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Title	Review of aeroplane performance requirements for commercial air transport operations
NPA Number	NPA 2016-11

UK CAA (European.Affairs@caa.co.uk) has placed **21** unique comments on this NPA:

Cmt#	Segment description	Page	Comment	Attachments
167	(General Comments)	0	<p>Page No: Whole document</p> <p>Paragraph No: Whole document</p> <p>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.</p> <p>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.</p>	
168	(General Comments)	0	<p>Page No: Various</p> <p>Paragraph No: Those relating to reduced required landing distance proposals.</p> <p>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.</p> <p>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.</p>	
169	(General Comments)	0	<p>Page No: Various</p> <p>Paragraph No: Those relating to proposals to align with the ICAO</p>	

			<p>SARPS and Recommended Practices for the new Global Runway Condition Reporting Format.</p> <p>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</p> <p>Justification: Consistency.</p>	
170	2. Explanatory Note	5 - 18	<p>Page No: 5</p> <p>Paragraph No: Explanatory note</p> <p>Comment: 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>	
171	2. Explanatory Note	5 - 18	<p>Page No: 6 et seq.</p> <p>Paragraph No: Those relating to reduced required landing distance proposals.</p> <p>Comment: 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>Justification: 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>	
172	3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.1. Definitions	19 - 21	<p>Page No: 19</p> <p>Paragraph No: 3.1.1 Definitions (25)</p> <p>Comment: 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</p>	

			<p>this context.</p> <p>Justification: Clarity.</p>	
173	3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.1. Definitions	19 - 21	<p>Page No: 20</p> <p>Paragraph No: 3.1.1 Definitions (103d), Note 2</p> <p>Comment: 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>Justification: Clarity.</p>	
174	3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-CAT — CAT.POL.A.250	26 - 27	<p>Page No: 26</p> <p>Paragraph No: CAT.POL.A.250 Approval of short landing operations</p> <p>Comment: 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>Justification: 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>	
175	3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-CAT — CAT.POL.A.255	27 - 28	<p>Page No: 27</p> <p>Paragraph No: CAT.POL.A.255 Approval of reduced required landing distance operations (b)</p> <p>Comment: 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>Justification: 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>Proposed Text: Amend to read:</p> <p>(b) To obtain the approval, the operator shall provide evidence that: (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</p>	

(1) an FDM programme specifically tailored to monitor the risk of runway excursions has been implemented and integrated in the operator's SMS

~~(2) the following conditions are met:~~

(2) One of the following conditions are met:

(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) the following conditions are met:

(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;

(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.

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

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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 confirming that the runway meets the criteria used for dispatch. Either way, the reduced factor effect would be retained.

			<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>Justification: The NLR Safety Assessment does not demonstrate for the wet runway condition that the mitigating measures restore the equivalent level of safety to the normal (wet) despatch criteria.</p>
177	3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-CAT — CAT.POL.A.255	27 - 28	<p>Page No: 27</p> <p>Paragraph No: CAT.POL.A.255</p> <p>Comment: 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>Justification: Use of reverse thrust is necessary to meet the assumptions in the safety justification for reduced factors.</p> <p>Proposed Text: It is suggested that an additional condition to CAT.POL.A.255(b) is included: -</p> <p>(x) the aircraft must be equipped with ground spoilers, anti-skid and thrust reversing systems,</p>
178	3. Proposed amendments — 3.1. Draft Regulation (draft EASA Opinion) — 3.1.2. Part-CAT — CAT.POL.A.355	29 - 30	<p>Page No: 30</p> <p>Paragraph No: CAT.POL.A.355(b)(7)(ii)</p> <p>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.</p> <p>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.</p> <p>Proposed Text: Amend to read:</p> <p>(7) operational procedures and instructions are established to ensure that:</p>

			<p>(i) all the equipment affecting landing performance and landing distance is operative before commencing the flight;</p> <p>(ii) the deceleration devices are operable before landing and correctly used by the flight crew; and</p> <p>(iii) landing on contaminated runways is prohibited;</p>	
179	3. Proposed amendments — 3.2. Draft CSs (draft EASA Decision) — CS-25 Book 1 — 3.2.1. Certification Specifications — CS 25.1592	32	<p>Page No: 32, 41, 52 et seq.</p> <p>Paragraph No: CS 25.1592 and associated AMC 25.1592.</p> <p>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.</p> <p>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.</p> <p>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.</p>	
180	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)	51 - 52	<p>Page No: 51</p> <p>Paragraph No: 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>Comment: 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 may 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>Justification: 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>Proposed Text:</p>	

			(2) For this purpose, the landing distance factors (LDFs) from Table 1 below may should be used
181	3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT — GM1 CAT.OP.MPA.303	53 - 54	<p>Page No: 53</p> <p>Paragraph No: GM1 CAT.OP.MPA.303 Autobrake Usage and Assessment Based on Dispatch Criteria</p> <p>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.</p> <p>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.</p>
182	3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT — GM1 CAT.OP.MPA.303	53 - 54	<p>Page No: 53</p> <p>Paragraph No: GM1 CAT.OP.MPA.303 In-flight check of the landing distance at the time of arrival — aeroplanes TIMELINESS</p> <p>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.</p> <p>Justification: This statement should be substantiated before it is applied in combination with the reduced landing distance factor.</p>
183	3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT — AMC1 CAT.POL.A.255(b)	58	<p>Page No: 58</p> <p>Paragraph No: AMC1 CAT.POL.A.255(b)(1) Approval of reduced required landing distance operations RISK ASSESSMENT</p> <p>Comment: The risk assessment must include quantitative evidence of the current level of safety.</p> <p>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.</p> <p>Proposed Text: Add new sub-para (k), as follows:</p> <p>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;</p>

			<p>(b) flight crew composition; (c) runway surface conditions; (d) dispatch criteria; (e) weather conditions and limitations; (f) aerodrome characteristics; (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><i>(k) quantitative Safety Performance Indicators relevant for the risk of runway excursions extracted from the operator's FDM programme.</i></p>	
184	3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT — GM1 CAT.POL.A.255(b)	62	<p>Page No: 62</p> <p>Paragraph No: GM1 CAT.POL.A.255(b)(2)(iii) Approval of reduced required landing distance operations MONITORING</p> <p>Comment: The FDM programme should be a mandatory method to monitor risk, rather than optional.</p> <p>Justification: FDM is the only effective tool to provide early warning about degradation of safety margins for runway excursions.</p> <p>Proposed Text: 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.</p> <p>(b) 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.</p> <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.</p> <p><i>(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.</i></p>	
185	3. Proposed amendments — 3.3. Draft AMC/GM (draft EASA Decision) — 3.3.3. Part-CAT — GM1 CAT.POL.A.255(b)	62	<p>Page No: 62</p> <p>Paragraph No: GM1 CAT.POL.A.255(b)(2)(iv) Approval of reduced required landing distance operations AERODROME LANDING ANALYSIS PROGRAMME (ALAP)</p> <p>Comment: 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>Justification: Ambiguous text.</p>	
186	4. RIA	68 - 93	<p>Page No: 70</p> <p>Paragraph No: Last paragraph - NLR Safety Assessment.</p>	

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.

187 4. RIA

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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.

