;">comment by: <i>ERAA</i></p> <p>231</p> <p>AMC 25.1592 2.0 p. 41 and 5.0 p. 42: Is factoring assumed for landing distance calculation? Widerøe operates all landings on the 830 metre runways as 'steep approach' 4.5 degrees from a 35 ft screen height. Many of the assumptions should be adjusted to reflect this type of landing, including screen height, air distance, transition distance and full braking distance.</p>
response	<p>Noted.</p> <p>See response to comment 299.</p>
comment	<p style="text-align: right;">comment by: <i>ERAA</i></p> <p>232</p> <p>Table 1, p. 46: What is meant by 0.20 and 0.16? How does this correlate to mu measured by surface friction tester?</p>
response	<p>Noted.</p> <p>See response to comment 299.</p>
comment	<p style="text-align: right;">comment by: <i>ERAA</i></p> <p>233</p> <p>Table 1, p. 46, RwyCC: The proposed RwyCC Table is under some conditions both more liberal and more conservative than current practice in Norway. It is more liberal with rime and wet snow; it suggests that wet snow has same friction as dry snow at e.g. OAT -13 degrees C. This is too coarse, as it may be too liberal for wet snow and too restrictive with dry snow.</p> <p>The home page for the world renowned ski wax brand SWIX illustrates well what is known to most people accustomed to winter conditions. SWIX is in fact producing 8 different ski grip waxes for temperatures ranging from 0 degrees to -30 degrees.</p> <p>Sand has a demonstrable effect to increase friction and Widerøe's Flyveselskap AS suggest that the friction characteristics for compacted snow is studied in more detail before setting hard limits for friction coefficients.</p> <p>The TALPA ARC takes the following condition into consideration when assessing the RWYCC:</p> <ul style="list-style-type: none"> <li>· Contamination</li> <li>· Type</li> <li>· Depth</li> <li>· Temperature</li> <li>· Coverage</li> </ul> <p>Widerøe's Flyveselskap AS suggest that more variables are put into the equation when the runway conditions are assessed and the RWYCC assigned. As a minimum should the following variables be considered:</p>



	<ul style="list-style-type: none"> <li>· Contamination</li> <li>· Type</li> <li>· Depth</li> <li>· Coverage</li> <li>· Use of sand</li> <li>· Use of frozen sand</li> <li>· Use of chemicals</li> <li>· Runway surface temperature</li> <li>· Air temperature</li> <li>· Dew points temperature</li> </ul> <p>- See comments under RIA.</p>
response	<p>Noted.</p> <p>See response to comment 299.</p>
comment	<p>242 <span style="float: right;">comment by: Thomson Airways</span></p> <p>6.1 Air Distance</p> <p>Time must be made available for the aircraft manufacturers to provide operators with the necessary performance calculation tools to enable accurate compliance with the proposed landing performance factors.</p>
response	<p>Noted.</p> <p>The certification standards are intended to be available to manufacturers sufficiently in advance of the entry into force of the operational requirements.</p>
comment	<p>245 ❖ <span style="float: right;">comment by: General Aviation Manufacturers Association / Hennig</span></p> <p>GAMA notes that the data basis for dry runway time of arrival landing performance is different from what is shown in CS 25.125. The manufacturer certifying two different sets of landing performance could be a potential source of confusion for operators and would be an additional burden for the OEM that does not seem to have been considered fully in the analysis.</p> <p>The development and maintenance of two different sets of dry runway landing performance will require separate AFMSs and databases which will add unnecessary complexity and cost for what is considered a minimal increase of safety given the existing dry runway dispatch requirements in CAT.POL.A.230.</p> <p>GAMA recommends that the agency limit the proposed required time of arrival assessments to non-dry runways only as there should be sufficient margin from dispatch requirements in CAT.POL.A.235.</p>
response	<p>Not accepted.</p>



The current standard for landing distance on dry runways at time of dispatch is not suitable for in-flight checks at time of arrival. This unfortunately leads to two different data sets for dry and wet runways. However it should be noted that the operational requirement for in-flight check at time of arrival, for the case of dry runways may be limited to simply confirm the dispatch calculation.

comment 248 ❖ comment by: *General Aviation Manufacturers Association / Hennig*

AMC 25.1591 Section 7.3.1 revises the ice value from 0.5 to 0.7 in Table 2. AMC 25.1592 Section 6.2 however, presents an ice value of 0.8 in Table 1. There does not appear to be a physics-based reason why different values are reasonable for different phases of operation. GAMA notes that the TALPA ARC recommended 0.08.

GAMA views it is essential that the agency achieve harmonisation of the braking coefficients between AMC 25.1591, 25.1592 and AC 25-31, 25-32.

Therefore, GAMA recommends a common value for this runway condition and that this value be harmonised with FAA guidance in AC 25-32 at 0.08 for ice; i.e., 0.08 for both takeoff and landing.

response Partially accepted.

A single value will be provided, which is however set at 0.07. Such value is selected because, for most aircraft types in most conditions, it allows the 15% operational margin to cover a degradation of the actual coefficient to 0.05, a value that was observed in in-service accidents and incidents. This would not be the case for 0.08. It is understood that the FAA may harmonize with the EASA value.

comment 249 comment by: *General Aviation Manufacturers Association / Hennig*

The agency in AMC 25.1592 Section 6.1 provides guidance on air distance and seems to infer mandatory use of 7 seconds and 0.98 Vref.

GAMA recommends that AMC 25.1592 permit landing air distances based on flight test data that has been shown to comply with CS 25.101(f)(h) and therefore determined in accordance with procedures established by the applicant for operation in service and are able to be consistently executed by crews of average skills, and do not exceed sink rates specified in method 2 of AC 25-7C air distance methodology.

response Accepted.

The mentioned paragraph of the AMC 25.1592 provides:

*“Unless the air distance used for compliance with CS 25.125 is representative of an average pilot flying in normal operations (see flight test demonstration below), the air distance used for operational landing performance assessments should be determined analytically [...]”*

This means that using a demonstrated airborne distance in line with the comment is acceptable in line with the FAA AC25-32.

comment 250 comment by: *General Aviation Manufacturers Association / Hennig*



The agency states in note 1 to Table 1 in AMC 25.1592 that a 90 percent of the flight-test based dry runway braking coefficient of friction be used unless it can be shown that testing was based on operationally representative amounts of rubber contamination and paint stripes on the runway.

GAMA notes that the term "operationally representative" is subjective. (As an example, will photographic evidence be required of the flight test touchdown zone and with subsequent area percentage of rubber contamination analysis?)

Additionally, the 90 percent factor seems subjective and no justification was provided in the NPA for the factor. (Except for listing AC 25-32 in the reference section.)

Finally, the manufacturer certifying two different sets of landing performance data places an additional burden on the OEM that does not seem to be fully considered in the analysis.

GAMA recommends that EASA not create an additional burden on the manufacturer by forcing the second set of data and risk causing confusion among operators by providing two sets of dry landing data.

response

Not accepted.

The note is in line with TALPA ARC proposals reflected in the ICAO doc 10064 (APM) and the FAA AC 25-32. The additional burden is limited since a specific dataset must be produced to account for realistic air distance, slope and temperature anyway.

comment

251

comment by: *General Aviation Manufacturers Association / Hennig*

GAMA notes that AMC 25.1592 appears to be missing a section that addresses credit for reverse thrust which exists in FAA AC 25-32 (see section 10).

GAMA recommends that the agency update AMC 25.1592 to include a section that provides credit for reverse thrust to ensure that the guidance material is harmonised with FAA AC 25-32.

response

Noted.

Concerns on the use of reverse credit for the determination of the landing distance at time of arrival have been raised at Certification level. The Agency will engage on a specific consultation with OEMs on this issue, to determine under which conditions this may be possible.

comment

252

comment by: *General Aviation Manufacturers Association / Hennig*

AMC 25.1592, Section 7.0, Table 2 shows the contaminant maximum depth as 15 mm for slush and standing water.

GAMA notes that this value is not harmonised with AC 25-32, Section 9.3, which lists the contaminant depth as "1/2 inch (13 mm)".

GAMA recommends that AMC 25.1592 and AC 25-32 be harmonised.



response Partially accepted.

The contaminant depth values are removed from the table. See also the rationale of comment 74.

comment 258 comment by: *Norwegian Air (Norwegian Air Norway, Norwegian Air International, Norwegian Air UK and Norwegian Air Shuttle)*

**3.2.2. CS-25 Book 2 AMC 25.1592 6.0 Derivation of Landing Distance**

*It should be included in a note in table 1 that runway temperature may be used when available. There is a general concern about the -15C limit for compact snow. It seems rather low, with no rationale behind why this limit was picked. In Norway we have experienced that this limit should be closer to -8C. It will have a negative impact on regularity if the -15C limit is introduced. We have operated for many years with my 0.2 on compact snow with no temperature limit. It is therefore difficult to explain why the sudden decrease to 0.16 for temperatures between -16C and -8C. On the other hand, we have experience that show that poor braking is often associated with moist low-level atmospheric conditions. We think it is strange that the RCAM do not cater for relative humidity.*

response Not accepted.

The -15 °C criterion is kept as a conservative value until research or supporting data will justify an alternative solution. However flexibility will be provided by the concept of specially prepared winter runways developed in RMT.0704.

comment 261 comment by: *General Aviation Manufacturers Association / Hennig*

GAMA disagrees with the agency's proposal to require a single prescribed air time and touchdown speed ratio AMC 25.1592, Section 6.1, because it is not reflective of an aeroplane's capabilities. Additionally, disallowing / not properly accounting for runway slope effects unnecessarily complicates the computations, so that the final data is not reflective of a physics-based evaluation. We also note that this is not a conservative approach to establishing runway performance.

Allowing the proposed method to be applicable for downhill slopes in magnitudes up to 2 percent is non-conservative and not in agreement with FAA AC 25-32 which only permits in magnitudes up to 1 percent.

GAMA recommends that the agency revise AMC 25.1592 to permit manufacturers to compute and schedule the effects of runway slope on landing air distance regardless of slope magnitude and direction rather than use a single prescribed air time and speed ratio. The air distance time from 50 ft above the landing surface and touchdown speed ratio should both be allowed to be determined based on flight testing, provided that the applicant shows that it complies with CS 25.101(f)(h), and is not based on the parametric air distance model in FAA AC 25-7C.

response Not accepted.





The 7 seconds airborne time is an allowance for an operational airborne distance that is adapted to the aeroplane capabilities via the approach speed. As such it does not necessarily have to be physically realistic, but rather represent an average achievable distance in line operations.

The effect of slope on the airborne distance is not purely geometric. The reason for neglecting the slope effect is that, except for automatic landing, the pilot will aim for the touchdown zone and thus should achieve relatively consistent airborne distances within the usual range of slopes for which aircraft are certified (i.e. for -2% to +2%). The intent of extending the slope range from that specified in the FAA AC 25-32 was precisely to reduce the burden on the OEMs, as no method for accounting for higher slopes is provided in the AC or the AMC. For autoland, specific airborne distances accounting for slope are applied.

comment

287

comment by: IATA

9 Reference 11.

ICAO Doc 10064: Aeroplane Performance Manual

EASA is encouraged to revise the NPA when the ICAO Doc 10064 will be published and ensure global harmonization, where applicable.

response

Accepted.

comment

288

comment by: IATA

AMC 25.1592 The Derivation and Methodology of Performance Information for Landing Distance Assessment at Dispatch and at Time of Arrival

4.0 Definitions

4.2 Runway Condition Code (RWYCC)

IATA Comments: See comment on the definition of RWYCC in the Definition section, point 3.1.1

response

Accepted.

See also response to comment 274.

comment

299

comment by: Widerøe Flyveselskap AS

AMC 25.1592 2.0 p. 41 and 5.0 p. 42:

Is factoring assumed for landing distance calculation? Widerøe operates all landings on the 830 metre runways as 'steep approach' 4.5 degrees from a 35 ft screen height. Many of the assumptions should be adjusted to reflect this type of landing, including screen height, air distance, transition distance and full braking distance.

Table 1, p. 46:



Question to EASA:

What is meant by 0.20 and 0.16? How does this correlate to  $\mu$  measured by surface friction tester?

Table 1, p. 46, RwyCC:

The proposed RwyCC Table is under some conditions both more liberal and more conservative than current practice in Norway. It is more liberal with rime and wet snow; it suggests that wet snow has same friction as dry snow at e.g. OAT -13 degrees C. This is too coarse, as it may be too liberal for wet snow and too restrictive with dry snow.

The home page for the world renowned ski wax brand SWIX illustrates well what is known to most people accustomed to winter conditions. SWIX is in fact producing 8 different ski grip waxes for temperatures ranging from 0 degrees to -30 degrees.

Sand has a demonstrable effect to increase friction and Widerøe's Flyveselskap AS suggest that the friction characteristics for compacted snow is studied in more detail before setting hard limits for friction coefficients.

Th TALPA ARC takes the following condition into consideration when assessing the RWYCC:

- Contamination
- Type
- Depth
- Temperature
- Coverage

Widerøe's Flyveselskap AS suggest that more variables are put into the equation when the runway conditions are assessed and the RWYCC assigned. As a minimum should the following variables be considered:

- Contamination
- Type
- Depth
- Coverage
- Use of sand
- Use of frozen sand
- Use of chemicals
- Runway surface temperature
- Air temperature
- Dew points temperature

- See comments under RIA.

response Accepted.



Assumptions to derive landing distances in case of steep approaches will be added in CS-25. The possibility to upgrade RWYCC will be dealt with in the aerodrome rules where the rulemaking task RMT.0704 is introducing the concept of operations on “specially prepared winter runways”, which will be referenced appropriately in the Regulation for air operations.

comment

314

comment by: *Textron Aviation*

## 2.0 Applicability of Data

The Purpose of this AMC clearly states that the intent is to provide information, guidance, recommendations, and acceptable means on compliance in the production of landing performance information for use:

- before flight during flight planning, and
- at the time of arrival.

The highlighted text contradicts this purpose, stating that these methods are only for time-of-arrival data, and then goes so far as to speculate on the basis of data that was provided for dispatch purposes. It is true that various manufacturers have provided varying forms of contaminated data in the past, and based on different assumptions, but it is not appropriate here to dismiss all of that data as being inappropriate for use during time-of-arrival. It is also not appropriate to discourage applicants from using this guidance as the basis for dispatch data. Recommend that these highlighted statements be deleted.

response

Not accepted.

The AMC allows data for slippery wet runways and contaminated runways to be the same for dispatch and in-flight purposes. Additionally, CS 25.1592 is applicable to new designs only. The use of existing data is dealt with in the rules for air operations

comment

315

comment by: *Textron Aviation*

## 6.1 Air Distance

It is recognized that some OEMs have historically provided aggressive air distances as part of 25.125 certification, knowing that their operators would be applying large dispatch factors in accordance with operational rules. However, some manufacturers of smaller aircraft have historically calculated realistic air distances, determined from test data flown in accordance with AFM procedures and with full accountability of speed, temperature, and runway slope, because their customers/operators are not required to apply any dispatch factors. Such air distance methodology should remain acceptable.

response

Noted.

AMC 25.1592 states that the air distance is applicable “Unless the air distances used for compliance with CS25.125 is representative of an average pilot flying in normal operation...” These methodologies remain acceptable.

comment

316

comment by: *Textron Aviation*

	<p>6.1 Air Distance</p> <p>- the touchdown rate of descent should be in the range of 1-4 ft per sec.</p> <p>This touchdown requirement was taken from FAA AC 25-32. However, this touchdown requirement was not recommended by the TALPA ARC. It was added by the FAA following conclusion of the TALPA ARC, without ARC input or technical discussion. The TALPA ARC recommendation was to allow air distance methodology derived from flight test data flown in accordance with AFM procedures, and which complies with 25.101 and existing AC 25-7C guidance.</p>
response	<p>Noted.</p> <p>A too high touchdown rate of descent is one of the reasons why the expected air distance may not be achievable in normal line operations. This is why for the determination of the air distance for landing performance data to be used at the time of arrival a specific range is recommended.</p>

comment	<p>317 <span style="float: right;">comment by: <i>Textron Aviation</i></span></p> <p>Table 1</p> <p>6 - Dry -90% of certified value used to comply with CS 25.125</p> <p>Recent discussions within the Flight Test Harmonization Working Group discussing Task 9 (wet runway stopping performance) have indicated that this requirement is not likely to be limiting, as the dry dispatch requirement is much more likely to drive requirements for dry runway performance.</p> <p>Recommend additional discussion or perhaps the deletion of this item. Creation of additional dry data based on slightly different assumptions will require a large effort in terms of time and financial resources, and having two sets of dry data will be confusing to operators and flight planners. These negative issues far outweigh any benefit, as this data is not likely to limit operations or have any impact to safety.</p>
response	<p>Not accepted.</p> <p>It is true that for dispatch purposes CS 25.125 will drive the requirements for landing. However, for the assessment of the landing distance at time of arrival, which may be for an unplanned airport/runway/weather conditions, the demonstrated friction for a dry runway may not be conservative, which justifies this reduced friction value.</p>

comment	<p>331 <span style="float: right;">comment by: <i>Bombardier</i></span></p> <p><b>3.2.2 CS-25 Book 2, New AMC 25.1592, section 6.1</b></p> <p>BA requests EASA to justify why it is acceptable not to correct for runway slope effect on air distance, for downslopes up to -2%, if using the 7 seconds and 98% speed decay air distance models. AC25-32 recommends a correction from -1% to -2% (but unfortunately provides no methodology).</p> <p>The FAA AC 91-79A specifies that downward slope of -1% would increase landing distance by 10%: BA determined that this is equivalent to an increase of 23% of air distance for every 1% downslope on all BA airplane models. Assuming that the pilot does not correct the airplane</p>
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	<p>trajectory during the air distance segment (such as adjusting the flight path by lowering the nose to meet a specified touchdown point), it is estimated that the air distance must be increased to account for the effect of downward slope.</p> <p>BA recommends EASA to review the BA methodology for applicability for downslope effect on air distance.</p>
response	<p>Not accepted.</p> <p>The effect of slope on the landing distance is taken into account in the determination of the ground roll, but the airborne distance is independent of slope. The limitation of this airborne distance to a range of <math>\pm 1\%</math> was originally justified by purely geometrical considerations. However, the pilot will aim for the touchdown zone on the runway independent of the runway slope. This operational airborne distance allowance is thus considered adequate for the usual range for which aircraft are certified, i.e. <math>\pm 2\%</math>.</p>
comment	<p>342 <span style="float: right;">comment by: <i>NetJets Europe</i></span></p> <p>6.0 - DERivation of Landing distance:</p> <p>NetJets notes the RWYCC – we feel this is workable within EASA environment and locations where this standard is or will be used however, NetJets would like to highlight that for locations where this standard is not used, the current data with the contamination type and depth or braking action may still be required.</p>
response	<p>Noted.</p> <p>The runway condition assessment matrix (RCAM) allows to determine the applicable RWYCC for a given contaminant type and depth.</p>
comment	<p>354 <span style="float: right;">comment by: <i>US FAA</i></span></p> <p>4.1 Frost</p> <p><b>Comment summary</b></p> <p>Note 2:— under certain conditions, frost can cause the surface to become very slippery, which is then reported appropriately as ‘reduced braking action’.</p> <p><b>Suggested resolution</b></p> <p>Verify this note is consistent with the instructions for the airport to report the surface.</p>
response	<p>Accepted.</p> <p>The same definitions are adopted in the aerodrome rules amended by the rulemaking task RMT.0704. Consistency will be ensured.</p>



comment	<p>355</p> <p><b>6.1 third para</b></p> <p><b>Comment summary</b></p> <p>.... at a speed of 98 % of the recommended speed over the landing threshold, also referred to as the final-approach speed (VAPP). The above phrase “also referred to as the final-approach speed (VAPP)” can be interpreted as 98% of the recommended speed over the landing threshold is the final-approach speed (VAPP).</p> <p><b>Suggested resolution</b></p> <p>Change to the following.</p> <p>.... at a speed of 98 % of the recommended speed over the landing threshold. <i>The recommended speed over the landing threshold may also be referred to as the final-approach speed (VAPP).</i></p>	comment by: <i>US FAA</i>
response	Accepted.	

