RA 3275 - Runway Visual Range

Rationale

The availability of accurate up-to-date meteorological information is crucial for the safe conduct of flights. On approach to or departure from an Aerodrome, it is important that pilots are able to determine the likelihood of being able to obtain the required visual references to complete a landing or departure.

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3275(1) Runway Visual Range (RVR) / Instrumented RVR (IRVR) **shall** be provided under specified meteorological conditions.

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Provision of Runway Visual Range / Instrumented Runway Visual Range

RVR

1. RVR **should** be provided to pilots whenever:
   a. The reported meteorological visibility falls to 1500 m or less.
   b. The IRVR displays a value equal to or less than 1500 m.
   c. Shallow fog is being reported or during a period for which it is forecast.
2. RVR observations **should** be repeated at intervals, or when requested, during all stages of an instrument approach and landing and the RVR value passed to the pilot within 30 seconds of each observation.

IRVR

3. IRVR values **should** be passed to pilots at the beginning of each approach and, thereafter, whenever there is a significant change[1] in the RVR until the Air System has landed. The IRVR value **should** also to be passed to the pilot before departure and when the IRVR goes below limits for an Air System to make an approach.
4. Unless a suppressed value is specifically requested by a pilot, the IRVR values transmitted **should** contain only those values that are displayed at full intensity. The value of the touchdown position is always displayed at full intensity and if no other values are at full intensity this is the only value which needs to be passed.
5. The three transmissometers are located one at each end of the Runway adjacent to the touchdown zone and the third near the Runway midpoint area. When available, all three positions **should** to be reported to the pilot, they **should** be passed as three numbers relating to touchdown, mid-point and stop end respectively, eg, **RVR 650 — 500 — 550.** If only two values are passed, they **should** be individually identified, eg, **Touchdown 650** — **Stop End 550.**
6. **Transmissometer Unserviceability.** If the touchdown transmissometer fails, the IRVR system can still be used providing the mid-point and stop end transmissometers remain serviceable. In such circumstances the mid-point value **should** be passed to the pilot together with the stop end value. The pilot **should** be informed that the touchdown transmissometer has failed, eg, **"Touchdown RVR not available — Mid-Point 600 — Stop End 400."**
7. If two transmissometers become unserviceable the IRVR value for the remaining transmissometer, provided that it is not the stop end value, can be used. If the IRVR value for the stop end is the only one available, the system **should** be regarded as unserviceable for that Runway. By changing the direction of use of the

[1] A significant change is defined as a change in value of one increment or more.

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Runway it may become serviceable again with the single available value representing the touchdown reading.

Conversion of Meteorological Visibility to RVR.

8. Where IRVR is not available or unserviceable controllers **should** revert to Human Observer RVR as defined in RA 3275(2) ►◄. Where neither IRVR or Human Observed RVR are available controllers **should** derive RVR by converting the reported met visibility in accordance with ►Table 1◄ at para 16.

9. RVR conversion should not be used for calculating take-off minima, Category II or III minima or when RVR or IRVR is available.

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Provision of Runway Visual Range / Instrumented Runway Visual Range

RVR

10. RVR has evolved to make available a more localised assessment of visual range in relation to a particular Runway when the meteorological report gives a visibility of less than 1500 m.

11. The RVR indicates the range over which the pilot of an Air System on the centreline of a Runway can expect to see the Runway surface markings, the lights delineating the Runway or identifying its centreline. The UK standard for reporting RVR extends from zero to 1500 m.

IRVR

12. With some IRVR equipment, transmissometer readings may only be displayed when the Runway lights are set at an intensity of 10% or more. Settings less than 10% may result in all three readings being replaced by zeros. If, during RVR conditions, a pilot requests a reduced Runway edge light setting of less than 10%, ►they◄ will be advised that an IRVR reading may not be available at this setting.

13. IRVR gives an automatic and continuous display of RVR values to Air Traffic Control (ATC). Transmissometers are used to measure atmospheric opacity from fixed points alongside a Runway, the number of units in any system being determined by the category of the Instrument Landing System installation and Runway length. In a three transmissometer system the units are linked by an associated data transfer system to a central processor.

