Annex to ED Decision 2017/017/R

'Acceptable Means of Compliance (AMC) and Guidance Material (GM) to Authority, Organisation and Operations Requirements for Aerodromes — Amendment 2'

The Annex to ED Decision 2014/012/R is amended as follows:

The text of the amendment is arranged to show deleted text, new or amended text as shown below:

— deleted text is ~~struck through~~;

— new or amended text is highlighted in grey;

— an ellipsis '(…)' indicates that the rest of the text is unchanged.

1. GM1 ADR.OPS.A.005 is amended as follows:

GM1 ADR.OPS.A.005 Aerodrome data

(…)

(b) Strip/Runway End Safety Area/Stopway

(1) Length, width to the nearest metre or foot; ~~and~~

(2) Surface type~~.~~; and

(3) Arresting system – location (which runway end) and description.

(…)

2. A new AMC4 ADR.OPS.B.070 is added as follows:

AMC4 ADR.OPS.B.070 Aerodrome works safety

CLOSED RUNWAYS AND TAXIWAYS, OR PARTS THEREOF

The aerodrome operator should ensure that:

(a) a closed marking as defined in CS ADR.DSN.R.855(c) is displayed on a temporarily closed runway, or taxiway, or a portion thereof, except that such a marking may be omitted when the closing is of short duration and adequate warning by air traffic services is provided;

(b) lighting on a closed runway or taxiway, or a portion thereof is not operated, except as required for maintenance purposes; and

(c) in addition to closed markings, when the runway, taxiway, or portion thereof is closed and is intercepted by a usable runway or taxiway which is used at night, unserviceability lights as defined in CS ADR.DSN.R.870(c) should be placed across the entrance to the closed area at intervals not exceeding 3 m.

3. A new GM5 ADR.OPS.B.070 is added as follows:

GM5 ADR.OPS.B.070 Aerodrome works safety

USE OF TEMPORARY RUNWAY MARKINGS

(a) Circumstances may occur when it is not practicable to install permanent markings, for example during runway resurfacing. In order to provide sufficient visual guidance to aircraft, the following markings should be considered:

(1) runway centre line;

(2) taxiway centre line lead on/off;

(3) runway edge line;

(4) runway threshold; and

(5) touchdown zone and aiming point markings.

(b) Centre line and edge marking widths can be replaced by temporary markings of reduced width from 0.9 m to 0.6 m, if required.

(c) Touchdown zone and aiming point markings should be painted as soon as possible after the resurface of the runway.

(d) Threshold markings should be painted as soon as possible, using temporary materials before making them permanent.

4. AMC1 ADR OPS.B.080 is amended as follows:

AMC1 ADR.OPS.B.080 Marking and lighting of vehicles and other mobile objects

(…)

(c) When flags are used to mark mobile objects, they should ~~comply with the applicable CSs~~ be displayed around, on top of, or around the highest edge of the object. Flags should not increase the hazard presented by the object they mark.

(d) When flags are used to mark mobile objects they should not be less than 0.9 m on each side and should consist of a chequered pattern, each square having sides of not less than 0.3 m. The colours of the pattern should contrast each with the other and with the background against which they will be seen. Orange and white, or alternatively red and white should be used, except where such colours merge with the background.

5. AMC1 ADR.OPS.C.010 is amended as follows:

AMC1 ADR.OPS.C.010 Pavements, other ground surfaces and drainage

(…)

(g) The surface of a paved runway should be evaluated when constructed or resurfaced to determine that the surface friction characteristics achieve the design objectives.

6. GM3 ADR OPS.C.010(b)(2) is amended as follows:

GM3 ADR.OPS.C.010(b)(2) Pavements, other ground surfaces, and drainage

RUNWAY SURFACE EVENNESS

(a) The operation of aircraft and differential settlement of surface foundations will eventually lead to increases in surface irregularities. Small deviations in the above

tolerances will not seriously hamper aircraft operations. In general, isolated irregularities of the order of 2.5 cm to 3 cm over a 45 m-distance are ~~tolerable~~ acceptable, as shown in Figure 1. Although maximum acceptable deviations vary with the type and speed of an aircraft, the limits of acceptable surface irregularities can be estimated to a reasonable extent. The following table describes ~~maximum~~ acceptable, ~~and temporarily acceptable~~ tolerable and excessive limits~~.~~:

Surface Irregularity	~~Minimum acceptable l~~Length of irregularity (m)								
	3	6	9	12	15	20	30	45	60
Acceptable surface irregularity height (cm)	2.9	3.8	4.5	5	5.4	5.9	6.5	8.5	10
~~Maximum surface irregularity height (or depth) (cm)~~	~~3~~	~~3.5~~	~~4~~	~~5~~	~~5.5~~	~~6~~	~~6.5~~	~~8~~	~~10~~
~~Temporary~~ Tolerable ~~acceptable~~ surface irregularity height ~~(or depth)~~ (cm)	~~3.5~~ 3.9	5.5	~~6.5~~ 6.8	~~7.5~~ 7.8	~~8~~ 8.6	~~9~~ 9.6	11	~~13~~ 13.6	~~15~~ 16
Excessive surface irregularity height (cm)	5.8	7.6	9.1	10	10.8	11.9	13.9	17	20

Table 1

~~If the maximum limits are exceeded, corrective action should be undertaken, as soon as reasonably practicable, to improve the ride quality. If the temporarily acceptable limits are exceeded, the portions of the runway that exhibit such roughness should have corrective measures taken immediately if aircraft operations are to be continued.~~

(1) If the surface irregularities exceed the heights defined by the acceptable limit curve but are less than the heights defined by the tolerable limit curve, at the specified minimum acceptable length, herein noted by the tolerable region, then maintenance action should be planned. The runway may remain in service. This region is the start of possible passenger and pilot discomfort.