**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.1. Definitions — GM13 Annex I Definitions**

p. 49

comment	<p>216</p> <p>Embraer understands that EASA is planning to harmonize with FAA rules, so we suggest using the same definition of Contaminated Runway provided on paragraph 6.3 of AC 25.32.</p>	comment by: <i>Embraer S.A.</i>
response	<p>Not accepted.</p> <p>EASA has adopted the ICAO definitions.</p>	
comment	<p>306</p> <p>It is a common occurrence what when a contaminated runway is cleared by the airport authority (e.g. by sweeping/brushing and/or the application of chemicals) they do not do so to the full runway width (e.g. only a 40m wide strip on a 45m wide runway may be cleared.) Can GM13 for Contaminated Runways be expanded to provide guidance to operators in this regard? Specifically, can a runway which has been cleared in this way, be considered to no longer be contaminated? (on the basis of the "width being used" reference in the definition.)</p>	comment by: <i>Aer Lingus</i>
response	<p>Accepted.</p> <p>Guidance will be added on the operational use of the runway.</p>	



comment	325	comment by: <i>Ryanair</i>
	This definition is more restrictive than the previous definition and the added restriction is unwarranted. The current proposal suggests that 1/12th of a runway qualifies as contaminated versus 1/4th under previous regulation.	
response	Not accepted.	
	The new reporting format leads to an assumption of dry runway below the coverage threshold where previously the operator would have calculated with a wet runway assumption. This reduces the margins available in operations. To ensure that the existing margins are sufficient for (unreported) worse case contamination of the runway, the reporting threshold had to be reduced to 25% of one third.	

**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.1. Definitions — GM14 Annex I Definitions**

p. 49

comment	77	comment by: <i>AIRBUS</i>
	<p><b>SUBJECT:</b> Area intended to be used</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b> 3.3.1 Definitions 2. New GM14</p> <p><b>2. PROPOSED TEXT / COMMENT:</b> This GM should be applicable to WET RUNWAY as well.</p> <p>Amend GM14: “The ‘area intended to be used’ means the area of the runway that is part of the take-off run available (TORA), accelerate stop distance available (ASDA) or landing distance available (LDA) declared in the aeronautical information publication (AIP) or by notice to airmen (NOTAM).”</p> <p><b>3. RATIONALE / REASON / JUSTIFICATION:</b> The ASDA is not necessarily contained within the TORA.</p>	
response	Accepted.	
	The definition will be amended and made applicable to dry and wet runways.	
comment	116	comment by: <i>CAA Norway</i>
	<p><b>GM14 Annex 1 Definitions</b> DRY RUNWAY <i>Comment:</i> Why is ASDA not included? If the conditions on the stopway (if provided) is significantly less than on the runway, the possibility of a rejected take-off overrun onto the runway strip/RESA seems to be increased.</p>	
response	Accepted.	



The definition will be amended.

**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.2. Part-ORO — GM1 ORO.MLR.100**

p. 50

comment

259

comment by: *Norwegian Air (Norwegian Air Norway, Norwegian Air International, Norwegian Air UK and Norwegian Air Shuttle)*

**GM1 ORO.MLR.100 Operations manual — general**

**CROSSWIND LIMITATIONS IN THE OPERATIONS MANUAL (OM)**

When publishing operational crosswind limitations in Part B of the OM in accordance with AMC3 ORO.MLR.100, operators should consider:

(a) the following manufacturer's information:

(1) values published in the 'Limitations' Section of the aircraft flight manual (AFM);

~~(2) maximum demonstrated crosswind values, when more limiting values are not published in the 'Limitations' Section of the AFM;~~

(3) gust values; and

(4) additional guidance or recommendations;

(b) operational experience; and

(c) operating-environment factors such as:

(5) runway width;

(6) runway surface condition; and

(7) prevailing weather conditions.

*We recommend to delete (2) above. Maximum demonstrated crosswind values should not be considered as limiting. By putting this in, operators may be required by the regulator to alter their crosswind limitation to the maximum demonstrated value, if this is lower than the manufacturers recommendation in the FCTM. The crosswind information in both the Airplane Flight Manual (AFM) and Flight Crew Training Manual (FCTM) are considered guidelines, not limitations. The AFM statement is simply that--a statement that the maximum crosswind that was demonstrated is xx KT but it is not a crosswind limitation. **Note that statement is not in the Limitations section of the AFM, but in Section 4 (performance) of the AFM.***

*The maximum demonstrated takeoff and landing crosswinds published in the AFM are merely the maximums that manufacturers could find during its certification flight testing of the aircraft. It is a regulatory requirement to publish these values in the AFM even though they are typically not considered limiting. During airplane certification flight testing, it can be very difficult to find crosswinds of sufficient magnitude to be considered limiting. Essentially, the manufacturer has to accept the actual crosswind that existed at the time of the certification testing, and it is this maximum demonstrated crosswind that gets published in the AFM. If a higher or lower maximum crosswind would have been found during the testing, then the AFM-published value would have been higher or lower.*

*The crosswind guideline values published in the FCTM are meant to be more operationally useful. They are guidelines based on piloted simulator evaluations, flight test data, and engineering analysis. They are usually, but not always, different from the maximum demonstrated crosswind shown in the AFM because the AFM values are merely the maximums that happened to be found during certification testing. They could therefore be lower than the maximum demonstrated value.*





*The FCTM values are provided as guidance on crosswind values that manufacturer test pilots believe can be handled without exceptional piloting skills for the runway conditions stated. The guidelines are provided to assist operators in establishing their own crosswind policies. Operators should consider these published guidelines, runway conditions, and their flight crew and operational experience to determine their own crosswind policies. For example, an operator who routinely operates in high crosswind conditions may consider publishing higher values because their crews are experienced in handling high crosswinds. Another airline may want to use the values as published because they do not routinely encounter higher crosswinds.*

response Not accepted.

The intent of the GM is to draw the attention of operators on the information provided by OEMs that needs to be considered when establishing crosswind limitations. Furthermore, the maximum demonstrated crosswind values need to be considered in the absence of more limiting values in the “Limitations” section of the AFM. Other material as provided in the FCTM or other OEM documents needs to be considered as well as per point (4) of the GM. The operational experience is of course another important element to consider as per point (b) of the GM.

**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT — AMC1 CAT.OP.MPA.300**

p. 51

comment 234

comment by: ERAA

New AMC1.CAT.OP.MPA.303 p. 51, and Table 1 p. 52:

These LDF's are not compatible with a steep approach concept. To our knowledge, the underlying simulations were based on approach angles up to 3.5 degrees. For our operation on 830 metre runways, Widerøe uses a steep approach concept with 4.5 degrees and 35 ft screen height, and the LDF's are not appropriate for this type of operation. - The LDF's seem prohibitive. Also, it is noted that LDF 1.67 is used for Turboprop instead of 1.43. Turboprop aircraft generally operate at lower speeds and energy. This means higher traction, and lower inertia when decelerating. The propellers in disc or reverse are very effective and efficient brakes compared with turbojet thrust reversers. We are deeply concerned that aircraft manufacturers will not provide performance data that will give acceptable landing mass on contaminated runways.

response Noted.

See response to comment 300.

**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT — AMC1 CAT.OP.MPA.303(a) and (b)(1) and (c)(1)**

p. 51-52

comment 18

comment by: DGAC France

The explanatory note indicates that the proposed new AMC1 CAT.OP.MPA.303 “is based on the FAA Advisory Circular (AC) 25-32”.



	<p>Yet, this FAA AC “provides guidance and standardized methods [...] when developing landing performance data for time-of-arrival landing performance assessments for transport category airplanes”</p> <p>But the EASA LDFs are not explicated in the FAA AC 25-32. Moreover this NPA does not provide any details about the flight tests and the hypothesis to determine LDFs.</p> <p>In addition, the economic impact of ICAO amendments in paragraph 4.5.4 of the RIA is only based on :</p> <ul style="list-style-type: none"> <li>- Airbus and Embraer figures, but relevant data for performance are already existing for these aeroplanes,</li> <li>- Class B and Class C aeroplanes, but they are not concerned by LDFs,</li> <li>- IATA survey saying that in-flight assessment of the landing distance is generally made, but without information about the methods or factors used.</li> </ul> <p>Therefore, DGAC France asks for a rationale about LDFs determination, impact assessment and the consequences for the operators of performance class A aeroplanes without relevant data performances.</p> <p>Without these information, DGAC France is not in position to support the proposed LDFs.</p>
response	<p>Partially accepted.</p> <p>The factors have been established during the work of the TALPA ARC as the result of a Monte Carlo statistical analysis of operational landing distances on different runway surfaces, based on the use of:</p> <ul style="list-style-type: none"> <li>• 5 sample FAR 25 turbojet types (in 6 landing configurations)</li> <li>• 3 sample FAR 25 turboprop types (in 8 landing configurations), and</li> <li>• 12 sample flight conditions</li> </ul> <p>The resulting factors being those with a 99% reliability.</p> <p>Though not explicitly mentioned in the AC 25-32, they are proposed for use in the FAA order 8900 when OEM data developed in accordance with AC 25-32 are not available. They are also recommended by the ICAO Aeroplane Performance Manual (Doc. 10064).</p> <p>As regards the impact assessment, EASA acknowledges the difficulty for certain aircraft types to be provided with performance data compliant with the new proposed standard of CS 25.1592 and the fact the in certain cases the generic factors may be too penalising. The economic assessment of the RIA will be revised to take into account this aspect and alternatives to the generic factors will be offered to comply with the new rule.</p>
comment	<p>78 <span style="float: right;">comment by: AIRBUS</span></p> <p><b>SUBJECT :</b> Landing Distance Assumption and Procedures</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b> 3.3.3 Part-CAT 3. New AMC1 CAT.OP.MPA.303 (a)</p> <p><b>2. PROPOSED TEXT / COMMENT:</b> Append to AMC1 CAT.OP.MPA.303 (a): “The OM should state the the procedures and assumptions used to develop the performance data.”</p>



**3. RATIONALE / REASON / JUSTIFICATION:**

The AFM is not the appropriate place for the procedures and assumptions used in developing the data, but the information relevant to the flight crew on what aspects are necessary to achieve the published distances should be included in the OM.

response Accepted.

comment 79

comment by: AIRBUS

**SUBJECT :** Landing Distance Factors

**1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:**

3.3.3 Part-CAT

3. New AMC1 CAT.OP.MPA.303 (b)(2)

**2. PROPOSED TEXT / COMMENT:**

Amend Table 1 under AMC1 CAT.OP.MPA.303(b)(2):

<b>Turbojet with all reversers operating</b>	1.67	2.2	2.3	2.5	2.9	3.4
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**3. RATIONALE / REASON / JUSTIFICATION:**

Clarify that these factors assume that all installed reversers are operative.

response Accepted.

comment 88

comment by: Stefan

See my previous comments, LDR was in the past normally associated to the landing distance at the planning stage. It seems that there is no consistency in the terminology used. LDR is not defined anywhere but then is cited in this paragraph.

response Not accepted.

“Required” landing distance is self-defined as being that required by the rules.

comment 89

comment by: Stefan

(4) They may not be conservative for all configurations in case of unfavourable combinations of these parameters, so what has to be done? We accept the situation of flying with a downslope of -2%, ISA +20 and a gust correction of +20kts? Manufacturer should provide some guidance.

response Not accepted.

The factors have been established during the work of the TALPA ARC as the result of a Monte Carlo statistical analysis of operational landing distances on different runway surfaces, based on the use of:

- 5 sample FAR 25 turbojet types (in 6 landing configurations)
- 3 sample FAR 25 turboprop types (in 8 landing configurations), and



- 12 sample flight conditions

And with the conditions mentioned in the comment. They have been accepted as the resulting factors being those with a 99% reliability.

comment

117

comment by: CAA Norway

**AMC1 CAT.OP.MPA.303(a) and (b)(1) and (c)(1) In-flight check of the landing distance at the time of arrival — aeroplanes**

Paragraph (a)

*Comment:*

Reference comment to AMC 25.1592. Applicability, including the factors in Table 1, with respect to steep approaches and short landing operations, reference CAT.POL.A 245, 250, 345 and 350. must be clarified.

*Rationale:*

It would seem inappropriate to use AMC 25.1592 as a requirement related to steep approach and short landing operations, where, for example, the transition time would be significantly shorter than for a normal approach (3 – 3,5 degrees approach angle)

These types of operation require a tighter control of speed and profile than normal approaches, and availability of approved data for landing distance at the estimated time of arrival for landing distance assessment may be even less readily available than for normal operation, see comments to paragraph b) below.

Further, the reason for having these types of operations is, in many cases, a clear public interest in sustaining both scheduled operations with performance class A and air ambulance flights with performance class B aeroplanes to aerodromes where an extension of declared distances are either physically or economically extremely difficult, and where operations under present rules have not shown any safety issues related landing overruns during normal operations. (In Norway we have this situation with more than 500.000 landing operations over the last couple of decades.)

Paragraph (b)

*Comment:*

This paragraph is the cause of serious concerns and need to be improved and/or supplemented by further guidance material.

*Rationale:*

There is a serious concern that few manufacturers will provide relevant data developed and approved according to AMC 25.1592 or equivalent, for aircraft types which are already in service.

Aeroplanes required to be operated in Performance class A comprises not only aeroplanes from Airbus, Boeing and Embraer as mentioned in the RIA, but also a large variety of multi engine jets and turboprops manufactured by other companies worldwide.

There are also some turboprops which normally operates in performance Class B, but because of seating configuration have to be operated in performance class A. These may not have any performance information related to operation on contaminated runways.



Further, the aeroplane types required to be operated in performance class A has very large span of max certified landing mass, from below 12500 lbs (5700 kg) and up to several 100.000 lbs/kg, and similarly a very wide span of approach speed, ranging from PANS OPS CAT A to D inclusive.

At the time of writing, we have no, or few firm indications as to how these aeroplane types will be supported.

As a matter of fact, there are signals that data developed and approved in accordance with AMC 25.1592 will not be provided, unless there is a serious customer demand. It is not difficult to see that cost, especially for aeroplane types certified to earlier standards might be quite expensive, at least for the smaller operators.

A consequence will be that a large number of operators have to apply paragraph (b) in the AMC.

Subparagraph (b) describes one possibility (or is it two?):

- (1) Correction factors may be applied to the certified landing distances on dry runways published in the AFM for turbojet-powered and turbopropeller-powered aeroplanes
- (2) For this purpose, the landing distance factors (LDFs) from Table 1 may be used.

At the time of writing, we read this as follows:

- a) Unless an Alternative Means of Compliance has been approved, the LDFs from Table 1 have to be used.
- b) The operator may develop correction factors other than those in Table 1, without the need for an AltMoc.

We need a clarification of this question.

#### **Proposals:**

##### *Proposal a)*

We propose that proper guidance material is developed to aid operators to develop correction factors other than the ones listed in Table 1, whether an alternative means of compliance is required or not.

##### *Rationale*

For some aeroplane types there exist approved or advisory material related to operation on contaminated runways. At least some has been developed in accordance with the present AMC 25.1591.

Guidance is needed on how to apply these data when developing correction factors other than the ones in Table 1.

##### *Proposal b)*

If a set of generic Landing Distance Factors (LDFs) shall be published, ref the current Table 1, operators would need a more sophisticated approach. Consequently, it is suggested that the following principles should be followed:

- At least two sets of factors should be provided, one for PANS OPS CAT A/B and one set for CAT C/D aeroplanes.



- Unfactored landing distance, DRY, for the appropriate runway pressure altitude, temperature and adjusted for slope and Head/Tailwind should be the starting point.
- A minimum Vref increment of 5 kts is acceptable as a baseline, 20 kts seems to be too much for PANS OPS Cat A/B aeroplanes.
- The 15 % margin must be taken into account. (Which figure is the baseline onto which 15% shall be added?)

#### *Rationale*

We can foresee that operators need a more sophisticated set of performance data than what can be achieved by simply applying the LDFs from Table 1. Reasons are listed below:

- *Slope* is a known property of the landing runway.

As credit for upslope may not be given, but penalty for downslope obviously must be taken into account, this could/should be done in the same manner as aerodrome elevation and aerodrome temperature. These properties are known at the time when the in-flight assessment shall take place.

Information in one AFM indicates that a downslope of 1 % implies a 30 % increase in the unfactored landing distance on a level runway, whereas a 2 % downslope implies a 100 % increase.

It should be noted that ICAO Annex 14 Vol 1 contains a design limit of 1 % slope for runways with Code number 3 and 4, and 2% for runways with Code number 1 and 2. Thus it would be unusual to find runways with LDA much above 1500 meters with slope greater than 1. Thus a single correction factor for slope seems to possibly incur unnecessary penalties.

- *Vref increment*, planned Vref increment should be assessed and briefed at the same time as the inflight landing distance assessment takes place (around top of descent). For PANS OPS CAT A/B aeroplanes, it is considered unlikely that a planned Vref increment would be more than 10 kts.

If a 5 kts Vref increment is used as baseline, separate correction factors based on Vref increments of 10, 15 and, at least for PANS OPS CAT C/D aeroplanes 20 kts should be available. As any Vref increment will increase the landing distance, it seems that using a single correction factor for Vref increment will possibly incur unnecessary penalties.

The NPA document itself contains no explanation on how these LDFs were developed, apart from the Notes to the table and, to some extent subparagraph (b)(4), which identifies the considerations taken account of.

- *Temperature*. This is taken account of directly together with aerodrome elevation, and is estimated to be accurate as long as reported value at the time of assessment is used, and no further factoring should be necessary.

- *Head/Tailwind*. This should be taken account of as usual (max 50 % of headwind, at least 150 % of tailwind). Reported values at the time of assessment is used, and no further factoring should be necessary.

It is noted that at least one manufacturer strongly discourages tailwind landings on a contaminated runway.



*Question:*

How has it been developed, and what is the applicability range with respect to factors as aeroplane size (landing mass), approach speed (Pans Ops Category), approach angle (Max 3.5 or greater), does it apply to steep approach etc)

*Comments to Table 1:**Re Note 2:**Question 1*

How is the figure 1.67 for turboprops landing on a RWYCC 6 arrived at? Compared to turbo jets, the factor of 1.67 is used which is consistent with the figure in CAT.POL.A. 230. An explanation is required why the figure is not 1.43.

*Question 2*

Who determines whether a turboprop is “modern with adequate disk drag” or not? Whereas a number of PT 6 powered turboprops may not have the same properties in ground idle as for example a DHC 8, the drag effect is distinctly noticeable, and it seems to be an overreaction to have use LDFs for turbojets, no reverse.

*Subparagraph (b) (3).**Comment/Question:*

At least two manufacturers require that the unfactored landing distance on a level runway is corrected for slope before further use, shall the LDFs be multiplied with the unfactored landing distance on a level runway or on the distance corrected for slope?

*Subparagraph (b) (4).**Comment/Question:*

Based on the arguments listed earlier with respect to temperature, slope and approach speed increments, we question whether these LDFs are equally applicable to PANS OPS CAT A/B aeroplanes as to the faster, and usually heavier PANS OPS CAT C/D aeroplanes.

response

Partially accepted.

On the comment on paragraph (a):

Assumptions to derive landing distances in case of steep approaches will be added in CS-25.

On the comment on paragraph (b):

The generic factors have been established during the work of the TALPA ARC as the result of a Monte Carlo statistical analysis of operational landing distances on different runway surfaces, based on the use of:

- 5 sample FAR 25 turbojet types (in 6 landing configurations)
- 3 sample FAR 25 turboprop types (in 8 landing configurations), and
- 12 sample flight conditions

They have been accepted as the resulting factors being those with a 99% reliability. EASA acknowledges the difficulty for certain aircraft types to be provided with performance data compliant with the new proposed standard of CS 25.1592 and the fact the in certain cases the generic factors may be too penalising. For such cases alternatives to the generic factors will be offered.



comment	<p>156 <span style="float: right;">comment by: ESDU, IHS Markit</span></p> <p>Page 52          AMC1 CAT.OP.MPA.303(a). In flight check. Table 1 - LDFs          Factors applied to dry runway data when landing with varying RWYCCs.          How are these factors derived and substantiated?</p>
response	<p>Noted.</p> <p>The factors have been established during the work of the TALPA ARC as the result of a Monte Carlo statistical analysis of operational landing distances on different runway surfaces, based on the use of:</p> <ul style="list-style-type: none"> <li>• 5 sample FAR 25 turbojet types (in 6 landing configurations)</li> <li>• 3 sample FAR 25 turboprop types (in 8 landing configurations), and</li> <li>• 12 sample flight conditions</li> </ul> <p>The resulting factors being those with a 99% reliability.</p>
comment	<p>180 <span style="float: right;">comment by: UK CAA</span></p> <p><b>Page No:</b> 51</p> <p><b>Paragraph No:</b> AMC1 CAT.OP.MPA.303(a) and (b)(1) and (c)(1) In-flight check of the landing distance at the time of arrival — aeroplanes (b)(2).</p> <p><b>Comment:</b> Whilst it is the longer term objective that Class A aeroplanes will have type-specific data produced in accordance with CS25.1592, the intention of (b)(1) and (2) should be that in the absence of such data the landing distance factors (LDFs) from Table 1 should be used, since these have been developed from a suitably rigorous analysis. Hence, the current wording “...the landing distance factors (LDFs) from Table 1 below <i>may</i> be used...” infers that other factors may possibly be applied, but it is not clear from where an alternative source of factors could be obtained.</p> <p><b>Justification:</b> In the absence of type-specific time of arrival for landing distance data, the factors that should be used must be appropriate and suitably derived.</p> <p><b>Proposed Text:</b></p> <p>(2) For this purpose, the landing distance factors (LDFs) from Table 1 below <del>may</del> <b>should</b> be used</p>
response	<p>Partially accepted.</p> <p>EASA acknowledges the difficulty for certain aircraft types to be provided with performance data that are compliant with the new proposed standard of CS 25.1592. Alternatives based on existing manufacturer data will be offered for those cases.</p>
comment	<p>246 ❖ <span style="float: right;">comment by: General Aviation Manufacturers Association / Hennig</span></p>





GAMA notes that an enroute check of landing distance at time of arrival is an operational requirement per CAT.OP.MPA.303.

Operational requirements are different than the airworthiness certification standards which are dependent on the type certification basis of an airplane model for applicability. Therefore, it is understood that this operational requirement to provide performance information in accordance with AMC 25.1592, or equivalent, is applicable to both existing models where CS 25.1592 is not part of the certification basis, as well as future models, where CS 25.1592 is part of the model's certification basis. It is a significant burden for an OEM to generate and certify new performance information as well as a departure from the intent of AC 25-32 where existing, approved data would remain accepted.

Furthermore, some ongoing certification programs have specific wet runway Certification Review Items (CRI) applied to them which are not consistent with AMC 25.1592 which would result in increased burden. Data created in accordance with prior amendments of 25.1591, or in accordance with wet runway CRIs, should remain acceptable.

GAMA requests that EASA confirm that existing Smooth Wet Runway CRI is considered an acceptable data basis for providing wet runway operational material as an alternative to CS 25.1592/AMC 25.1592.

Additionally, GAMA requests that EASA allow existing time of arrival performance information to remain as is and require the proposed data standards for new certification models only.

response Accepted.

EASA recognises the difficulty for certain aircraft types to be provided with performance data compliant with the new proposed standard of CS 25.1592. Alternatives will be developed for those cases.

comment 253

comment by: *General Aviation Manufacturers Association / Hennig*

AMC1.CAT.OP.MPA.303(a) and (b)(1) and (c)(1), Table 1 provides Landing Distance Factors (LDFs), but no background is provided for how these factors were determined for different types of aeroplanes.

One of the footnotes indicates that the factors include effects of 15 percent safety margin, increased ambient temperatures, a range of runway slopes, and increased approach speeds.

GAMA recommends that EASA provide additional background and rationale for how these factors were established.

response Accepted.

The factors have been established during the work of the TALPA ARC as the result of a Monte Carlo statistical analysis of operational landing distances on different runway surfaces, based on the use of:

- 5 sample FAR 25 turbojet types (in 6 landing configurations)



- 3 sample FAR 25 turboprop types (in 8 landing configurations), and
- 12 sample flight conditions

The resulting factors being those with a 99% reliability.

This background will be explained in the Opinion.

comment

271

comment by: *General Aviation Manufacturers Association / Hennig*

The proposal seems to not address large, multi-engine turboprop aeroplanes in its current structure. As the agency knows, Performance Class A includes a number of aeroplane types that were not certified to 14 CFR Part 25 or CS-25 airworthiness standards including these turboprop aeroplanes.

The agency recognizes that for Performance Class B and C aeroplanes, data may not be currently available, because no relevant airworthiness standard exists. The agency will recall that the TALPA ARC, in which it participated, recognized this situation and noted that many of its recommendations for Part/CS-25 would not translate well to small Part/CS-23 aeroplanes.

The TALPA ARC recommended that in the absence of a specific identified safety issue, the requirement for a time of arrival assessment should be made applicable only to multi-engine turbojets and large (commuter category) turboprops and not applicable to small turboprop aeroplanes.

GAMA recommends that the agency limit the applicability of CAT.OP.MPA.303(a) to a subset of Performance Class A aeroplanes, specifically multi-engine turbojets aeroplanes and turboprop powered aeroplanes with a MCTOM exceeding 8 616 kg and more than 19 passengers.

response

Accepted.

The applicability of the requirement to Performance Class A aeroplanes will be tailored in line with the comment.

comment

275

comment by: *FNAM*Attachment [#3](#)

**The FNAM is asking for the removal of the implementing rule CAT.OP.MPA.303 and all its AMC and GM. Moreover, regarding the IR CAT.OP.MPA.300, the FNAM is asking for the removal of the reference to paragraph CAT.OP.MPA.303 in order to ensure consistency. Besides, we suggest that the AMC1 CAT.OP.MPA.300 remains as it was written before the modifications brought by this NPA.**

**Generally speaking, the FNAM is asking for the removal of all references to paragraph CAT OP.MPA.303 and its AMC and GM that have been added through this NPA.**

**Furthermore, in order to document the impact of such a measure on the various activities of all the stakeholders potentially impacted by this new requirement, the FNAM is asking for a 3 months' extension of the period of consultation of this NPA so that all concerned operators may develop their own arguments.**

**This additional period of consultation would allow:**



- a simplification of the methodology described in the AMC1 so that it can be applicable in the cockpit
- a reevaluation of the Landing Distance Factors (LDF) which seem pulled out of the hat (contrary to what was stipulated in the explanatory note of this NPA, the factors defined in the AMC1 CAT.OP.MPA.303 (a) and (b)(1) and (c)(1) are not explicated in the FAA Advisory Circular (AC) 25-32)

### 1/ Over conservative factors defined in the AMC1

Regarding the AMC1, the FNAM would like some clarification regarding the meaning of “or equivalent” in the sentence “in accordance with AMC 25.1592, or equivalent”. **Indeed, it should be confirmed that airplanes certified before the release of the AMC 25.1592 and airplanes certified before the release of CS 25 (e.g. JAR 25 certification or catch-up of previous national certifications) are deemed to be equivalent.**

Besides, some factors described in the AMC1 are a misfit (cf. table in Annex 1):

- For dry runways, there is no case where there is no demonstrated Landing Distance. Therefore, the FNAM is wondering why for a RWYCC of 6, the LDF is equal to 1.67 whereas the corresponding factor to apply in-flight defined in the IR CAT.OP.MPA.303 is equal to 1.15. There are inconsistencies between the IR CAT.OP.MPA.303 and its AMC1.
- Moreover, on wet runways, the factors described in the AMC1 are outliers and not consistent with the spirit of the AirOps regulation. Indeed, if we apply the data certified in the AFM (1.15.LD<sub>Dry</sub> for most old certified aircrafts) the factor that needs to be applied is equal to  $(1.15)^2$ , which means 1.32, and not 2.6. Equally, if there is no certified data on wet runway condition, the FNAM does not understand the discrepancy between the 2.6 factor described in this AMC1 and the application of CAT.POL.A.235 that requires a wet factor of 1.15 on which CAT.OP.MPA.303 supplement another safety margin of 1.15. This equals to the same  $(1.15)^2$ , which means 1.32, total factor.
- In other cases, some factors seems to be outliers since they are far too complex to implement and lead to inapplicable landing distances.

### 2/ Additional workload for pilots at a critical phase of flight

This measure may appear dangerous for flight safety because it brings an additional workload for pilots at a critical moment: the approach preparation. Indeed, with an unusual representation for pilots, they are required to do 2 complex calculations which are not matching the usual Charts presentation in the AFM and the FCOM, when such Charts exist, which is not the case for most old generation airplanes:

- Ensure that  $1.15.LD_{\text{Demonstrated}} \leq LDA$  or  $LDF.LD_{\text{Demonstrated on dry runway}} \leq LDA$
- Compute the most unfavorable runway condition that may be accepted in order to conduct a safe landing



In practice, this is unrealistic and may cause critical over workload in the cockpit during the approach.

### 3/ Measure only conceived for modern turbojets

If this measure concerns all performance class A aeroplanes, it seems to have only been conceived for modern turbojets such as A320, B737-800, etc. It clearly does not take into account turbopropellers such as Beech1900 nor old ones such as Fokker 50, ATR 42-500 old generation. This measure does not take into account old Business Aviation turbojets such as the Falcon 50.

First, these aircrafts do not have devices allowing the computation of performance landing distance assessment.

Secondly, for most old airplanes, the certified data contained in the AFM do not include landing distances for wet / contaminated runways, requiring the use of the LDFs which have been demonstrated to be over conservative.

As a conclusion, if modern turbojets may not be impacted by this new constraint, no RIA has been made to measure the impact on smaller / older aircrafts, including old turbojets.

### 4/ Current status of the regulation

Until now, the logic has been to ensure first at dispatch that the demonstrated certified landing distance, depending on the runway condition, the altitude, the wind, the temperature, was below 0.6.LDA (Landing Distance Available) for turbojet-powered aeroplanes or 0.7.LDA for turbopropeller-powered aeroplanes with the following particularity for wet runways: in the absence of demonstrated data, the landing distance chosen on a wet runway is the landing distance necessary on a dry runway increased by 15%.

Then during the flight, the commander, already taking into account ICAO recommendations, has to ensure that the landing weight satisfies all the constraints depending on the real conditions such as:

- The demonstrated landing distance is below the LDA
- The go-around limitation during the approach is taken into account
- Etc.

In essence, at dispatch, the landing distance depending on the conditions at the estimated time of arrival has to be below 0.6.LDA or 0.7.LDA. This condition was taken into account in the accessibility of an adequate aerodrome during pre-flight planning.

### 5/ New additional constraints on landing distance through the IR CAT.OP.MPA.303

The IR CAT.OP.MPA.303 adds additional constraints before the approach phase. The commander shall ensure that:

At the estimated time of arrival weather conditions  $1.15.LD_{\text{Demonstrated}} \leq LDA$

When demonstrated landing distances ( $LD_{\text{Demonstrated}}$ ) do exist for the expected conditions, the landing distance to be taken into account is therefore  $1.15.LD_{\text{Demonstrated}}$ .



If this data is not available, the landing distance to be taken into account is  $LDF \cdot LD_{\text{demonstrated}}$  with LDF the landing distance factor defined in the AMC1 CAT.OP.MPA.303 (a) and (b)(1) and (c)(1).

Besides, in addition to the above, the commander shall compute during the approach preparation, the most unfavorable runway condition that may be accepted in order to conduct a safe landing. To that extend, the IR CAT.OP.MPA.303 requires 2 complex calculations during a critical phase of flight, while not requested before in flight.

NB : More, this 1.15 factor appears confusing, as similar to the 1.15 factor required at dispatch in case of wet / contaminated runway when demonstrated landing distances for such conditions are not available.

### 6/ Margin added to already existing margins

The implementing rule CAT.OP.MPA.303 is adding a margin on already existing margins.

Indeed:

- *A minima*, with this new requirement, the commander has to add, in real conditions, a 15% margin on the certified landing distance, whereas the certified landing distances are already taking into account safety margins
- The regulation EU n° 139/2014 (IR-ADR) applying to aerodromes, is already imposing RESA to prevent runway excursions

### 7/ Complex computing methodology

The method to compute landing distances described in the IR.CAT.OP.MPA.303 and in its AMC1 is complex and may appear dangerous.

Indeed:

- The logic to compute the constraint on the runway length necessary at dispatch:  $LD \leq k \cdot LDA$  (with  $k$  a factor) is contrary to the new constraint on the necessary runway length, in real conditions, computing method:  $k' \cdot LD \leq LDA$  (with  $k'$  a factor) which is source of error
- This computing method may appear dangerous because it does not match the operating practices. Indeed, usually, the commander computes the maximum operational landing weight depending on all the constraints, among which the runway length, the landing distance, the go-around limitation during the approach, etc. on an aggregated basis, and he makes sure that the real landing weight is below this computed mass

Thus, this new intermediate calculation, described in the IR CAT.OP.MPA.303 and in its AMC1 is not matching current operational practices and is not a usual representation for pilots.

### 8/ No impact assessment conducted whereas it is necessary

This measure is ludicrous. No impact assessment on this new measure has been conducted regarding:



- The old generation airplanes for which the performance information for landing distance assessment are not available in the AFM
- The runway lengths computed according to the AMC1 CAT.OP.MPA. 303 (a) (b)(1) and (c)(1)
- The number of runway excursions that would have been avoided if this measure, which leads in most of the cases to distances much longer than most of the existing runways, had been implemented

### 9/ Lack of common sense

This measure is contrary to common sense. Indeed, if in-flight the conditions taken into account at dispatch are not satisfied anymore, what should the commander do? Does he have to divert to a smaller and with reduced facilities aerodrome? Besides, current requirements are already compliant with the ICAO recommendations. No ICAO requirement is asking for in-flight additional margins, and above all, with such an absurd methodology.

Furthermore, this measure creates discrepancies between European operators and the other ones without knowing what will happen for TCO holders: it is reasonable to think that TCO holders will unlikely propose alternative means of compliance warranting the same level of safety.

### 10/ Conclusion

For all these reasons, as stated above:

The FNAM is asking for the removal of the implementing rule CAT.OP.MPA.303 and all its AMC and GM. Moreover, regarding the IR CAT.OP.MPA.300, the FNAM is asking for the removal of the reference to paragraph CAT.OP.MPA.303 in order to ensure consistency. Besides, we suggest that the AMC1 CAT.OP.MPA.300 remains as it was written before the modifications brought by this NPA. Generally speaking, the FNAM is asking for the removal of all references to paragraph CAT OP.MPA.303 and its AMC and GM that have been added through this NPA.

response

Noted.

See response to comment 270.

comment

300

comment by: *Widerøe Flyveselskap AS*

New AMC1.CAT.OP.MPA.303 p. 51, and Table 1 p. 52:

These LDF's are not compatible with a steep approach concept. To our knowledge, the underlying simulations were based on approach angles up to 3.5 degrees. For our operation on 830 metre runways, Widerøe uses a steep approach concept with 4.5 degrees and 35 ft screen height, and the LDF's are not appropriate for this type of operation. - The LDF's seem prohibitive. Also, it is noted that LDF 1.67 is used for Turboprop instead of 1.43. Turboprop aircraft generally operate at lower speeds and energy. This means higher traction, and lower inertia when decelerating. The propellers in disc or reverse are very effective and efficient brakes compared with turbojet thrust reversers. We are deeply concerned that aircraft



	<p>manufacturers will not provide performance data that will give acceptable landing mass on contaminated runways.</p>
response	<p>Accepted.</p> <p>The concerns expressed in this comment will be addressed by adding assumptions to derive landing distances in case of steep approaches.</p>
comment	<p>308 <span style="float: right;">comment by: <i>DGAC France</i></span></p> <p>When there is no data available for the in-flight assessment, the use of the factors (LDFs) raises an important issue that needs to be addressed: in most cases, these factors are more constraining than the dispatch ones. Therefore, a runway that was legal at dispatch may become too short according to time of arrival criteria immediately after take-off. As a consequence, the probability to divert is critically increased and the relevance of dispatch checks in those cases may really be questioned.</p> <p>Besides, it is very likely that operators who are concerned by this issue will apply for alternative means of compliance that will be really difficult for a National Authority to assess at an operational level.</p>
response	<p>Accepted.</p> <p>Alternatives to the generic factors will be offered to comply with the new rule so to avoid undue penalization of certain aircraft. More generally, even when non using the generic factors to determine the landing distance at time of landing, it may happen that, in marginal cases, with particularly unfavourable combinations of runway length and runway surface conditions it is already possible at the time of dispatch to foresee that the landing distance determined in flight will be longer than the one determined with dispatch criteria. For such cases appropriate guidance will be developed.</p>
comment	<p>318 <span style="float: right;">comment by: <i>Textron Aviation</i></span></p> <p>3. New AMC1 CAT.OP.MPA.303(a) and (b)(1) and (c)(1) is added as follows: (a) ...or equivalent, and included in the operations manual (OM).</p> <p>Suggest stating that data previously provided to comply with JAR/CS 25.1591 or related ops rules is considered to be equivalent.</p>
response	<p>Accepted.</p> <p>Alternatives will be developed for those cases.</p>
comment	<p>319 <span style="float: right;">comment by: <i>Textron Aviation</i></span></p> <p>Note 2: these LDFs apply only to modern turboprops with efficient disk drag. For older turboprops without adequate disk drag, use the Turbojet, No Reverse LDFs.</p>



	<p>It is not clear how to distinguish a modern turboprop with efficient disk drag, from an older turboprop without adequate disk drag.</p> <p>It is not clear how to determine if a disk drag is efficient or not adequate.</p> <p>These qualifiers leave too much to interpretation. Examples of existing airplanes might be helpful.</p>
response	<p>Noted.</p> <p>The concept of disk drag and its use in landing performance considerations is defined in CS-23. Relevant information for each aircraft type is published in the AFM.</p>

**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT — GM1 CAT.OP.MPA.303**

p. 53-54

comment	<p>13 <span style="float: right;">comment by: <i>Landauer Aviation Consulting Ltd</i></span></p> <p>"ASSESSMENT BASED ON DISPATCH CRITERIA When the runway is dry or wet grooved or with a PFC, the assessment of the landing distance at the time of arrival may be <b>done</b> by confirming that the runway meets the criteria used for dispatch."</p> <p>Suggest that "carried out" or "made" are better than "done".</p>
response	Accepted.
comment	<p>80 <span style="float: right;">comment by: <i>AIRBUS</i></span></p> <p><b>SUBJECT :</b> Consideration of MEL/CDL/in-flight failures</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b> 3.3.3 Part-CAT 4. New GM1 CAT.OP.MPA.303</p> <p><b>2. PROPOSED TEXT / COMMENT:</b> Amend paragraph (h) under GM1 CAT.OP.MPA.303: “(...) planned use of <b>available and operable</b> aeroplane ground deceleration devices.”</p> <p><b>3. RATIONALE / REASON / JUSTIFICATION:</b> The impact of any MEL, CDL or in-flight system failures on aeroplane ground deceleration devices should be considered.</p>
response	Accepted.
comment	<p>81 <span style="float: right;">comment by: <i>AIRBUS</i></span></p> <p><b>SUBJECT :</b> Autobrake usage</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b></p>





response	<p>3.3.3 Part-CAT 4. New GM1 CAT.OP.MPA.303</p> <p><b>2. PROPOSED TEXT / COMMENT:</b> Amend the paragraph AUTOBRAKE USAGE under GM1 CAT.OP.MPA.303: „(...) For operations when the runway is dry or wet grooved or with a porous friction course (PFC), if the manual braking distance provides <b>at least</b> 15 % safety margin, then the braking technique may include a combination of autobrakes and manual braking even if the selected autobrake landing data does not provide a 15 % safety margin.“</p> <p><b>3. RATIONALE / REASON / JUSTIFICATION:</b> Clarification.</p> <p>Accepted.</p>
comment	<p>82 <span style="float: right;">comment by: AIRBUS</span></p> <p><b>SUBJECT:</b> Time of Arrival Assessment based on Dispatch Criteria</p> <p><b>1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:</b> 3.3.3 Part-CAT 4. New GM1 CAT.OP.MPA.303</p> <p><b>2. PROPOSED TEXT / COMMENT:</b> Amend the paragraph ASSESSMENT BASED ON DISPATCH CRITERIA under GM1 CAT.OP.MPA.303: „When the runway is dry or wet grooved or with a PFC, the assessment of the landing distance at the time of arrival may be done by confirming that the <b>assumptions</b> used for dispatch <b>remain applicable at time of arrival.</b> (...)“</p> <p><b>3. RATIONALE / REASON / JUSTIFICATION:</b> Extend the statement to all assumptions on the conditions expected to be encountered on arrival at time of dispatch.</p>
response	<p>Accepted.</p> <p>However it's necessary to check whether this proposal should be at AMC.</p>
comment	<p>90 <span style="float: right;">comment by: Stefan</span></p> <p>criteria used for dispatch, is it intended before the flight?</p> <p>In case of in flight replanning to a different airport than at the dispatch stage (pre-flight), what conditions should be applied?</p>
response	<p>Noted.</p> <p>Dispatch criteria are those established in CAT.POL.A.230 and CAT.POL.A.235.</p>
comment	<p>91 <span style="float: right;">comment by: Stefan</span></p>



	See my previous comments, in this chapter "operational landing distance calculations" are introduced. What is the operational landing distance? It is not defined anywhere. There is no consistency in the terminology used and this creates room for interpretation and generally confusion.
response	Accepted.  A definition of "landing distance at time of arrival" will be introduced and terminology used in the rules will be revised consistently.