(2) If the surface irregularities exceed the heights defined by the tolerable limit curve, but are less than the heights defined by the excessive limit curve, at the specified minimum acceptable length, herein noted by the excessive region, the maintenance corrective action is mandatory to restore the condition to the acceptable region. The runway may remain in service but should be repaired within a reasonable period. This region could lead to the risk of possible aircraft structural damage due to a single event or fatigue failure over time.

(3) If the surface irregularities exceed the heights defined by the excessive limit curve, at the specified minimum acceptable length, herein noted by the unacceptable region, then the area of the runway where the roughness has been identified warrants closure. Repairs are required to restore the condition within the acceptable limit region and the aircraft operators may be advised accordingly. This region runs the extreme risk of a structural failure and must be addressed immediately.

(b) The term ‘surface irregularity’ is defined herein to mean isolated surface elevation deviations that do not lie along a uniform slope through any given section of a runway. For the purposes of this concern, a ‘section of a runway’ is defined herein to mean a segment of a runway throughout which a continuing general uphill, downhill, or flat

slope is prevalent. The length of this section is generally between 30 and 60 m, and can be greater, depending on the longitudinal profile and the condition of the pavement.

(c) The maximum tolerable step-type bump, such as that which could exist between adjacent slabs, is simply the bump height corresponding to zero bump length at the upper end of the tolerable region of the roughness criteria of Figure 1.

(d) Deformation of the runway with time may also increase the possibility of the formation of water pools. Pools as shallow as approximately 3 mm in depth, particularly if they are located where they are likely to be encountered at high speed by landing aeroplanes, can induce aquaplaning which can then be sustained on a wet runway by a much shallower depth of water. Improved guidance regarding the significant length and depth of pools relative to aquaplaning is the subject of further research. It is, of course, especially necessary to prevent pools from forming whenever there is a possibility that they might become frozen.

(e) Macrotexture and microtexture are taken into consideration in order to provide the required surface friction characteristics. This normally requires some form of special surface treatment.

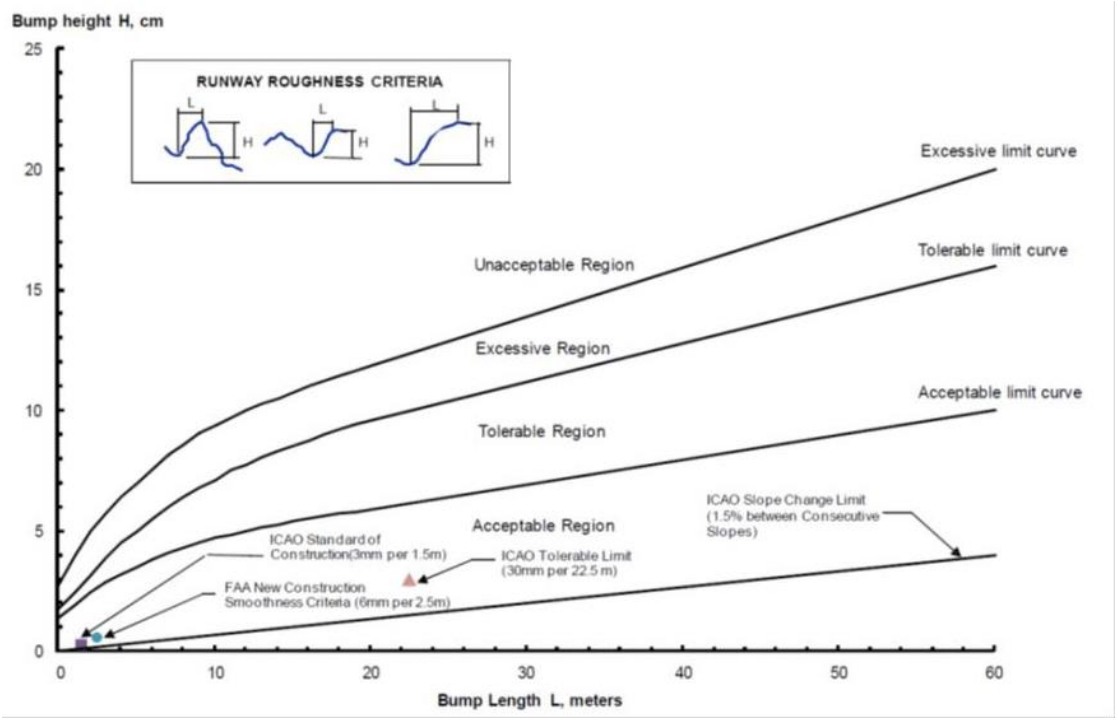

Figure 1