comment	<p>118 <span style="float: right;">comment by: CAA Norway</span></p> <p><b>GM1 CAT.OP.MPA.303 In-flight check of the landing distance at the time of arrival — aeroplanes</b> TIMELINESS</p> <p><i>General Comment:</i> For practical purposes, the operator will need to provide flight crews with a quick reference tool in order to avoid using unreliable or unsafe data.</p> <p>TIMELINESS <i>No comment.</i></p> <p>RUNWAY CONDITION CONSIDERATIONS <i>Proposal:</i> Insert new (d) as follows (d) Other elements in the Runway Condition Report, which may cover the following issues:</p> <ul style="list-style-type: none"> <li>- width of runway to which the RWYCCs apply if less than published width;</li> <li>- reduced runway length;</li> <li>- drifting snow on the runway;</li> <li>- loose sand on the runway;</li> <li>- chemical treatment on the runway;</li> <li>- snowbanks on the runway;</li> <li>- snowbanks on taxiway;</li> <li>- snowbanks adjacent to the runway;</li> <li>- taxiway conditions;</li> <li>- apron conditions;</li> <li>- State approved and published use of measured friction coefficient;</li> <li>- plain language remarks.</li> </ul> <p><i>Rationale:</i> This information is included, as applicable, in the Runway Condition Report in order to enhance situational awareness. Consequently, it would be prudent to consider this information at this time in order to obtain a more complete picture of the situation on the ground. (Source PANS AERODROMES)</p> <p>ASSESSMENT BASED ON DISPATCH CRITERIA. <i>Comment/Question/Proposal</i> It is noted the term "grooved" and "PFC" are defined in ICAO Annex 6 Part I, but are not used elsewhere in the Annex.</p>
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response	<p><i>Question: Are these defined in CS25</i></p> <p>It is proposed, as an important task, to relate pavement characteristics to drainage capacity instead of certain specific treatment or manufacturing techniques. This would require current status to be established with respect to macrotexture on runways in order to establish a datum. This task should be performed/monitored by ICAO as it should be supported by overarching performance-based SARPs across relevant Annex' and PANS.</p> <p>Partially accepted.</p> <p>On the general comment, all information in the operations manual has to be provided in a manner that is easy to use and observes human factor principles as required by ORO.MLR.100(k).</p> <p>On the comment on "RUNWAY CONDITION CONSIDERATIONS", relevant information will be added to the GM.</p> <p>On the third comment EASA will monitor any ICAO development on runways having improved friction characteristics.</p>
comment	<p>157 <span style="float: right;">comment by: ESDU, IHS Markit</span></p> <p>Page 53 3.3.3 – Part – CAT 4 – New GM1 CAT.OP.MPA.303 Autobrake Usage – Why is it permissible to select an auto-brake setting that does not guarantee stopping on a surface that has recently become wet, particularly if operating with reduced landing distance factors? Surely it is better to select a high brake setting to ensure a stopping capability and to reduce the deceleration when it becomes clear that the runway length is adequate. This is certainly preferable to increasing braking when running out of runway. Operating rules should not be written to address a lack of variability in autobrake characteristics on specific types.</p>
response	<p>Noted.</p> <p>The intent of the GM is to avoid selection of unduly high autobrake settings that would increase brake temperature and wear which can lead to failures in carbon brakes. Furthermore, unnecessarily high settings are a significant operational constraint for turnaround times that are not necessarily justified by a safety benefit.</p>
comment	<p>158 <span style="float: right;">comment by: ESDU, IHS Markit</span></p> <p>Page 53 3.3.3 – Part – CAT 4 – New GM1 CAT.OP.MPA.303 Assessment Based on Dispatch Criteria – As set out in our comment made about Page 13 – Paragraph 2.4.4 – CAT.POL.A.255, it is likely that the proposed landing distance factors will give very little margin when using 'normal' landing technique on a dry runway. If the runway is wet a longer distance will be required to stop. The NPA does not supply any justification for giving credit for grooved or PFC surfaces in combination with reduced landing distance factors.</p>
response	<p>Not accepted.</p>



The use of reduced required landing distance in accordance with CAT.POL.A.255 is not supposed to be cumulated with any performance credit for grooved or PFC wet runways. When dispatching a flight to a forecast wet runway, an additional check is required against the criteria for landing distance at time of arrival established in CAT.OP.MPA.303.

comment

181

comment by: UK CAA

**Page No:** 53**Paragraph No:** GM1 CAT.OP.MPA.303 Autobrake Usage and Assessment Based on Dispatch Criteria**Comment:** It is not clear why it is permissible to accept an auto-brake standard that does not guarantee stopping on a surface that has become wet since despatch, particularly if one is operating with reduced landing distance factors. The dispatch data may already have taken some credit for a grooved or PFC surface.**Justification:** There does not appear to be any justification provided (e.g. in the NLR Safety Study) for giving credit for grooved or PFC surfaces. The proposals would benefit from the provision of this information.

response

Noted.

The intent of the GM is to avoid selection of unduly high autobrake settings that would increase brake temperature and wear which can lead to failures in carbon brakes. Furthermore, unnecessarily high settings are a significant operational constraint for turnaround times that are not necessarily justified by a safety benefit.

comment

182

comment by: UK CAA

**Page No:** 53**Paragraph No:** GM1 CAT.OP.MPA.303 In-flight check of the landing distance at the time of arrival — aeroplanes TIMELINESS**Comment:** The paragraph concerning assessment based on dispatch criteria state that “When the runway is dry or wet grooved or with a PFC, the assessment of the landing distance at the time of arrival may be done by confirming that the runway meets the criteria used for dispatch. The required landing distance for dry runways determined in accordance with CAT.POL.A.230(a) contains adequate margin to fulfil the intent of the time-of-arrival landing distance calculation on a dry runway, which includes specific allowance for the additional parameters considered in that calculation.” would benefit from further justification.**Justification:** This statement should be substantiated before it is applied in combination with the reduced landing distance factor.

response

Partially accepted.



The use of reduced required landing distance in accordance with CAT.POL.A.255/355 is not supposed to be cumulated with any performance credit for grooved or PFC wet runways. When dispatching a flight to a forecast wet runway, an additional check is required against the criteria for landing distance at time of arrival established in CAT.OP.MPA.303. The GM will be clarified to this extent.

comment	<p>235</p> <p style="text-align: right;">comment by: ERAA</p> <p>P53 GM1 CAT.OP.MPA.303 In-flight check of the landing distance at the time of arrival</p> <p>The NPA is assuming that all flights are sufficiently long in time and distance that there is a cruise, or top of descend segment, allowing time for landing performance assessment.</p> <p>Widerøe's Flyveselskap AS operates 15 city pair combinations with a great circle distance of less than 60NM, and the shortest city pair combination has a typical flight time of only 8 minutes.</p> <p>For such flights the company has established procedures for calculation of destination landing performance before departure so that the sterile cockpit concept, below 10000feet, is not compromised.</p> <p>Widerøe's Flyveselskap AS suggest a revision of the text that allow for performance assessment being conducted in non-critical phases of flight.</p>
response	<p>Noted.</p> <p>See response to comment 301.</p>

comment	<p>243</p> <p style="text-align: right;">comment by: Thomson Airways</p> <p>GM1 CAT.OP.MPA.303 In-flight check of the landing distance at the time of arrival - aeroplanes</p> <p>1. This text could result in the Commander of a succeeding aeroplane on final approach being forced into a difficult quick decision based on a very subjective pilot report of braking action. The pilot making the report could also be very inexperienced at reporting braking actions. The aeroplane types and braking characteristics could also be very different.</p> <p>Thomaon Airways' proposed text: '<i>GM1 CAT.OP.MPA.303 - The assessment is initially performed when landing weather and runway condition reports are obtained, usually around top of descent. The assessment <b>should</b> includes consideration of how much deterioration in runway surface friction characteristics can be tolerated to ensure a safe landing so that a quick decision is made just prior to landing if the preceding aircraft provides a pilot advisory report of braking action (AIREP) of worse than expected braking action.</i>'</p>
response	<p>Not accepted.</p>



The concern expressed in the comment is understood, however, as a matter of fact a pilot report from the preceding aircraft may be obtained just prior to landing and therefore the flight crew should be prepared to deal with it at that moment. The GM is meant to make sure that the flight crew is prepared to this eventuality by having done the relevant considerations beforehand. These elements should be anyway addressed by proper training.

comment 260 comment by: Tom Wike

What is the definition of "efficient disk drag"? Will a list of applicable aircraft types and propeller systems be provided?

response Noted.

The concept of disk drag and its use in landing performance considerations is defined in CS-23. A list cannot be provided as relevant information for each aircraft type is published in the AFM.

comment 276 comment by: FNAM

Attachment [#4](#)

**The FNAM is asking for the removal of the implementing rule CAT.OP.MPA.303 and all its AMC and GM. Moreover, regarding the IR CAT.OP.MPA.300, the FNAM is asking for the removal of the reference to paragraph CAT.OP.MPA.303 in order to ensure consistency. Besides, we suggest that the AMC1 CAT.OP.MPA.300 remains as it was written before the modifications brought by this NPA.**

**Generally speaking, the FNAM is asking for the removal of all references to paragraph CAT OP.MPA.303 and its AMC and GM that have been added through this NPA.**

**Furthermore, in order to document the impact of such a measure on the various activities of all the stakeholders potentially impacted by this new requirement, the FNAM is asking for a 3 months' extension of the period of consultation of this NPA so that all concerned operators may develop their own arguments.**

**This additional period of consultation would allow:**

**- a simplification of the methodology described in the AMC1 so that it can be applicable in the cockpit**

**- a reevaluation of the Landing Distance Factors (LDF) which seem pulled out of the hat (contrary to what was stipulated in the explanatory note of this NPA, the factors defined in the AMC1 CAT.OP.MPA.303 (a) and (b)(1) and (c)(1) are not explicated in the FAA Advisory Circular (AC) 25-32)**

### **1/ Over conservative factors defined in the AMC1**

Regarding the AMC1, the FNAM would like some clarification regarding the meaning of "or equivalent" in the sentence "in accordance with AMC 25.1592, or equivalent". **Indeed, it should be confirmed that airplanes certified before the release of the AMC 25.1592 and airplanes certified before the release of CS 25 (e.g. JAR 25 certification or catch-up of previous national certifications) are deemed to be equivalent.**

Besides, some factors described in the AMC1 are a misfit (cf. table in Annex 1):



- For dry runways, there is no case where there is no demonstrated Landing Distance. Therefore, the FNAM is wondering why for a RWYCC of 6, the LDF is equal to 1.67 whereas the corresponding factor to apply in-flight defined in the IR CAT.OP.MPA.303 is equal to 1.15. There are inconsistencies between the IR CAT.OP.MPA.303 and its AMC1.
- Moreover, on wet runways, the factors described in the AMC1 are outliers and not consistent with the spirit of the AirOps regulation. Indeed, if we apply the data certified in the AFM ( $1.15.LD_{Dry}$  for most old certified aircrafts) the factor that needs to be applied is equal to  $(1.15)^2$ , which means 1.32, and not 2.6. Equally, if there is no certified data on wet runway condition, the FNAM does not understand the discrepancy between the 2.6 factor described in this AMC1 and the application of CAT.POLA.235 that requires a wet factor of 1.15 on which CAT.OP.MPA.303 supplement another safety margin of 1.15. This equals to the same  $(1.15)^2$ , which means 1.32, total factor.
- In other cases, some factors seems to be outliers since they are far too complex to implement and lead to inapplicable landing distances.

## 2/ Additional workload for pilots at a critical phase of flight

This measure may appear dangerous for flight safety because it brings an additional workload for pilots at a critical moment: the approach preparation. Indeed, with an unusual representation for pilots, they are required to do 2 complex calculations which are not matching the usual Charts presentation in the AFM and the FCOM, when such Charts exist, which is not the case for most old generation airplanes:

- Ensure that  $1.15.LD_{Demonstrated} \leq LDA$  or  $LDF.LD_{Demonstrated}$  on dry runway  $\leq LDA$
- Compute the most unfavorable runway condition that may be accepted in order to conduct a safe landing

In practice, this is unrealistic and may cause critical over workload in the cockpit during the approach.

## 3/ Measure only conceived for modern turbojets

If this measure concerns all performance class A aeroplanes, it seems to have only been conceived for modern turbojets such as A320, B737-800, etc. It clearly does not take into account turbopropellers such as Beech1900 nor old ones such as Fokker 50, ATR 42-500 old generation. This measure does not take into account old Business Aviation turbojets such as the Falcon 50.

First, these aircrafts do not have devices allowing the computation of performance landing distance assessment.

Secondly, for most old airplanes, the certified data contained in the AFM do not include landing distances for wet / contaminated runways, requiring the use of the LDFs which have been demonstrated to be over conservative.



As a conclusion, if modern turbojets may not be impacted by this new constraint, no RIA has been made to measure the impact on smaller / older aircrafts, including old turbojets.

#### 4/ Current status of the regulation

Until now, the logic has been to ensure first at dispatch that the demonstrated certified landing distance, depending on the runway condition, the altitude, the wind, the temperature, was below 0.6.LDA (Landing Distance Available) for turbojet-powered aeroplanes or 0.7.LDA for turbopropeller-powered aeroplanes with the following particularity for wet runways: in the absence of demonstrated data, the landing distance chosen on a wet runway is the landing distance necessary on a dry runway increased by 15%.

Then during the flight, the commander, already taking into account ICAO recommendations, has to ensure that the landing weight satisfies all the constraints depending on the real conditions such as:

- The demonstrated landing distance is below the LDA
- The go-around limitation during the approach is taken into account
- Etc.

In essence, at dispatch, the landing distance depending on the conditions at the estimated time of arrival has to be below 0.6.LDA or 0.7.LDA. This condition was taken into account in the accessibility of an adequate aerodrome during pre-flight planning.

#### 5/ New additional constraints on landing distance through the IR CAT.OP.MPA.303

The IR CAT.OP.MPA.303 adds additional constraints before the approach phase. The commander shall ensure that:

At the estimated time of arrival weather conditions  $1.15.LD_{\text{Demonstrated}} \leq LDA$

When demonstrated landing distances ( $LD_{\text{Demonstrated}}$ ) do exist for the expected conditions, the landing distance to be taken into account is therefore  $1.15.LD_{\text{Demonstrated}}$ .

If this data is not available, the landing distance to be taken into account is  $LDF.LD_{\text{Demonstrated}}$  with LDF the landing distance factor defined in the AMC1 CAT.OP.MPA.303 (a) and (b)(1) and (c)(1).

Besides, in addition to the above, the commander shall compute during the approach preparation, the most unfavorable runway condition that may be accepted in order to conduct a safe landing. To that extend, the IR CAT.OP.MPA.303 requires 2 complex calculations during a critical phase of flight, while not requested before in flight.

NB : More, this 1.15 factor appears confusing, as similar to the 1.15 factor required at dispatch in case of wet / contaminated runway when demonstrated landing distances for such conditions are not available.

#### 6/ Margin added to already existing margins

The implementing rule CAT.OP.MPA.303 is adding a margin on already existing margins.

Indeed:





- *A minima*, with this new requirement, the commander has to add, in real conditions, a 15% margin on the certified landing distance, whereas the certified landing distances are already taking into account safety margins
- The regulation EU n° 139/2014 (IR-ADR) applying to aerodromes, is already imposing RESA to prevent runway excursions

### 7/ Complex computing methodology

The method to compute landing distances described in the IR.CAT.OP.MPA.303 and in its AMC1 is complex and may appear dangerous. Indeed:

- The logic to compute the constraint on the runway length necessary at dispatch:  $LD \leq k.LDA$  (with  $k$  a factor) is contrary to the new constraint on the necessary runway length, in real conditions, computing method:  $k'.LD \leq LDA$  (with  $k'$  a factor) which is source of error
- This computing method may appear dangerous because it does not match the operating practices. Indeed, usually, the commander computes the maximum operational landing weight depending on all the constraints, among which the runway length, the landing distance, the go-around limitation during the approach, etc. on an aggregated basis, and he makes sure that the real landing weight is below this computed mass

Thus, this new intermediate calculation, described in the IR CAT.OP.MPA.303 and in its AMC1 is not matching current operational practices and is not a usual representation for pilots.

### 8/ No impact assessment conducted whereas it is necessary

This measure is ludicrous. No impact assessment on this new measure has been conducted regarding:

- The old generation airplanes for which the performance information for landing distance assessment are not available in the AFM
- The runway lengths computed according to the AMC1 CAT.OP.MPA. 303 (a) (b)(1) and (c)(1)
- The number of runway excursions that would have been avoided if this measure, which leads in most of the cases to distances much longer than most of the existing runways, had been implemented

### 9/ Lack of common sense

This measure is contrary to common sense. Indeed, if in-flight the conditions taken into account at dispatch are not satisfied anymore, what should the commander do? Does he have to divert to a smaller and with reduced facilities aerodrome? Besides, current requirements



are already compliant with the ICAO recommendations. No ICAO requirement is asking for in-flight additional margins, and above all, with such an absurd methodology.

Furthermore, this measure creates discrepancies between European operators and the other ones without knowing what will happen for TCO holders: it is reasonable to think that TCO holders will unlikely propose alternative means of compliance warranting the same level of safety.

### 10/ Conclusion

For all these reasons, as stated above:

The FNAM is asking for the removal of the implementing rule CAT.OP.MPA.303 and all its AMC and GM. Moreover, regarding the IR CAT.OP.MPA.300, the FNAM is asking for the removal of the reference to paragraph CAT.OP.MPA.303 in order to ensure consistency. Besides, we suggest that the AMC1 CAT.OP.MPA.300 remains as it was written before the modifications brought by this NPA. Generally speaking, the FNAM is asking for the removal of all references to paragraph CAT OP.MPA.303 and its AMC and GM that have been added through this NPA.

response

Noted.

See response to comment 270.

comment

301

comment by: *Widerøe Flyveselskap AS*

P53 GM1 CAT.OP.MPA.303 In-flight check of the landing distance at the time of arrival

The NPA is assuming that all flights are sufficiently long in time and distance that there is a cruise, or top of descend segment, allowing time for landing performance assessment.

Widerøe's Flyveselskap AS operates 15 city pair combinations with a great circle distance of less than 60NM, and the shortest city pair combination has a typical flight time of only 8 minutes.

For such flights the company has established procedures for calculation of destination landing performance before departure so that the sterile cockpit concept, below 10000feet, is not compromised.

Widerøe's Flyveselskap AS suggest a revision of the text that allow for performance assessment being conducted in non-critical phases of flight.

response

Accepted.

Guidance will be provided for short flights.

comment

324

comment by: *General Aviation Manufacturers Association / Hennig*

The agency provides guidance material for autobrake usage for time of arrival landing distance assessment.



	<p>GAMA requests that EASA justify the use of a lower safety margin for combination of manual and autobraking when sufficient safety margins are available with manual braking. The AMC1 indicates it is not intended to force a higher level of autobraking to an unreasonable level when a 15 percent safety margin exists using manual braking.</p>
response	<p>Noted.</p> <p>Limiting autobrake selection to the availability of a 15% margin may push operators to use unnecessarily higher autobrake settings than required, or even manual braking, especially when only a few low deceleration settings are available on the aircraft. This increases the brake temperatures systematically, leading to risk of brake oxidation and failure. It was thus accepted that in some cases the flight crew may need to override the autobrakes with strong manual braking, but most of the time they will be able to manage the stop smoothly and with a limited number of brake applications.</p>

**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT — AMC1 CAT.OP.MPA.311**

p. 54-56

comment	<p>14 <span style="float: right;">comment by: Landauer Aviation Consulting Ltd</span></p> <p>GENERAL</p> <p>".....Pilot reports of runway braking action should be <b>done</b> in the format of....."</p> <p>Suggest that "done" is superfluous and the sentence reads better as ".....Pilot reports of runway braking action should be <del>done</del> in the format of....."</p>
response	<p>Accepted.</p>
comment	<p>119 <span style="float: right;">comment by: CAA Norway</span></p> <p><b>AMC1 CAT.OP.MPA.311 Runway braking action reporting</b></p> <p>GENERAL</p> <p><i>Comment/Proposal 1:</i> Suggest this to be split into one AMC covering the format of the report itself and the training requirements, and a GM explaining the system, background and aerodrome handling of the RWCC</p> <p><i>Rationale:</i> The AMC in its present for contains both the ways and means of complying with reporting requirements in CAT.OP.MPA.311 and explanation/training material related to the format, ways and means used by the aerodrome staff to assess and report runway conditions</p> <p><i>Comment 2:</i> Table I is not consistent with the ICAO concept/definitions</p> <p><i>Proposal:</i></p>



Replace the existing Table 1 and footnotes with the following:

**Table 1 – Association between runway surface condition and RWYCC based on reported contaminant type and depth and OAT\*.**

Runway Surface Condition	Surface Condition Descriptor	Depth	Notes	RWYCC	
Dry	Dry	n/a	Includes wet or contaminated below 25% coverage in each runway third	6	
Wet	Wet		Damp (any visible moisture)	5	
		3mm or less		5	
Slippery Wet	Wet		'Slippery wet' runway	3	
Contaminated	Compacted Snow	Any	At or below OAT* -15°C	4	
			Above OAT* -15°C	3	
	Dry Snow	3mm or less	More than 3mm Up to 100mm	Including when any depth occurs on top of Compacted Snow	5
					3
					0 <sup>2)</sup>
					5
	Frost <sup>1)</sup>	Any		5	
	Ice	Any	In cold and dry conditions	1	
	Slush	3mm or less	More than 3mm Up to 15mm		5
					2
					5
					2
	Standing Water	3mm or less	More than 3mm Up to 15mm		5
					2
0 <sup>2)</sup>					
Wet Ice	Any		0 <sup>2)</sup>		
Wet Snow	3mm or less	More than 3mm	Including when any depth occurs on top of Compacted Snow	5	
				3	



		Up to 30mm		
		Any	On top of Ice	0 <sup>2)</sup>

\*Runway surface temperature should preferably be used where available.

Notes:

- 1) *Under certain conditions frost can cause the surface to become very slippery.*
- 2) *Operations in conditions where Less Than Poor Braking Action prevails are prohibited.*

*Rationale:*

For consistency purposes and in order to be compliant with the defined concept of the ICAO global reporting format following changes is proposed:

- Insert a footnote where OAT occurs (three locations) - *\*Runway surface temperature should preferably be used where available.* (ICAO compliant)
- Move text *Damp (any visible dampness)* to fourth column and insert Wet (ICAO compliant – Damp is not a descriptor – Wet is a descriptor)
- Insert *Dry* in second column (Consistency – Dry is a descriptor)
- Insert *Wet* in second column and *'slippery wet' runway* in fourth column. (Wet is a descriptor)

*Comment 3,*  
Table 2, Note 1.

*Proposal:*

Proposed to delete existing note and replace it with two notes. The second note is strictly speaking not needed as the table it refers do not relate to measured friction coefficients.

Note 1: Flight crew **should not** upgrade a reported RWYCC. Such a decision **cannot** be taken by a flight crew on approach. Such an upgrade **can only be performed by aerodrome personnel** as it must be supported by all other observations to them.

Note 2: Reported friction coefficients poorly correlate with actual aircraft braking capability/landing performance. If a friction coefficient is reported it **can only** be used if it is part of a method **approved and harmonized** by the State of the Operator and the State of the Aerodrome.

*Rationale:*

The main aim of this note is that the pilot should not do any upgrade. For this reason it is proposed to replace

~~Note 1: the aerodrome personnel may downgrade or upgrade the reported RWYCC based on the friction coefficient (Mu) measured by a friction measuring device meeting standards set or agreed by the state of aerodrome. Such a decision should not be taken by a flight crew on the approach as it must be supported by all other observations. Measured friction values poorly correlate with actual aircraft braking capability/landing performance.~~

with the following new Note:

Note 1: Flight crew **should not** upgrade a reported RWYCC. Such a decision **cannot** be taken by a flight crew on approach. Such an upgrade **can only be performed by aerodrome personnel** as it must be supported by all other observations to them.

The Table which the note refers to, do not have any reference to friction measuring devices. For that reason there should not be necessary to mention 'measured friction values'. Such values are not reported unless it is part of a State specific approved method. However, if it is



	<p>of importance to have an alert with respect to ‘measured friction values’ a Note 2 could be considered:</p> <p>Note 2: Reported friction coefficients poorly correlate with actual aircraft braking capability/landing performance. If a friction coefficient is reported it <b>can only</b> be used if it is part of a method <b>approved and harmonized</b> by the State of the Operator and the State of the Aerodrome.</p>
response	<p>Partially accepted.</p> <p>On comment 1: Guidance on reporting will be separated from guidance on flight crew training.</p> <p>On comment 2: The table will be crosschecked against ICAO source documents.</p> <p>On comment 3: The note will be clarified.</p>
comment	<p>236 <span style="float: right;">comment by: ERAA</span></p> <p>New AMC1.CAT.OP.MPA.311 p. 54 and Table 1 p. 55 and Table 2 p. 56: We strongly support the option for aerodrome personnel to upgrade the reported RwyCC based on mu measurements approved by the state. Comparing with note on this AMC on page 11, it is unclear whether mu measurements can be used to upgrade. In our view, and based on our experience, it should be possible for aerodrome personnel to upgrade, and also to RwyCC 4. This RwyCC is - at it stands in the NPA - unduly restrictive, and should be redefined to cover higher temperatures also; dew point spread may form part of the definition.</p>
response	<p>Noted.</p> <p>The possibility to upgrade a RWYCC will be contemplated by the concept of operations on “specially prepared winter runways”, which will be introduced by the rulemaking task RMT.0704 and will be referenced appropriately in the Regulation for air operations.</p>
comment	<p>237 <span style="float: right;">comment by: ERAA</span></p> <p>P54 AMC1 CAT.OP.MPA.311 Runway braking action reporting</p> <p>Widerøe's Flyveselskap AS support the statement in Note1: “the aerodrome personnel may downgrade or upgrade the reported RWYCC based on the friction coefficient (Mu) measured by a friction measuring device meeting standards set or agreed by the state of aerodrome.”</p> <p>Provided use of approved winter surface treatment procedures, monitored by approved friction measuring device, and assessed by trained personnel according to established and approved procedures a reporter should be allowed to upgrade the RCAM RWYCC to the following proposed highest RWYCC:</p> <ul style="list-style-type: none"> <li>· Wet runway – RWYCC4</li> <li>· Dry snow – RWYCC 4</li> <li>· Wet snow - RWYCC 4</li> <li>· Compacted snow temp warmer than – 14C - RWYCC 4</li> </ul>



	<ul style="list-style-type: none"> <li>· More than 3mm water - RWYCC 4</li> <li>· More than 3mm slush - RWYCC 4</li> <li>· Ice - RWYCC 2</li> <li>· Ice – RWYCC 3 if sanded with loose sand</li> <li>· Ice - RWYCC 4 if runway is prepared with fixed sand</li> <li>· Wet ice - RWYCC 1</li> <li>· Water on top of compacted snow - RWYCC 2</li> <li>· Dry or wet snow over ice - RWYCC 4</li> </ul>
response	<p>Noted.</p> <p>See response to comment 302.</p>
comment	<p>238 <span style="float: right;">comment by: ERAA</span></p> <p>Question to EASA:</p> <p>The NPA does not state how measurements of contaminants at 3mm or less can be measured.</p> <p>According to the Norwegian AIP AD 1.2 Snow Plan the intervals for reporting of depth are as follows:</p> <ul style="list-style-type: none"> <li>· Dry snow – 8mm</li> <li>· Wet snow – 6mm</li> <li>· Slush – 3mm</li> </ul> <p>Hence, whenever there is dry snow less than 8mm it will be reported as 8mm, for wet snow the reported depth will be 6mm.</p> <p>This implies that for wet or dry snow the runway will always be reported as contaminated according to the RCAM regardless of actual depth.</p> <p>Will EASA provide IR, AMC and GM for aerodrome operators describing methods and procedures safeguarding reliable measurements of depth for all type of contaminants?</p>
response	<p>Noted.</p> <p>See response to comment 302.</p>
comment	<p>266 <span style="float: right;">comment by: AIR FRANCE</span></p> <p>The AMC could be written in a more operational way.</p> <p>The requirement of CAT.OP.MPA.311 asks the pilot to report when braking actions is not as good as reported. So the knowledge of the braking action reported should be the first concern of this AMC but it is going there in an indirect way. The braking action will not be stated in the SNOWTAMS and the Runway State group in the METAR will not be issued. PANS-ATM amendment according to SL30 is requesting ATC to provide on frequency the RWYCC.</p>



Therefore the flight crew will have the information of the RWYCC and possibly not an explicit Braking Action statement. As it is now, in the AMC there is no clear and upfront correlation between the reported RWYCC with the Braking Action.

The AMC should start with a clear statement of the correlation between RWYCC and Braking action, which will be what the pilot will be using as a reference to decide if the one encountered is worse.

A suggested text for the beginning of the AMC could be:

“The braking action is correlated to the RWYCC as per following table:

RWYCC	Braking Action	Description
6	N/A	
5	GOOD	Braking deceleration is normal for the wheel braking effort applied AND directional control is normal.
4	GOOD TO MEDIUM	Braking deceleration OR directional control is between good and medium.
3	MEDIUM	Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced.
2	MEDIUM TO POOR	Braking deceleration OR directional control is between medium and poor.
1	POOR	Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced.
0	LESS THAN POOR	Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain.

Whenever the braking action encountered is less than the reported, an AIREP should be transmitted to the ATC, containing as applicable:

Good to medium braking action as “BRAKING ACTION GOOD TO MEDIUM”

Medium braking action as “BRAKING ACTION MEDIUM”

Medium to poor braking action as “BRAKING ACTION MEDIUM TO POOR”

Poor braking action as “BRAKING ACTION POOR” “

Less than poor braking action as “BRAKING ACTION LESS THAN POOR””

response

Accepted.

The intent of the comment is agreed. The proposed text will be crosschecked against ICAO terminology for adoption.

comment

290

comment by: IATA

AMC1 CAT.OP.MPA.311 Runway braking action reporting GENERAL

IATA Comments:

The requirement of CAT.OP.MPA.311 asks the pilot to report when braking actions is not as good as reported. So the knowledge of the braking action reported should be the first concern





of this AMC but it is going there in an indirect way. The braking action will not be stated in the SNOWTAMS and the Runway State group in the METAR will not be issued. PANS-ATM amendment according to SL30 is requesting ATC to provide on frequency the RWYCC. Therefore the flight crew will have the information of the RWYCC and possibly not an explicit Braking Action statement. As it is now, in the AMC there is no clear and upfront correlation between the reported RWYCC with the Braking Action.

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2	MEDIUM TO POOR	Braking deceleration OR directional control is between medium and poor.
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Good to medium braking action as “BRAKING ACTION GOOD TO MEDIUM”

Medium braking action as “BRAKING ACTION MEDIUM”

Medium to poor braking action as “BRAKING ACTION MEDIUM TO POOR”

Poor braking action as “BRAKING ACTION POOR” “

Less than poor braking action as “BRAKING ACTION LESS THAN POOR””



response

Noted.

See response to comment 266.

comment

291

comment by: IATA

AMC1 CAT.OP.MPA.311 Runway braking action reporting GENERAL

IATA Comments: See comment on the RCR in the definitions section.

The RCR should be described, maybe in a GM.

Also the references to the ICAO documents (9981 and 4444) should be developed and the contents inserted in the EASA AMCs or GM.

response

Accepted.

See response to comment 282.

comment

302

comment by: Wideroe Flyveselskap AS

Attachments [#5](#) [#6](#)

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P54 AMC1 CAT.OP.MPA.311 Runway braking action reporting

Widerøe's Flyveselskap AS support the statement in Note1: "the aerodrome personnel may downgrade or upgrade the reported RWYCC based on the friction coefficient (Mu) measured by a friction measuring device meeting standards set or agreed by the state of aerodrome."

Provided use of approved winter surface treatment procedures, monitored by approved friction measuring device, and assessed by trained personnel according to established and approved procedures a reporter should be allowed to upgrade the RCAM RWYCC to the following proposed highest RWYCC:

- Wet runway – RWYCC4
- Dry snow – RWYCC 4
- Wet snow - RWYCC 4
- Compacted snow temp warmer than – 14C - RWYCC 4
- More than 3mm water - RWYCC 4
- More than 3mm slush - RWYCC 4
- Ice - RWYCC 2
- Ice – RWYCC 3 if sanded with loose sand
- Ice - RWYCC 4 if runway is prepared with fixed sand
- Wet ice - RWYCC 1
- Water on top of compacted snow - RWYCC 2
- Dry or wet snow over ice - RWYCC 4



Question to EASA:

The NPA does not state how measurements of contaminants at 3mm or less can be measured.

According to the Norwegian AIP AD 1.2 Snow Plan the intervals for reporting of depth are as follows:

- Dry snow – 8mm
- Wet snow – 6mm
- Slush – 3mm

Hence, whenever there is dry snow less than 8mm it will be reported as 8mm, for wet snow the reported depth will be 6mm.

This implies that for wet or dry snow the runway will always be reported as contaminated according to the RCAM regardless of actual depth.

Will EASA provide IR, AMC and GM for aerodrome operators describing methods and procedures safeguarding reliable measurements of depth for all type of contaminants?

Question to EASA:

The NPA excerpt of the RCAM states that contamination on top of ice shall be reported as RWYCC 0.

According to the Norwegian AIP AD 1.2 Snow Plan the following combinations of contaminants are allowed:

- Wet/ice
- Wet/compacted snow
- Wet/frozen ruts and ridges
- Wet/ice/frozen ruts and ridges
- Frost/ice
- Frost/compacted snow
- Frost/frozen ruts and ridges
- Frost/ice/frozen ruts and ridges
- Frost/compacted snow/frozen ruts and ridges
- Dry snow/ice
- Dry snow/compacted snow
- Dry snow/frozen ruts and ridges
- Dry snow/ice/frozen ruts and ridges
- Dry snow/compacted snow/frozen ruts and ridges
- Wet snow/ice
- Wet snow/compacted snow
- Wet snow/frozen ruts and ridges
- Wet snow/ice/frozen ruts and ridges



- Wet snow/compacted snow/frozen ruts and ridges
- Slush/ice
- Slush/compacted snow
- Slush/frozen ruts and ridges
- Slush/ice/frozen ruts and ridges
- Slush/compacted snow/frozen ruts and ridges
- Ice/compacted snow
- Ice/frozen ruts and ridges
- Ice/compacted snow/frozen ruts and ridges
- Compacted snow/frozen ruts and ridges

Will EASA provide IR, AMC and GM for aerodrome operators describing methods and procedures safeguarding reliable assessment of various types of contaminants?

Is it only the contaminant on top that will be reported?

What if part or the runway is bare and dry, some part contaminated by dry ice and finally some part of the runway contaminated with ice underneath dry snow? Will it be reported by RCAM as RWYCC 0? Widerøe's Flyveselskap AS is suggesting provisions for upgrading as stated above.

The Table 2 - Association between AIREP and RWYCC was briefly commented upon in point 7.3.4 Specially Prepared Winter Runway Surface. Widerøe's Flyveselskap AS would like to emphasize that RWYCC issued according to RCAM without justified upgrade may introduce a significant mismatch between the pilots anticipated deceleration and actual observed deceleration.

Whenever a runway is specially prepared it should be upgraded based on approved procedures to minimize the discrepancy between the reported RWYCC and the deceleration felt by the flight crew.

A scientific study called "The IRIS runway model - A decision support model for assessing runway conditions" produced by Alex Klein-Paste, Associate professor at NTNU, dept of Civil and Transport Engineering, is enclosed.

The report studied 27219 SNOWTAM reports to identify the performance of the TALPA matrix versus actual assessments performed by reporters at Norwegian aerodromes and the proposed scientific model for runway assessment called IRIS.

The report identified the following interesting data:

- TALPA assessed the braking action for 55% of runways as less than medium
- Reporters reported nearly 90% of runways with braking action as medium or better
- The IRIS model assessed the braking action for 85% of runways as medium or better

However, when upgrading the TALPA RWYCC according to ICAO methodology the TALPA RWYCC was more aligned with the figures as when using IRIS methodology.

Furthermore, when evaluating the data by collection of PIREPS the report concluded that the RWYCC assigned by reporters is more in line with the PIREPS than both the TALPA and IRIS assigned RWYCC.



The conclusion is that the IRIS model outperforms both the TALPA and ICAO model, including upgrade, but that the model need further improvement.

Widerøe's Flyveselskap AS has performed more than 700000 landings with the DASH-8 on short field aerodromes, 800-1199m, and has never experienced runway overruns due to erroneous or incorrect runway condition assessment and reporting. The crew reports an average of 3000 occurrence reports every year and there are no reports related to mismatch between reported runway conditions and braking action and actual observed braking action.

In fact, the anti-skid is hardly ever activated, and in these few instances the reported friction values are reported as poor or medium-poor and the flight crew is clearly aware that the runway surface is slippery.

Widerøe's Flyveselskap AS suggest that EASA provides IR, AMC and GM for scientific models for preparation of winter surface runways, assessment and reporting that ensure correlation between reported RWYCC and actual observed and experienced braking action. Alternatively, the IR, AMC and GM must allow continuation of the already established and well performing regime that is in force today.

response Partially accepted.

The concerns expressed in the comment and the possibility to upgrade RWYCC will be dealt with in the aerodrome rules, where the rulemaking task RMT.0704 is introducing the concept of operations on “specially prepared winter runways”, which will be referenced appropriately in the Regulation for air operations.

**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT — AMC1 CAT.POL.A.200**

p. 56-57

comment 239

comment by: ERAA

Question to EASA:

The NPA excerpt of the RCAM states that contamination on top of ice shall be reported as RWYCC 0.

According to the Norwegian AIP AD 1.2 Snow Plan the following combinations of contaminants are allowed:

- Wet/ice
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- Wet/ice/frozen ruts and ridges
- Frost/ice
- Frost/compacted snow
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- Frost/ice/frozen ruts and ridges
- Frost/compacted snow/frozen ruts and ridges
- Dry snow/ice
- Dry snow/compacted snow
- Dry snow/frozen ruts and ridges
- Dry snow/ice/frozen ruts and ridges
- Dry snow/compacted snow/frozen ruts and ridges
- Wet snow/ice
- Wet snow/compacted snow
- Wet snow/frozen ruts and ridges
- Wet snow/ice/frozen ruts and ridges
- Wet snow/compacted snow/frozen ruts and ridges
- Slush/ice
- Slush/compacted snow
- Slush/frozen ruts and ridges
- Slush/ice/frozen ruts and ridges
- Slush/compacted snow/frozen ruts and ridges
- Ice/compacted snow
- Ice/frozen ruts and ridges
- Ice/compacted snow/frozen ruts and ridges
- Compacted snow/frozen ruts and ridges

Will EASA provide IR, AMC and GM for aerodrome operators describing methods and procedures safeguarding reliable assessment of various types of contaminants?

Is it only the contaminant on top that will be reported?

What if part or the runway is bare and dry, some part contaminated by dry ice and finally some part of the runway contaminated with ice underneath dry snow? Will it be reported by RCAM as RWYCC 0? Widerøe's Flyveselskap AS is suggesting provisions for upgrading as stated above.

The Table 2 - Association between AIREP and RWYCC was briefly commented upon in point 7.3.4 Specially Prepared Winter Runway Surface. Widerøe's Flyveselskap AS would like to emphasize that RWYCC issued according to RCAM without justified upgrade may introduce a significant mismatch between the pilots anticipated deceleration and actual observed deceleration.

Whenever a runway is specially prepared it should be upgraded based on approved procedures to minimize the discrepancy between the reported RWYCC and the deceleration felt by the flight crew.

A scientific study called "The IRIS runway model - A decision support model for assessing runway conditions" produced by Alex Klein-Paste, Associate professor at NTNU, dept of Civil and Transport Engineering, is enclosed.



The report studied 27219 SNOWTAM reports to identify the performance of the TALPA matrix versus actual assessments performed by reporters at Norwegian aerodromes and the proposed scientific model for runway assessment called IRIS.

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However, when upgrading the TALPA RWYCC according to ICAO methodology the TALPA RWYCC was more aligned with the figures as when using IRIS methodology.

Furthermore, when evaluating the data by collection of PIREPS the report concluded that the RWYCC assigned by reporters is more in line with the PIREPS than both the TALPA and IRIS assigned RWYCC.

The conclusion is that the IRIS model outperforms both the TALPA and ICAO model, including upgrade, but that the model need further improvement.

Widerøe's Flyveselskap AS has performed more than 700000 landings with the DASH-8 on short field aerodromes, 800-1199m, and has never experienced runway overruns due to erroneous or incorrect runway condition assessment and reporting. The crew reports an average of 3000 occurrence reports every year and there are no reports related to mismatch between reported runway conditions and braking action and actual observed braking action.

In fact, the anti-skid is hardly ever activated, and in these few instances the reported friction values are reported as poor or medium-poor and the flight crew is clearly aware that the runway surface is slippery.

Widerøe's Flyveselskap AS suggest that EASA provides IR, AMC and GM for scientific models for preparation of winter surface runways, assessment and reporting that ensure correlation between reported RWYCC and actual observed and experienced braking action. Alternatively, the IR, AMC and GM must allow continuation of the already established and well performing regime that is in force today.

response

Noted.

See response to comment 302.

comment

320

comment by: *Textron Aviation*

6. AMC1 CAT.POL.A.200 is amended as follows:  
WET AND CONTAMINATED RUNWAY DATA

The TALPA ARC recognized that landing performance data has been provided for existing airplanes in various forms, such as based on braking action or contaminant type and depth, and significant effort was spent on the RCAM to allow operators to use this existing data to make a time-of-arrival assessment. The TALPA ARC recommendations, as well as AC25-32,



state that data already provided for existing airplanes in order to comply with JAR/CS 25.1591 or related Ops rules should be acceptable for this assessment. CAT.POL.A.200 also recognizes that the AFM may not contain approved performance data for takeoff or landing on wet or contaminated runways, and makes allowance for the use of other data.

Recommend that the advisory material be clarified such that existing data supplied to comply with 25.1591 or related Ops rules is acceptable for already-certified aircraft.

response Accepted.

Alternatives will be developed for those cases.

**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT — GM1 CAT.POL.A.200**

p. 57

comment 240

comment by: ERAA

GM1.CAT.POL.A.200 p. 57:

Does the reference for 'Applicable standards for the landing distance assessment at the time of arrival' refer to the requirement for 15% margin?

response Noted.

See response to comment 304.

comment 280

comment by: FNAM

**The FNAM is asking for the removal of the implementing rule CAT.OP.MPA.303 and all its AMC and GM. Moreover, regarding the IR CAT.OP.MPA.300, the FNAM is asking for the removal of the reference to paragraph CAT.OP.MPA.303 in order to ensure consistency. Besides, we suggest that the AMC1 CAT.OP.MPA.300 remains as it was written before the modifications brought by this NPA.**

**Generally speaking, the FNAM is asking for the removal of all references to paragraph CAT.OP.MPA.303 and its AMC and GM that have been added through this NPA.**

**Furthermore, in order to document the impact of such a measure on the various activities of all the stakeholders potentially impacted by this new requirement, the FNAM is asking for a 3 months' extension of the period of consultation of this NPA so that all concerned operators may develop their own arguments.**

**This additional period of consultation would allow:**

- **A simplification of the methodology described in the AMC1 so that it can be applicable in the cockpit**
- **A reevaluation of the Landing Distance Factors (LDF) which seem pulled out of the hat (contrary to what was stipulated in the explanatory note of this NPA, the**





factors defined in the AMC1 CAT.OP.MPA.303 (a) and (b)(1) and (c)(1) are not explicated in the FAA Advisory Circular (AC) 25-32)

response Noted.

See response to comment 268.

comment 304

comment by: Wideroe Flyveselskap AS

GM1.CAT.POL.A.200 p. 57:

Question to EASA:

Does the reference for 'Applicable standards for the landing distance assessment at the time of arrival' refer to the requirement for 15% margin?

response

Noted.

Applicable standards in this context means the certification standards, in accordance with performance data have to be provided, for the purpose of determining the landing distance at time of arrival.

**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT — AMC1 CAT.POL.A.230**

p. 57

comment 83

comment by: AIRBUS

**SUBJECT :** Considerations for Landing Performance at Dispatch

**1. PARAGRAPH / SECTION THE COMMENT IS RELATED TO:**

3.3.3 Part-CAT

8. AMC1 CAT.POL.A.230

**2. PROPOSED TEXT / COMMENT:**

Insert paragraph under AMC1 CAT.POL.A.230:

The following considerations may impact landing distance calculations:

(a)

The following considerations may impact landing distance calculations:

(a) aerodrome elevation;

(b) wind;

(c) aeroplane mass and configuration;

(d) approach ground speed at threshold;

(e) eventual adjustments to the landing distance, such as autoland; and

(f) available and operable aeroplane ground deceleration devices. (...)"

**3. RATIONALE / REASON / JUSTIFICATION:**



	In line with the required assumptions for computation of the time of arrival performance, the assumptions for computation at dispatch should be explicit. It is proposed to continue to assume that slope and temperature effects are covered by dispatch factors, but it is also proposed to specify the use of the expected operational approach speed at threshold and consideration for any MEL or CDL items affecting deceleration devices.
response	Partially accepted.  The text of CAT.POL.A.230 will be completely re-drafted for consistency with other requirements and will take into account some of the suggestions.

**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT — GM1 CAT.POL.A.255(b)(1)**

p. 58

comment	33 comment by: <i>Joachim J. Janezic (Institute for Austrian and International Aviation law)</i>  The GM is related to the wrong passage of the rule. It should be named "GM1 CAT.POL.A.255(a)".
response	Accepted.  The reference to the paragraph number will be corrected.
comment	35 comment by: <i>Joachim J. Janezic (Institute for Austrian and International Aviation law)</i>  1. The exclusion of "holiday charter" is not justifiable. If an aircraft is chartered for business purpose the operator is (if having an approval) allowed to perform a reduced required distance landing, but if the same operator with the same crew and the same aircraft are performing a flight for another purpose (namely for recreational purpose of the passengers = holiday charter), the operator should no longer be allowed to perform such a flight. This "purpose of the flight"-oriented distinction is not objective.  2. I guess it was intended to exempt holiday-charters carried out <u>by airline operators</u> ; but in this case it should be clarified that CAT.POL.A.255 still is applicable to holiday-charter flights carried out by business-jet operators.
response	Not accepted.  The definition of holiday charter re-called in this GM is already existing and used in Reg. (EU) 965/2012 and it does not apply to business jet operators.
comment	244 ❖ comment by: <i>General Aviation Manufacturers Association / Hennig</i>  The General Aviation Manufacturers Association (GAMA) appreciates the agency proposing establishing a mechanism for operators to establish a landing mass on dry runways of 80 percent of the landing distance available (LDA) for business jets operations that comply with CAT.POL.A.255.



The 80 percent allowance builds in experience gained in commercial on-demand business aviation operations in the United States in accordance with 14 CFR 135.4, Eligible-On-Demand (EOD) operations which have shown not only to increase operational flexibility but enhance safety.

GAMA, however, recommends that the agency update the maximum certified take-off mass (MCTOM) proposed in the NPA (i.e., 45 360 kg) to align with new business jet products on the market. As the agency knows, there are several new business jet with an MCTOM above 45 360 kg including the Bombardier Global 7000 and 8000 as well as the Gulfstream G650ER (see, rulemaking underway in RMT.0695 for additional background). GAMA recommends that EASA increase the allowable MCTOM to accommodate these new business jets for 80 percent LDA operations.

The RMT.0695 draft NPA proposes to increase the MCTOM for non-ETOPS business jet operations to 60 000 kg as the new threshold. GAMA recommends that the agency align the MCTOM in the runway performance regulation to establish a common set of thresholds between the two rules to ensure all business jet operators in Europe can benefit from the increased safety and operational flexibility that the 80 percent LDA runway achieves in concert with the requirements in CAT.POL.A.255.

response

Partially accepted.

The aircraft eligibility for these operations will be changed in order to be established on the basis of certification criteria

comment

351

comment by: US FAA

***New GM1 CAT.POL.A.255(a) is added as follows:***

***New GM1 CAT.POL.A.355(a) is added as follows:***

**Comment summary**

Current part 25 certification methods offers options as to air distance certification methods. One method is based on a calculation simulating a 3.5 degree glidepath and 8 ft/s touchdown rate. Both are more aggressive than the normal airport approach guidance and the operational landing training.

Applying the reduced landing distance factor of 1.25 [ 1/0.8] to an AFM distance based on a very aggressive air distance definition reduces the effective margin from an operational landing air distance as defined in FAA AC 121.195 (d)-1a, OPERATIONAL LANDING DISTANCES FOR WET RUNWAYS; TRANSPORT CATEGORY AIRPLANES from the current 35 to 45% based on a 1.67 factor to 8 to 15% based on a 1.25 factor.

Whereas applying the 1.25 factor to an AFM distance based on normal airport approach guidance and operational landing training maintains the intended 25% margin based on stopping within 80% of the available landing distances.

Currently at least one business jet manufacturer offers AFMs based on both methods of air distance definition.



A second manufacturer of business jets has the parametric method of air distance definition based on 3.5 degree glide path and 8 ft/s touchdown rate applied to older models but a more operationally representative method applied to recently certified models.

As to OAT and slope accountability, AFM's which do not account for OAT or slope further reduces the margins when operating to airfields with temperatures greater than ISA and downhill slope.

**Suggested resolution**

Insert the following:

New GM1 CAT.POL.A.255(a) is added as follows:

GM1 CAT.POL.A.255(a) Approval of reduced required landing distance operations:  
CAT operations eligible for reduced required landing distance operations must have an AFM statement indicating the airplane is eligible to use the reduced required landing distances.

New GM1 CAT.POL.A.255(a) is added as follows:

GM1 CAT.POL.A.255(a) Approval of reduced required landing distance operations:  
CAT operations eligible for reduced required landing distance operations must have an AFM statement indicating the airplane is eligible to use the reduced required landing distances.

New GM1 CAT.POL.A.255(a) is added as follows:

GM1 CAT.POL.A.255(a) Approval of reduced required landing distance operations:  
CAT operations eligible for reduced required landing distance operations must have an AFM statement indicating the airplane is eligible to use the reduced required landing distances.

response

Accepted.

An aircraft eligibility criterion based on an AFM statement will be added.

**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT — GM2 CAT.POL.A.255(b)(1) )**

p. 58

comment

37 comment by: *Joachim J. Janezic (Institute for Austrian and International Aviation law)*

In the related GM2 CAT.POL.A.255(b)(1) it should be clarified that the risk assessment has to be performed if there is a deviation from CAT.POL.A.255(b)(2). In such a case the risk assessment might be restricted to the deviations from conditions of (b)(2).

response

Not accepted.

The proposal is already clear in this respect as it gives an “or” condition between the two paragraphs (b)(1) and (b)(2).



**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT — AMC1 CAT.POL.A.255(b)(1)**

p. 58

comment	92	comment by: <i>Stefan</i>
	<p>In a risk assessment I would suggest to add also a clear reference to realistic duty hours and fatigue of the pilots. As well known, fatigue is frequently cited as a contributing factor to accidents and serious incidents, not including this in a risk assessment would be partial.</p> <p>When defining realistic, please refer also to the accident investigation of the F-GLFA Falcon where crew was on board of the aircraft 3,5hrs before the flight even if the EU FTL were considering only 30 minutes (statement of MAK).</p>	
response	<p>Not accepted.</p> <p>Fatigue may be of course a contributing factor to any incident or accident, however it is out of the scope of the present rulemaking task and is appropriately dealt with in ORO.FTL.</p>	
comment	96	comment by: <i>Stefan</i>
	<p>It would be advisable also to specifically state in the AMC the need to reassess and in case review the stable approach criteria in the risk assessment since, as per NLR study, this is a critical factor.</p>	
response	<p>Noted.</p> <p>Stabilised approach criteria are defined in CAT.OP.MPA.115(a) which will be referenced to for better clarity. However approaches outside these criteria and other special approaches, as mentioned in the rule, are excluded.</p>	
comment	112	comment by: <i>Stefan</i>
	<p>Another comment on the risk assessment. There is no mention that the risk assessment shall include quantitative analysis that demonstrates for example the compliance of the operator to the stabilized approach criteria and touchdown point, how the stabilized approach have been defined and risk assessed, etc.</p> <p>The mainstream in the industry at the moment is to provide a nice bow-tie and the risk assessment is completed. What are the numbers behind, before getting the approval the operator should demonstrate and prove based on data that the barriers/mitigations identified in the risk assessment are effective and that the safety performance achieved is according to the safety target set. Would be acceptable for the approval if for example the rate of the unstable approaches is not known (0 reports received) or 20% of all flights performed are unstable (based on the FDM) but it is nicely described in the OM that pilots has to be stable and land on the touchdown point and the relevant training has been performed?</p> <p>Would strongly suggest that this risk assessment should at least include a retrospective analysis of company data with reference to the safety performance about unstable approach and long landings.</p>	



response Accepted.

The analysis of operator's performance and occurrence reports related to unstable approaches and long landings will be recommended in the risk assessment.

comment 120 comment by: CAA Norway

**AMC1 CAT.POL.A.255(b)(1) Approval of reduced required landing distance operations**  
RISK ASSESSMENT

*Comment:*

Reference should be made to AMC1 CAT.POL.A.255(b)(2)(viii) Approval of reduced required landing distance operations, ADDITIONAL AERODROME CONDITIONS

*Rationale:*

While the AMC in item f) lists "aerodrome characteristics", this encompass a multitude of elements, some of which are covered in AMC1 CAT.POL.A.255(b)(2)(viii). The proposal is intended to ensure that the content of AMC1 CAT.POL.A.255(b)(2)(viii) is considered during the risk assessment process.

response Not accepted.

The requirement to consider aerodrome characteristics is already clearly stated at the level of implementing rule.

comment 183 comment by: UK CAA

**Page No:** 58

**Paragraph No:** AMC1 CAT.POL.A.255(b)(1) Approval of reduced required landing distance operations RISK ASSESSMENT

**Comment:** The risk assessment must include quantitative evidence of the current level of safety.

**Justification:** To demonstrate that an equivalent level of safety is achievable, it is necessary to establish first the current level of safety. This requires quantitative data which only an FDM programme can deliver.

**Proposed Text:** Add new sub-para (k), as follows:

RISK ASSESSMENT

The risk assessment required by CAT.POL.A.255(b)(1) should include at least the following elements:

- (a) flight crew qualification in terms of training, checking and recency;
- (b) flight crew composition;
- (c) runway surface conditions;
- (d) dispatch criteria;
- (e) weather conditions and limitations;
- (f) aerodrome characteristics;



	<p>(g) aeroplane characteristics and limitations;  (h) aeroplane equipment and systems affecting landing performance;  (i) aeroplane performance data; and  (j) operating procedures and operating minima.</p> <p><b><i>(k) quantitative Safety Performance Indicators relevant for the risk of runway excursions extracted from the operator's FDM programme.</i></b></p>
response	<p>Partially accepted.</p> <p>The aircraft categories for which FDM is mandatory are established in ORO.AOC.130 on the basis of more general criteria which are not meant to be revised by this proposal. When FDM is available, it should be used also for the purposes of CAT.POL.A.255. Moreover it is recommended to be used on a voluntary basis also when it is not required by ORO.AOC.130. However, alternative means for data collection will be considered and the analysis of operator's performance in relation to unstable approaches and long landings will be included in the risk assessment.</p>
comment	<p>196 <span style="float: right;">comment by: Dassault-Aviation</span></p> <p>Dassault-Aviation</p> <p>Page 58 AMC1 CAT.POL.A.255(b)(1)(e)</p> <p>Comment:  The risk assessment should emphasize the crosswind condition for the weather conditions and limitations part.</p>
response	<p>Accepted.</p> <p>Crosswind will be mentioned in the AMC.</p>
comment	<p>359 <span style="float: right;">comment by: US FAA</span></p> <p><b>Comment summary</b></p> <p>List of conditions (a) through (j) does not include approach guidance unless you consider it covered by (f) aerodrome characteristics</p> <p><b>Suggested resolution</b></p> <p>Add an item to the list:  ( ) Available approach guidance</p>
response	<p>Partially accepted.</p>



Approach guidance is included under aerodrome characteristics. This will be further explained at GM level.

**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT —**  
**AMC1 CAT.POL.A.255(b)(2)(iii)**

p. 59-62

comment 41 comment by: *Joachim J. Janezic (Institute for Austrian and International Aviation law)*  
AMC1 CAT.POL.A.255(b)(2)(iii):

It should be clarified that NCC-operations have to be considered as a "similar type of operation".

response Not accepted.

There is no landing factor required for NCC operations therefore the entire concept of reduced required landing distance approval is not applicable to such operations

comment 45 comment by: *Joachim J. Janezic (Institute for Austrian and International Aviation law)*

**Recurrent Training and Checking:**

Please clarify that a recency in "real operation" substitutes the landings required during annual training.

response Accepted.

comment 197 comment by: *Dassault-Aviation*

Dassault-Aviation

Page 60 FSTD TRAINING AND/OR FLIGHT TRAINING

Comment:

There are no requirements for the trainers, we recommend that:

\* FSTD training should be performed with a SFI

\* Flight training should be performed with a TRI or a Line Training Captain previously trained by a TRI

response Not accepted.

The qualification of the trainers is covered in ORO.FC.145.

comment 198 comment by: *Dassault-Aviation*

Dassault-Aviation





	<p>Page 60 FSTD TRAINING AND/OR FLIGHT TRAINING</p> <p>Comment: Crosswind could be challenging for reduced required landing distance operations, we recommend including approaches and landings with crosswind exercises in the pilot training</p>
response	<p>Accepted.</p> <p>Crosswind will be included in the training.</p>

comment	<p>356 <span style="float: right;">comment by: US FAA</span></p> <p><b>Comment summary</b></p> <p>(c) Flight crew with previous <u>increased reduced</u> required landing distance operations experience of a similar type of operation with another EU operator, may undertake the following:</p> <p>The word “increased” appears to have been retained in error.</p> <p><b>Suggested resolution</b></p> <p>Remove the word “increased” from this item.</p>
response	<p>Accepted.</p>

**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT — GM1 CAT.POL.A.255(b)(2)(iii)** p. 62

comment	<p>42 <span style="float: right;">comment by: Joachim J. Janezic (Institute for Austrian and International Aviation law)</span></p> <p>1. What does it mean if a FDM is "recommended" in a <u>GM</u>? If it is required, put it in the rule. If EASA wants to have operators established such a FDM: put it in an AMC. But do not put in a GM and do not word it as a recommendation, because this is not something to better understand the rule itself (which is the purpose of a GM).</p> <p>2. FDM is not something to monitor the flight crew but the operation of the aircraft. In this sense this GM goes beyond the rule itself (which is – from a legal point of view – not permitted).</p>
response	<p>Accepted.</p> <p>FDM will be recommended at AMC level.</p>



comment	<p>93 <span style="float: right;">comment by: <i>Stefan</i></span></p> <p>I am not sure what method alternative to FDM (see further note) can be used. Voluntary reporting would probably be inadequate to define a trend. FDM should be binding and not just recommended if an equivalent level of safety and monitoring is required: also NLR in the study provided considers FDM as a "solid mitigating factor".</p>
response	<p>Not accepted.</p> <p>The aircraft categories for which FDM is mandatory are established in ORO.AOC.130 on the basis of more general criteria which are not meant to be revised by this proposal. When FDM is available, it should be used also for the purposes of CAT.POL.A.255. Moreover it is recommended to be used on a voluntary basis also when it is not required by ORO.AOC.130. However, alternative means for data collection will be considered.</p>
comment	<p>94 <span style="float: right;">comment by: <i>Stefan</i></span></p> <p>Even FDM with older generation aircraft could be quite ineffective. Consider an aircraft with 64/128 wps, position is barely recorded.</p> <p>Why not instead proposing the use of a form similar to the CATIII landing forms, where touchdown position and deviation from the vertical/horizontal profile at the minima are recorded by crew? This in addition to the Mandatory Occurrence Reporting on the unstable approaches supported mandatorily by FDM could be a more effective solution to be included in the regulation as GM.</p>
response	<p>Partially accepted.</p> <p>Alternative means for data collection will be considered.</p>
comment	<p>184 <span style="float: right;">comment by: <i>UK CAA</i></span></p> <p><b>Page No:</b> 62</p> <p><b>Paragraph No:</b> GM1 CAT. POL.A.255(b)(2)(iii) Approval of reduced required landing distance operations MONITORING</p> <p><b>Comment:</b> The FDM programme should be a mandatory method to monitor risk, rather than optional.</p> <p><b>Justification:</b> FDM is the only effective tool to provide early warning about degradation of safety margins for runway excursions.</p> <p><b>Proposed Text:</b> Amend to read:</p> <p>(a) Reduced required landing distance operations should be continuously monitored by the operator to detect any undesirable trends before they become hazardous. (b) <del>A flight data monitoring (FDM) programme, as required by ORO.AOC.130, is an acceptable method to monitor operational risks related to reduced required landing distance operations.</del></p>



~~(c) Although ORO.AOC.130 requires FDM only for aeroplanes with a maximum certified take-off mass (MCTOM) of more than 27 000 kg, FDM is recommended for all operators conducting reduced required landing distance operations.~~

**(b) The operator’s flight data monitoring (FDM) programme should be explicitly configured to monitor SPIs relevant to the risk of runway excursions. Detailed guidance material is available on the EOFDM working group deliverables.**

response Partially accepted.

The aircraft categories for which FDM is mandatory are established in ORO.AOC.130 on the basis of more general criteria which are not meant to be revised by this proposal. When FDM is available, it should be used also for the purposes of CAT.POL.A.255. Moreover it is recommended to be used on a voluntary basis also when it is not required by ORO.AOC.130. However, the text proposed will be adopted for the cases where FDM is used.

comment 221

comment by: DGAC France

DGAC has some concerns about the relevance of the training and recency conditions that are not related to specific and identified airports. DGAC believes that the efficiency of such a training and recency considerations depends upon the airports characteristics.  
At least, DGAC recommends to specify in this AMC that the FSTD training and/or flight training shall be performed at an aerodrome that is representative of such operations and considered as the most critical by the operator.  
In addition, DGAC considers that operating an aerodrome under reduced required landing distance operations represents an additional complexity that must be taken into account in the categorisation of the aerodrome by the operator.  
In any case, DGAC believes that, for each aerodrome operated under the reduced required landing distance operations and categorised as C, the FSTD training and/or flight training and recent experience requirements developed in this AMC shall be met.

response Accepted.

Training at aerodromes representative of the intended operations will be specified in the AMC.

**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT — GM1 CAT.POL.A.255(b)(2)(iv)**

p. 62

comment 19

comment by: DGAC France

It could be necessary to include the ALAP definition and meaning at either AMC level or within the definition section.

response Partially accepted.

Guidance on the ALAP will be expanded.



comment	<p>43 comment by: <i>Joachim J. Janezic (Institute for Austrian and International Aviation law)</i></p> <p>1. Please determine in an AMC what you exactly expect from the ALAP. 2. Please clarify that this ALAP is just a part of the dispatch (and not of the flight watch) process. It "sounds" as if there was a special programme to be established by the operator whereas in fact there are simply 4 items to be checked during dispatch.</p>
response	<p>Accepted.</p> <p>Clarifications on the intent and the content of the ALAP will be provided.</p>
comment	<p>185 <span style="float: right;">comment by: <i>UK CAA</i></span></p> <p><b>Page No:</b> 62</p> <p><b>Paragraph No:</b> GM1 CAT.POL.A.255(b)(2)(iv) Approval of reduced required landing distance operations AERODROME LANDING ANALYSIS PROGRAMME (ALAP)</p> <p><b>Comment:</b> It's not clear how and when the aerodrome critical data referred to here is meant to be used. If this data is meant to be used for dispatch purposes, this should be stated more clearly.</p> <p><b>Justification:</b> Ambiguous text.</p>
response	<p>Partially accepted.</p> <p>This guidance is intended for dispatch purposes. The GM will be anyway expanded to include additional information and clarifications.</p>
comment	<p>357 <span style="float: right;">comment by: <i>US FAA</i></span></p> <p><b>GM1 CAT.POL.A.255(b)(2)(iv) GM1 CAT.POL.A.355(b)(6)</b></p> <p><b>Comment summary</b></p> <p>In item (b) as called out, one item for consideration is runway surface condition. This would typically be taken as wet or contaminated (contaminated not allowed) however there should be conscious recognition that a wet runway surface may be significantly degraded because of poor airport maintenance.</p> <p><b>Suggested resolution</b></p> <p>(b) runway surface condition including notice of a slippery when wet surface characteristic.</p>
response	<p>Accepted.</p> <p>Runway maintenance status will be mentioned.</p>



**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT —  
AMC1 CAT.POL.A.255(b)(2)(v)**

p. 63

comment	159	comment by: ESDU, IHS Markit
	<p>Page 63            AMC1 CAT.POL.A.255 (b)(2)(v) – Approval of Reduced Required Landing Distance Operations – Equipment affecting landing performance            There does not appear to be any requirement to ensure that a critical piece of equipment or system is available in flight prior to landing. With such a significant reduction in margins, the reduced capability is much more significant.</p>	
response	<p>Noted.</p> <p>The mitigating measure related to the functionality of aircraft equipment is introduced by not allowing the dispatch of the aircraft with such equipment inoperative. Should such equipment or system become inoperative in-flight the situation will have to be dealt with according to the abnormal/emergency procedures established in the operations manual and to the commander's judgement. Additional guidance will be provided in this respect.</p>	

**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT —  
AMC1 CAT.POL.A.255(b)(2)(vi)**

p. 63

comment	352	comment by: US FAA
	<p><b><i>New AMC1 CAT.POL.A.255(a) is added as follows:</i></b></p> <p><b><i>New AMC1 CAT.POL.A.355(a) is added as follows:</i></b></p> <p><b>Comment summary</b></p> <p>Current part 25 certification methods offers options as to air distance certification methods. One method is based on a calculation simulating a 3.5 degree glidepath and 8 ft/s touchdown rate. Both are more aggressive than the normal airport approach guidance and the operational landing training.</p> <p>Applying the reduced landing distance factor of 1.25 [ 1/0.8] to an AFM distance based on a very aggressive air distance definition reduces the effective margin from an operational landing air distance as defined in FAA AC 121.195 (d)-1a, OPERATIONAL LANDING DISTANCES FOR WET RUNWAYS; TRANSPORT CATEGORY AIRPLANES from the current 35 to 45% based on a 1.67 factor to 8 to 15% based on a 1.25 factor.</p> <p>Whereas applying the 1.25 factor to an AFM distance based on normal airport approach guidance and operational landing training maintains the intended 25% margin based on stopping within 80% of the available landing distances.</p> <p>Currently at least one business jet manufacturer offers AFMs based on both methods of air distance definition.</p> <p>A second manufacturer of business jets has the parametric method of air distance definition based on 3.5 degree glide path and 8 ft/s touchdown rate applied to older models but a more operationally representative method applied to recently certified models.</p>	



As to OAT and slope accountability, AFM's which do not account for OAT or slope further reduces the margins when operating to airfields with temperatures greater than ISA and downhill slope.

#### Suggested resolution

Insert the following:

New AMC1 CAT.POL.A.255(a) is added as follows:

AMC1 CAT.POL.A.255 (a) Approval of reduced required landing distance operations is predicated on the AFM dry runway landing distance being based on operationally reasonable parameters and AFM data for slope and OAT as well as the other normal parameters. The AFM should have a positive statement saying this airplane's AFM performance qualifies for Reduced Landing Distance operation.

New AMC1 CAT.POL.A.355(a) is added as follows:

AMC1 CAT.POL.355(a) Approval of reduced required landing distance operations is predicated on the AFM dry runway landing distance being based on operationally reasonable parameters and AFM data for slope and OAT as well as the other normal parameters. The AFM should have a positive statement saying this airplane's AFM performance qualifies for Reduced Landing Distance operation.

response

Partially accepted.

An aircraft eligibility criterion based on an AFM statement will be introduced in CAT.POL.A.255.

### 3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT — AMC1 CAT.POL.A.255(b)(2)(viii)

p. 63

comment

46 comment by: *Joachim J. Janezic (Institute for Austrian and International Aviation law)*

1. Please specify what an "approved source" exactly is. Is this for example the aerodrome operator? The competent authority for oversight? Or is it any provider of Aeronautical Information?
2. Again please see our comments on steep approaches above.

response

Partially accepted.

1. The nature of the source for aerodrome information will be clarified.
2. Steep approach operations, are not intended to be combined with reduced required landing distance operations.



comment	<p>97 <span style="float: right;">comment by: <i>Stefan</i></span></p> <p>Point c) is nice but quite unachievable when operations are performed outside known and documented airports? Russia and Africa just to mention a couple of area where such info are frequently not available (sometimes not even adequate charts are available). In this case Google Earth is the only source, would be this considered acceptable?? Hopefully not..</p> <p>It should be clarified by Regulation that, if any of these info are not available from a CERTIFIED provider (if any, please do not considering the OACI Type A charts because these do not provide enough details and by the way they are not always available on the web), the operations should not be performed. If no certified provider is available providing such info simply remove this requirement because not achievable.</p>
response	<p>Accepted.</p> <p>The nature of the source for aerodrome information will be clarified.</p>
comment	<p>147 <span style="float: right;">comment by: <i>CAA Norway</i></span></p> <p><b>AMC1 CAT.POLA.255(b)(2)(viii) Approval of reduced required landing distance operations</b> ADDITIONAL AERODROME CONDITIONS</p> <p><i>Comment 1.</i> Consider developing a GM covering aerodrome issues of relevance to this concept.</p> <p><i>Rationale:</i> There are more aerodrome elements which should be considered than those covered by this AMC. A GM related to this would be in line with the AMC/GM combination that is proposed for “Crosswind limitations in the Operations Manual, ref GM 1, ORO.MLR.100 in this NPA.</p> <p><i>Comment 2:</i> Item (c), should specially mention the length of the Runway End Safety Area (RESA)</p> <p><i>Rationale:</i> On a number of airports, the RESA is shorter than optimum. This because the requirements, CS-ADR-DSN C.215 reads: (a) <i>Length of RESA</i> <i>A runway end safety area should extend from the end of a runway strip to a distance of at least 90 m and, as far as practicable, extend to a distance of:</i> (1) 240 m where the code number is 3 or 4 and (2) 120 m where the code number is 1 or 2 and the runway is an instrument one;</p> <p>The term «as far as practicable» means that shorter RESAs than 240/120 m may be seen as being compliant. However, this will necessarily mean a reduced safety buffer. Since the probability of a landing overrun intuitively seems to be increased with the application of this concept (allowing an 80 % instead of 60% rule, the combination of this rule and short RESA should be carefully considered. Ref Comment 1, this is an issue which could better handled in the proposed GM.</p>
response	<p>Partially accepted.</p> <p>The consideration of the RESA length will be added to paragraph (c).</p>



**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT —  
GM1 CAT.POL.A.355(b)(7)(i)**

p. 66

comment	160	comment by: ESDU, IHS Markit
	<p>Page 66 GM1 CAT.POL.A.355 (b)(7)(i) – Approval of Reduced Required Landing Distance Operations – Equipment affecting landing performance There does not appear to be any requirement to ensure that a critical piece of equipment or system is available in flight prior to landing. With such a significant reduction in margins, the reduced capability is much more significant.</p>	
response	<p>Noted.  See response to comment 159.</p>	

**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT —  
GM1 CAT.POL.A.355(b)(7)(ii)**

p. 67

comment	161	comment by: ESDU, IHS Markit
	<p>Page 67 - GM1 CAT.POL.A.355(b)(7)(ii) Approval of reduced required landing distance operations CORRECT USE OF DECELERATION DEVICES “Flight crew should use full reverse when landing irrespectively of any....”  It should be “irrespective” not “irrespectively”</p>	
response	<p>Accepted.</p>	

**3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT —  
AMC1 CAT.POL.A.355(b)(10)**

p. 67

comment	152	comment by: CAA Norway
	<p><b>AMC1 CAT.POL.A.355(b)(10) Approval of reduced required landing distance operations ADDITIONAL AERODROME CONDITIONS</b></p> <p><i>Comment 1.</i> Consider developing a GM covering aerodrome issues of relevance to this concept.</p> <p><i>Rationale:</i> There are more aerodrome elements which should be considered than those covered by this AMC. A GM related to this would be in line with the AMC/GM combination that is proposed for “Crosswind limitations in the Operations Manual, ref GM 1, ORO.MLR.100 in this NPA.</p> <p><i>Comment 2:</i></p>	





Item (c), should specially mention the length of the Runway End Safety Area (RESA)

*Rationale:*

On a number of airports, the RESA is shorter than optimum. This because the requirements, CS-ADR-DSN C.215 reads:

*(a) Length of RESA*

*A runway end safety area should extend from the end of a runway strip to a distance of at least 90 m and, as far as practicable, extend to a distance of:*

*(1) 240 m where the code number is 3 or 4 and*

*(2) 120 m where the code number is 1 or 2 and the runway is an instrument one;*

*The term «as far as practicable» means that shorter RESAs than 240/120 m may be seen as being compliant. However, this will necessarily mean a reduced safety buffer.*

*Since the probability of a landing overrun intuitively seems to be increased with the application of this concept (allowing an 80 % instead of 60% rule, the combination of this rule and short RESA should be carefully considered.*

Ref Comment 1, this is an issue which could better handled in the proposed GM.

response

Partially accepted.

The consideration of the RESA length will be added to paragraph (c).

**4. RIA**

p. 68-93

comment

25

comment by: *Gabriel Arroyo*

· According to the NPA explanatory Notes the RG considered the possibility to require an approval of the operator’s crosswind limits by the CA but was discarded “as the definition of operational crosswind limits is either based on manufacturer’s approved data in the AFM or manufacturer’s advisory data provided in other documents. Thus, an additional approval by the CA is not considered necessary. It was then decided to provide only guidance to operators on how to use the information available from manufacturers to establish crosswind limits in the OM and to relate such limits to the runway surface conditions”.

This guidance material asks the operator to self-evaluate its operational experience and to asses the impact of environment factors for establishing cross wind limitations. We wonder if all the operators will be mature enough as to produce a fair judgment about their possibilities. We think that a matter of such impact should be submitted to the approval of CA.

response

Not accepted.

The intent of the GM is to explain which elements to consider in establishing crosswind limits in the OM. The CAs could be in the same situation of the operators when dealing with such issues, as the best knowledge is with the OEMs. This is the reason why, after discussions with OEMs and CAAs, EASA did not consider appropriate to require an approval for such crosswind limitations in the OM.

comment

30

comment by: *safe-runway.GmbH*



**Reduced required landing distance operations for performance class A aeroplanes**

SAFETY IMPACT

Safety impact should be altered to +3

Motivation

When an aircraft operator wants the 80% landing factor possibility, a considerable number of additional requirements are to be adhered to. These additional measures will ONLY in during the 80% landings factor operations; result in a neutral safety impact.

Especially the provisions (GM1.CAT.POL.A.255) such as ALAP, crew monitoring via FDM and crew training will not only be beneficial for 80% operations, but will also improve the overall performance during all routine day-to-day operations. Better trained, checked and monitored crews will reduce the likely hood of runway excursions and enhance the overall level of safety during operations the CAT.POL.A 230 (1) and (2) also during routine operations. Therefore should the safety impact of option 1 of reduced required landing distance operations for performance class A airplanes (page 93) be altered to a +3.

(not +5 since it is expected that not all operators will apply for the 80% landing factors

IMPACT ON BETTER REGULATION AND HARMONISATION

Impact on better regulations and harmonisation +5 (provided the FAA will be prepared to harmonise with the more modern EASA regulation)

Motivation

NPA 2016-11 comes 16 years after the FAA 80% landing factors agreement. In these 16 years the viewpoints on runway safety and runway excursions have evolved and matured. The same applies to crew training, operators SMS, FDM and technological innovations reducing the risk (likelihood AND severity) of runway overruns. These updated insights are incorporated in NPA 2016-11. Thus it is indeed better regulation. Improved harmonization is also achieved, although the FAA is lagging behind in these modern developments. If the FAA would indicate an intend to harmonize with the modern EASA NPA 2016-11, than the impact on better regulations and harmonization should be altered to +5.

response

Not accepted.

Comment on safety value:

The final score for directly affected operators is considered neutral, also as a result of the model which shows that, until the threshold of the 80 % factor, mitigating measures allow achieving an equivalent level of safety. However the Opinion will include monitoring of the effectiveness of the new rules. On this basis an overall positive impact may be demonstrated in the future.

Comment on harmonisation:

The score already shows a quite positive impact. The value of +5 would not reflect the results of the analysis.

comment 110

comment by: *Stefan*

The mitigating factor proposed by NLR in their comprehensive study are very pertinent. I can definitely concur on the effectiveness of such measures if fully applied by front-line



personnel. Unfortunately, the study of the Human Factors, CRM and generally the change of culture and of mind-set required to the personnel is something that is not immediate, as well known to any industry. Requirements listed by regulation will be satisfied, pilots trained and from one day to the other, approach with reduced factor will be allowed associated to 15% factor for the in-flight assessment to runways previously not operated by flight crews. Pilots do not want to fly unstable approach but this does happen frequently and go around are not always performed for very valid reasons from the HF and CRM point of view, unfortunately some of these end up with a runway excursion sometimes with fatalities: go around are not performed even if these consequence are well known. Pilots that are used to float to make a soft landing for their boss since years (and that like any other passengers are saying “good pilot, he/she did a very smooth landing”, or exactly the opposite when the landing is firm..), even if super trained and with a high level of experience, will end up sometimes to revert to their habits to perform the soft landing like they did on the previous day on a 3 Km runway. It is quite a big change, as also stated by NLR, an improvement of the performance is required and this will not be immediate unfortunately (page 19 of the study).

I am sure that long discussion have been already done and the decision to limit to a certain category of aircraft is clearly associated to reduce the possible consequences (read number of fatalities) but I am, at the moment, a little bit sceptical about the outcome of this new policy (someone would say that I am resisting to the change). Then, it is a little bit sad that in this case, instead of pushing the EU policy worldwide (including to US), we decrease the requirements and EU adopts FAA standard.

response

Noted.

Harmonisation with the FAA regulatory system is pursued in general and is beneficial for industry and regulators at all levels. The particular case of reduced required landing distance carries the additional benefit or reducing a competitive disadvantage for European operators.

comment

162

comment by: ESDU, IHS Markit

Page 73, Figure 1.

The way the data is plotted is unnecessarily confusing!!!

Why are the results for aircraft in the range 27,001 to 272,000kg plotted to the left of those for aircraft in the range 5,701 to 27,000kg?

Also, why is the data presented at above and below 272,000 kg when the threshold to be justified in the proposed rule is 45,360 kg?

response

Accepted.

The third column should indeed be considered between the current first and second ones.

Furthermore, this part of the RIA is related to the implementation of the ICAO standards for runway condition assessment/reporting and for the in-flight assessment of the landing distance at time of arrival, which applies to all aircraft, hence the data analysed cover a large spectrum of mass.

comment

163

comment by: ESDU, IHS Markit

Page 76, 4.1.1. Reduced Required Landing Distance.....



	<p>In this section it is admitted that this change is proposed for commercial reasons, not to produce a safety benefit. It is also stated that the change of landing distance factor alone would reduce safety margins, but that this reduction is negated by the applied mitigations. But the fact that the use of the proposed factors and mitigations is not permitted for larger, heavier aeroplanes is an admission that the level of safety is not maintained. This should be made clear.</p>
response	<p>Partially accepted.</p> <p>The mass threshold will be replaced by an AFM eligibility statement.</p>
comment	<p>164 <span style="float: right;">comment by: ESDU, IHS Markit</span></p> <p>Page 85 onwards  RIA – risk analysis and mitigating measures  Reduced required landing distances for certain CAT operations.</p> <p>We consider that the mitigation measures proposed to compensate for the reduced factors are weak and will not achieve what is claimed.  The discussion of potential problems is not comprehensive.  The discussion for Class A aircraft makes no reference to the accuracy of the approach speed (<math>V_{ref}</math>) and does not associate “long landings” with approaching too fast.</p> <p>To expand on this it is worth discussing the issues with respect to Performance Class B aircraft as this RIA appears to be more comprehensive for this class of aeroplane.</p> <p>Consider the first threat - touchdown outside the required zone or at the wrong speed.</p> <p>The first declared prevention control states that a stable approach is achieved using propeller controls which may assist in slowing down, but this is not a valid technique for maintaining a stable approach. (It is certainly not available for turbofan powered aeroplanes).</p> <p>The second prevention control is to ensure accurate flare and touchdown by monitoring of the touchdown area. The implication of this phrase is that there is external monitoring of the touchdown point, but this only helps with respect to post incident analysis. The subsequent text makes reference to the use of external references such as a taxiway or specific paint marks on the runway but major runways have touchdown zones marked on them anyway so this is not an additional control. It also raises the question of how one sees the external references in the dark! There does not appear to be a declared prevention control that presents any enhanced flight path guidance and there is no proper discussion of speed control, which is potentially critical when it comes to floating and the resulting extended flare. Associated with this is the use of automatic speed control and that automated systems tend to require additional speed margins (e.g. <math>V_{REF} + 5kts</math>) even for aircraft with sophisticated autopilots and auto-throttles. Less sophisticated machines have less capable automatic systems that must be disengaged at the final stages due to their ‘minimum heights for use’. In addition, turbofans do not give rapid energy changes so speed control may suffer.</p> <p>The third control proposed is instructions for ‘go around / balked landing’, but there is no related text to explain how any safety benefit is to be achieved by this means.</p>



The risk assessment does not address the increased risks associated with control loss in the go-around, which is particularly relevant if the approach is being flown at the minimum approach speed.

The fourth prevention control proposed is to restrict the operations to VMC. This may help with landing accuracy, but it should be noted that VMC does not mean a crystal clear day so the claimed advantages may not be clear cut. Also, as noted above, monitoring of the touchdown area will be impaired at night, so should this restriction in fact be to 'Day VMC only'? It has to be questioned whether operators will respect this restriction. If the destination is forecast to be VMC at dispatch, but visibility reduces whilst the flight is in progress, will the crew of an aeroplane that is equipped to land in IMC divert to another aerodrome?

So to summarise, three of the most important factors, speed control, flight path guidance and potential loss of control in a go-around from a low airspeed are not addressed.

The mitigations associated with the threat of incorrect or invalid calculations of Landing Distance Required are also considered to be weak.

What is meant by the first prevention control - "no tailwinds forecasted"? In most cases the forecast wind only determines the direction of landing. It takes no account of variations in wind direction during the approach. In particular, some airfields exhibit tailwinds down the approach, but a headwind close to the ground. The resulting wind change does not assist with respect to a stable approach.

The second prevention control is also confusing. Does it mean that one can never land on a contaminated surface in case there is an erroneous landing distance calculation? It should be noted that CAT.POL.A.255 (b)(2)(iv)(c) states that 'no expected contaminated runway conditions exist at the expected time of arrival' which is not the blanket prohibition claimed in the table on page 87.

The next threat is 'unanticipated' failure of a stopping device.

The control measures include enhanced maintenance programmes and restrictions on MEL items, but the airworthiness requirements only require reliability for such devices of the order of 1 failure per thousand hours. It is inherent in the design requirements that there is no protection against a failure in flight or unexpected failure to deploy on landing, regardless of the maintenance schedule. The current reliability already assumes system checks before each flight. It is unclear if this is what is being referred to here, or if there is a proposal for a more comprehensive procedure. For example, thrust reverser checks are already carried out on departure to comply with the existing reliability requirements, so are there to be additional checks to enhance reliability? If not, then this is not a mitigation measure. No statistical analysis is presented that deals with the probability of an overrun and there is no explanation of what is meant by operational checks of braking devices. It should be recognised that within aircraft certification it is a system design objective to ensure that thrust reversers cannot deploy in flight (this is made mandatory by rules that resulted from the Lauda Air accident); consequently there will be many system failure modes that may prevent intentional deployment during landing.

The final threat listed is the incorrect deployment or non-deployment of stopping devices. The first prevention control is to make immediate and maximum use of braking devices mandatory. This may increase the exposure to loss of control should deployment occur too early or if asymmetric deployment occurs. It has been demonstrated that



	<p>asymmetric propeller reverse combined with maximum braking can result in loss of directional control. If follows that the second prevention control is only valid if it can be, and is, applied symmetrically.</p> <p>The additional control measures for all threats are crew training, checking, qualifications, experience and recency. The same crew complement is proposed as was previously required for turbojet powered aircraft. Additional training on simulators is unlikely to enhance the crew skills significantly as business jet simulators rarely have limiting runways modelled (the European certified airfields for many of these simulation devices include Heathrow, Gatwick and Amsterdam) and contaminated runway modelling is generally not consistent with the TALPA ARC matrix. Crew qualification does not rebalance the risk as experience and recency is mandatory for any current operations.</p> <p>We conclude that this risk assessment does not appear to be a valid safety reasoning for reducing the landing distance factors and that the declared controls do not appear to be effective in many real cases.</p>
response	<p>Partially accepted.</p> <p>As regards the achievement of stable approaches by using propeller controls, it is considered that at the lowest flight idle, propellers generate a significant drag that allows a better control of the final approach speed than turbfans on jet aircraft. Nevertheless, this consideration is not really part of the mitigating measures developed in CAT.POL.A.355.</p> <p>As regards the control of the touchdown zone, this is not an external monitoring but a systematic check carried out by the flight crew during the approach and landing to ensure that touchdown is performed within the designated area. Indeed, the operator should clearly identify the end of the touchdown area beyond which a go-around must be performed by the flight crew. Therefore, if an efficient control of the touchdown area is implemented, it may be considered that there is no more inaccuracy in the air distance before the touchdown.</p> <p>As regards the restriction to operations in VMC, it will be changed to “day VMC” as suggested by the comment.</p> <p>As regards the forecast conditions for the runway, an explicit prohibition to operate on contaminated runways will be added, as suggested by the comment.</p> <p>As regards the reliability of deceleration devices, additional maintenance instructions, such as more frequent checks, especially of the reverse system, should be established by the operator, in accordance with the manufacturer's recommendations, in order to enhance the reliability of these systems.</p> <p>As regards flight crew training, for performance class B aeroplanes the training will be aerodrome specific.</p>

comment 186

comment by: UK CAA



**Page No:** 70

**Paragraph No:** Last paragraph - NLR Safety Assessment.

**Comment:** The NLR Safety Assessment does not provide sufficient assurance that the reduced 80% factor will provide the equivalent level of safety as required by the intent of the proposals.

The justification for the 80% factor in the NLR Safety Assessment places much reliance on deceleration means other than wheel brakes as mitigating measures for the increased risks of an overrun, i.e. reversers and ground spoilers, yet the NPA does not introduce any requirement for these to be fitted to candidate aircraft. The fitment of spoilers and thrust reversers together with prohibitions on tailwind landings and landing on contaminated runways are quantifiable mitigating measures that can be assessed and demonstrated. However, the other mitigating measures relating to enhanced crew training concerning the importance of stabilized approaches, go-arounds, correct 50' height crossing speed, avoiding floating, fast or long landings, timely use of brakes and reverse etc are dependent on crew performance, and unless quantifiable assessments of the improvements necessary to achieve the same level of safety as for normal operations are available, should not be counted as a mitigating measure.

The Study itself states "It will prove more challenging to implement stabilized approaches, go-arounds, correct 50' height crossing speed, avoiding floating, fast or long landings, timely use of brakes and reverses etc. as mitigating measures. All these items are dependent on human, crew performance. Only stating in an operational manual that e.g. "a correct approach and landing must be applied when using a higher landing factor" would be correct but at the same time be insufficient".

It is suggested therefore that the proposals should reassess the 80% value to one which is supported by those mitigating measures which are quantifiable, namely to require the availability of retardation devices other than wheel brakes and prohibition on tailwind landings and landing on contaminated runways.

If further reduction is sought, then quantifiable, measurable improvements in crew approach and landing criteria should be demonstrated, to values which justify that the existing operational safety margins are unnecessary, before any further reduction of landing distance factor could be granted.

**Justification:** Better evidence needs to be provided for any reduction in landing distance margins.

response

Partially accepted.

A number of quantifiable measures, as suggested in the comment will be included in the proposed rules for reduced required landing distance operations. Namely, operations on contaminated runways, tailwind and special approaches outside of stabilised criteria will be prohibited.

The mitigating measure related to the functionality of deceleration devices is introduced by not allowing the dispatch of the aircraft with such equipment inoperative. Should such equipment or system become inoperative in-flight the situation will have to be dealt with



according to the abnormal/emergency procedures established in the operations manual and to the commander's judgement. Additional guidance will be provided in this respect.

comment

187

comment by: UK CAA

**Page No:** 92

**Paragraph No:** 4.5.6 - Impact on 'better regulation' and harmonisation - Reduced required landing distance operations for performance class A and B aeroplanes.

**Comment:** It is not clear why there is a need for harmonisation with the FAA's Reduced required landing distance provisions for Class A eligible on-demand operations, for example with regard to competition between EU and US operators.

**Justification:** The extent of the commercial competition between EU and US operators should be made in addition to the need for harmonisation at regulatory level.

response

Noted.

Harmonisation with the FAA regulatory system is pursued in general and is beneficial for industry and regulators at all levels. The particular case of reduced required landing distance carries the additional benefit of reducing a competitive disadvantage for European operators. This will be reflected in the economic criteria of the RIA.

comment

241

comment by: ERAA

REGULATORY IMPACT ASSESSMENT (RIA) 4.5.4 p. 90:

In the RIA it is stated that 'considering the voluntary implementation of the changes proposed by this Option [1] has started, the cost for operators is considered small'. For aerodromes that are 'becoming unusable due to the increased landing distance' the economic impact is 'very low'. These conclusions are mildly put very surprising.

Widerøe's Flyveselskap AS is of the opinion that the proposed NPA may have the effect of making winter landing operations impossible. The proposed regulation may very well be prohibitive.

We are concerned that performance material developed by manufacturers will be very restrictive. The Landing Distance Factors offered in Table 1 of the AMC are prohibitive, and are not applicable for steep approach as operated by Widerøe, using 4.5 degrees from a 35 ft screen height. We are also concerned that manufacturers will be reluctant to develop 'approved' performance data for contaminated runway. Furthermore, we are concerned that there can be a significant cost associated with development of revised performance data, much too high to be borne by one operator. This is particularly true if a new test flight campaign needs to be undertaken. - Preliminary data supplied by one turboprop manufacturer are not usable because they are too coarse.

Furthermore, we are concerned that the performance documentation for a turbopropeller aircraft may be relatively more restrictive than for a turbojet aircraft. Turbopropeller aircraft





operate at significantly lower speeds and energy during takeoff and landing. This means higher traction and less kinetic energy when decelerating. In addition, the propellers are extremely effective and efficient brakes compared to turbojet thrust reversers.

For Widerøe's operation, which is routinely performance-limited on 830 metre runways, there is a definite probability that many flights will be cancelled or overfly destination as a consequence of introducing RwyCC and RCAM as proposed. For this Public Service Obligation operation along the Norwegian coast with Dash-8 turboprops, there is a clear public interest that operations should continue largely as today. Widerøe would therefore strongly suggest that flexibility could be applied for an operation where the State of the aerodrome has determined that there is a public interest and operational necessity for the operation, and where there are physical limitations relating to extending the runway. This would be along the lines that apply for e.g. short landing operations (CAT.POL.A.250 (b)(2)) or aerodrome operating minima (CAT.OP.MPA.115 (b)(2)(ii)).

In Norway there are winter conditions for more than half of the year. The weather is characterized by frontal activity on the coast. Transportation of mild moist air gives rise to frequent showers of snow. As a consequence, Norway has developed very good routines and practices with respect to runway preparation and friction assessment. In Widerøe's operation - with approximately 700.000 landings with Dash-8 on 830 meter runways - we have had no incidents where aircraft have rolled beyond the departure end of runway. As an example of the well-established routines for safe winter operations, see below tables for the issuance of SNOWTAMS in Norway:

SNOWTAMS issued by ANSP AVINOR versus Europe and the world – total number for year 2012/2013

Issued SNOWTAM's	1 <sup>st</sup> half 2012	2 <sup>nd</sup> half 2012	1 <sup>st</sup> half 2013
World Wide - total	55305	28312	51617
Europe – EAD -ESI Clients - total	20505	13679	21793
Norway - total	19524	12832	19732
Norway versus the world	35,3%	45,3%	38,2%
Norway versus Europe	95,2%	93,8%	90,5%

SNOWTAMS issued by ANSP AVINOR for Short Field Aerodromes – number for year 2015



ICAO	Navn	Number of SNOWTAM
ENBL	Førde/Bringeland	510
ENBN	Brønnøy	366
ENBS	Båtsfjord	419
ENBV	Berlevåg	377
ENFG	Fagernes	218
ENFL	Florø	242
ENHF	Hammerfest	1186
ENHK	Hasvik	322
ENHV	Honningsvåg	363
ENLK	Leknes	609
ENMH	Mehamn	567
ENML	Molde	785
ENMS	Mosjøen	502
ENNK	Narvik	476
ENNM	Namsos	441
ENOV	Ørsta/Volda	382
ENRA	Røssvoll	404
ENRM	Rørvik/Ryum	311
ENRS	Røst	314
ENSB	Longyear	692
ENSD	Sandane	232
ENSG	Sogndal	537
ENSH	Svolvær	446
ENSK	Skagen	459
ENSO	Stord/Sørstokken	108
ENSR	Sørkjosen	384
ENSS	Svartnes	423
ENST	Stokka	274
ENVD	Vadsø	863
	Total number of SNOWTAM 2015 – Short Field Aerodromes	13212

We propose that a state may introduce national arrangements for the regulation of winter operations, not least for a specialized operation with a public interest.



response

Noted.

See response to comment 305.

comment

255

comment by: *General Aviation Manufacturers Association / Hennig*

GAMA appreciates the agency undertaking a Regulatory Impact Analysis in support of the NPA 2016-11 rulemaking. The economic impact, however, identified in section 4.5.4 has not adequately captured the costs associated with requiring a time of arrival assessment based on AMC 25.1592 or equivalent. (We assume equivalent is AC 25-32, but ideally also existing data created to show compliance with 25.1591 for existing aeroplanes to minimize cost.)

Some OEMs have produce new data based on the work of the TALPA ARC, but it is not necessarily aligned with AC 25-32. Furthermore, older aeroplane models have not yet been updated to provide this data.

Updating the performance data for these models will be a significant burden on the OEM, especially if guidance is remains unharmonised between the AMC and AC material.

Finally, the RIA seems to be lacking in consideration of the impact on small aeroplane OEMs and smaller operators. As an example, the social impact seems not to have fully considered the impact of time of arrival assessment could have to further restrict operations at small airfields, particularly those served by Part/CS-23 aeroplanes that do not have this data.

GAMA recommends that the agency re-assess the economic impact based on our comments and, as part of the finalisation of the regulation and associated guidance, work to minimise and ideally eliminate areas where there is divergent guidance.

response

Accepted.

The updated RIA in the Opinion will include further assessment of the impact on OEMs, especially those of CS-23 aircraft.

comment

305

comment by: *Widerøe Flyveselskap AS*

REGULATORY IMPACT ASSESSMENT (RIA) 4.5.4 p. 90:

In the RIA it is stated that ‘considering the voluntary implementation of the changes proposed by this Option [1] has started, the cost for operators is considered small’. For aerodromes that are ‘becoming unusable due to the increased landing distance’ the economic impact is ‘very low’. These conclusions are mildly put very surprising.

Widerøe’s Flyveselskap AS is of the opinion that the proposed NPA may have the effect of making winter landing operations impossible. The proposed regulation may very well be prohibitive.

We are concerned that performance material developed by manufacturers will be very restrictive. The Landing Distance Factors offered in Table 1 of the AMC are prohibitive, and are not applicable for steep approach as operated by Widerøe, using 4.5 degrees from a 35 ft screen height. We are also concerned that manufacturers will be reluctant to develop



‘approved’ performance data for contaminated runway. Furthermore, we are concerned that there can be a significant cost associated with development of revised performance data, much too high to be borne by one operator. This is particularly true if a new test flight campaign needs to be undertaken. - Preliminary data supplied by one turboprop manufacturer are not usable because they are too coarse.

Furthermore, we are concerned that the performance documentation for a turbopropeller aircraft may be relatively more restrictive than for a turbojet aircraft. Turbopropeller aircraft operate at significantly lower speeds and energy during takeoff and landing. This means higher traction and less kinetic energy when decelerating. In addition, the propellers are extremely effective and efficient brakes compared to turbojet thrust reversers.

For Widerøe’s operation, which is routinely performance-limited on 830 metre runways, there is a definite probability that many flights will be cancelled or overfly destination as a consequence of introducing RwyCC and RCAM as proposed. For this Public Service Obligation operation along the Norwegian coast with Dash-8 turboprops, there is a clear public interest that operations should continue largely as today. Widerøe would therefore strongly suggest that flexibility could be applied for an operation where the State of the aerodrome has determined that there is a public interest and operational necessity for the operation, and where there are physical limitations relating to extending the runway. This would be along the lines that apply for e.g. short landing operations (CAT.POL.A.250 (b)(2)) or aerodrome operating minima (CAT.OP.MPA.115 (b)(2)(ii)).

In Norway there are winter conditions for more than half of the year. The weather is characterized by frontal activity on the coast. Transportation of mild moist air gives rise to frequent showers of snow. As a consequence, Norway has developed very good routines and practices with respect to runway preparation and friction assessment. In Widerøe’s operation - with approximately 700.000 landings with Dash-8 on 830 meter runways - we have had no incidents where aircraft have rolled beyond the departure end of runway. As an example of the well-established routines for safe winter operations, see below tables for the issuance of SNOWTAMS in Norway:

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ENHV	Honningsvåg	363
ENLK	Leknes	609
ENMH	Mehamn	567
ENML	Molde	785
ENMS	Mosjøen	502
ENNK	Narvik	476
ENNM	Namsos	441
ENOV	Ørsta/Volda	382
ENRA	Røssvoll	404
ENRM	Rørvik/Ryum	311
ENRS	Røst	314
ENSB	Longyear	692
ENSD	Sandane	232
ENSG	Sogndal	537
ENSH	Svolvær	446
ENSK	Skagen	459
ENSO	Stord/Sørstokken	108
ENSR	Sørkjosen	384
ENSS	Svartnes	423
ENST	Stokka	274
ENVD	Vadsø	863
	Total number of SNOWTAM 2015 – Short Field Aerodromes	13212

We propose that a state may introduce national arrangements for the regulation of winter operations, not least for a specialized operation with a public interest.

response

Partially accepted.



With regard to the generic factors, EASA acknowledges the difficulty for certain aircraft types to be provided with performance data compliant with the new proposed standard of CS 25.1592 and the fact the in certain cases the generic factors may be too penalising. For such cases alternatives to the generic factors will be offered.

With regard to the possibility of upgrading the runway codes, the concerns expressed in this comment will be addressed in the rulemaking task RMT.0704 by introducing the concept of operations on “specially prepared winter runways”, which will be referenced appropriately in the Regulation for air operations.

comment	<p>321</p> <p>4.5.3 Social Impact</p> <p>Option 1 - No social impact is expected through this Option.</p>	comment by: <i>Textron Aviation</i>
response	<p>This aspect needs more discussion. If the time-of-arrival assessment and associated data methodology is required for all Performance Class A aircraft, it is very possible that operations will be reduced or restricted from a number of smaller airfields serviced by small aircraft in conditions where safe operations are taking place today.</p> <p>Noted.</p> <p>The aspects related to the costs of arrival assessment are reflected in the economic impacts. Furthermore the agency does not consider that the arrival assessment element will lead to an important reduction or restriction of operations.</p> <p>However EASA acknowledges the difficulty for certain aircraft types to be provided with performance data compliant with the new proposed standard of CS 25.1592 and the fact the in certain cases the generic factors may be too penalising. The economic assessment of the RIA will be revised to take into account this aspect and alternatives to the generic factors will be offered to comply with the new rule.</p>	
comment	<p>322</p> <p>4.5.4 Economic impact</p> <p>Several large aeroplane manufacturers, among which Airbus, Boeing and Embraer...</p> <p>There is a significant concern from many of the manufacturers of small Performance Class A aircraft related to the cost of providing this performance data for existing aircraft. Application to existing aircraft would be contrary to the TALPA ARC recommendations, as would application to smaller aircraft not certified under Part 25 airworthiness requirements.</p>	comment by: <i>Textron Aviation</i>
response	<p>Noted.</p> <p>Further to additional information received, the RIA will include in the Opinion further analyses the economic impact on providing performance data for existing aircraft.</p>	
comment	<p>323</p> <p>4.5.4 Economic impact</p>	comment by: <i>Textron Aviation</i>




	<p>As regards the cost for aerodromes becoming unusable due to the increased landing distance...</p> <p>The analysis done for environmental impact is apparently based largely on Airbus data, and likely does not accurately reflect impact to operations of small aircraft into small fields. The economic impact to these locations caused by increased diversions, while small compared to large commercial airline revues, are nonetheless significant to the locations affected.</p>
<p>response</p>	<p>Noted.</p> <p>The aspects related to the costs of arrival assessment are reflected in the economic impacts. Furthermore the agency does not consider that the arrival assessment element will lead to an important reduction or restriction of operations.</p> <p>However EASA acknowledges the difficulty for certain aircraft types to be provided with performance data compliant with the new proposed standard of CS 25.1592 and the fact the in certain cases the generic factors may be too penalising. Alternatives to the generic factors will be offered to comply with the new rule and this is understood to be beneficial also in terms of operations continuity at small fields.</p>
<p>comment</p>	<p>358 <span style="float: right;">comment by: US FAA</span></p> <p><b>Comment summary</b></p> <p>“In the analysis, 13 occurrences were identified, out of which 5 were classified as accidents and 9 as serious incidents.”</p> <p>13 occurrences were identified and put on the graphic however 5 accidents/9 serious incidents add up to 14.</p> <p><b>Suggested resolution</b></p> <p>Reduce 5 or 9 by 1 as appropriate to add up to 13.</p>
<p>response</p>	<p>Accepted.</p> <p>Indeed the correct figure is 13 occurrences out of which 8 serious incidents and 5 accidents.</p>



### 3. Appendix A — Attachments

 [Annex 1.pdf](#)

Attachment #1 to comment [#270](#)

 [Comment and proposal with rationale to AMC 25.1592 6.2 Transition Distance Table 1, footnote 3.pdf](#)

Attachment #2 to comment [#115](#)

 [Annex 1.pdf](#)

Attachment #3 to comment [#275](#)

 [Annex 1.pdf](#)

Attachment #4 to comment [#276](#)

 [IRIS Runway Model.pdf](#)

Attachment #5 to comment [#302](#)

 [5.3 IRIS runway model \(Alex Klein Paste NTNU\) 2016.pdf](#)

Attachment #6 to comment [#302](#)