14. The processor computes the RVR for each transmissometer position and displays it in digital form to ATC. For Radiotelephony transmission purposes the locations will be known as ‘Touchdown’, ‘Mid-Point’ and ‘Stop End’ and RVR values will relate to these positions.

15. IRVR Indications. There are a number of different IRVR systems, the processors in some systems are programmed to automatically reduce in intensity, or suppress, the display of the mid-point and / or stop-end readings when the values are not operationally significant.

16. IRVR readings extend from 25 m to 1500 m in the following steps:

a. 0 to 400 m in 25 m steps.

b. 400 to 800 m in 50 m steps.

c. 800 to 1500 m in 100 m steps.

►Table 1. RVR Conversion Table for no IRVR or Human Observed Report◄

Lighting Elements Available at the Airfield	RVR = Reported Met Visibility Multiplied By:	
	Day	Night
High Intensity Approach and Runway Lighting	1.5	2.0
Any Type of Lighting other than Above	1.0	1.5
No Lighting Available	1.0	N/A

Regulation 3275(2)

Provision of Human Observed Runway Visual Range

3275(2) Where the use of RVR / IRVR equipment is not possible, Aerodromes **shall** provide measurements of human observed RVR.

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Provision of Human Observed Runway Visual Range

17. Human observed RVR **should** only be undertaken by ►a◄ Suitably Qualified and Experienced Person.

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Provision of Human Observed Runway Visual Range

18. The observer will count the number of RVR installation lights seen and pass this figure to the Aerodrome controller who will convert the reported figure to a distance in metres by reference to the RVR conversion table, and pass this information to the appropriate controller for transmission to the pilot.

19. **Human Observed RVR Conversion Tables.** Human observed RVR conversion tables will be available to Aerodrome controllers at all times. Units will prepare and ensure the accuracy of conversion tables after initial installation and thereafter when:

a. Doubt exists whether the layout of the RVR system continues to comply with the standard siting plan as detailed in RA 3521(2)[2].

b. Doubt exists that the height and position of the observation point continues to comply with specification detailed in the RA 3521(2).

20. Human Observed RVR conversion tables will be created in the following manner:

a. Obtain the actual distance of each RVR light measured from the observation point (as provided during detailed installation survey).

b. Round the corrected distances down to the next 50 m increment (up to 800 m) or to the next 100 m increment (beyond 800 m) to obtain the converted RVR.

c. The RVR Conversion Table consists of the RVR light number and the converted RVR distance in metres (see ►Table 2◄ RVR Conversion Table – Sample Calculations).

►Table 2.◄ RVR Conversion Table – Sample Calculations

RVR LIGHT No (a)	ACTUAL DISTANCE OF RVR LIGHT (m) (b)	CORRECTION TO BE SUBTRACTED (m) (c)	CORRECTED DISTANCE (m) (b-c)	CONVERTED RVR DISTANCE (m) (d)
1	210	20	190	150
2	268	25	243	200
3	326	25	301	300
4	385	30	355	350
5	445	35	410	400
6	504	40	464	450
7	564	40	524	500
8	623	45	578	550
9	683	45	638	600
10	743	50	693	650
11	803	55	748	700

[2] RA 3521(2): Runway Visual Range Systems.

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12	902	55	847	800
13	1002	60	942	900
14	1102	65	1037	1000
15	1202	75	1127	1100
16	1301	85	1226	1200
17	1401	90	1311	1300
18	1501	90	1401	1400

21. Obtain the corrected RVR light distances (b-c) by subtracting the corrections given in ►Table 2◄ – RVR Conversion Table from actual RVR light distance (b).

22. Round down the corrected distances (b-c) to the next lower 50 m increment (up to 800 m) or next lower 100 m increment (beyond 800 m) to obtain the converted RVR distances (d).

23. The final RVR Conversion Table for the Aerodrome used in this example would consist of columns (a) and (d).

24. Column (c) details the corrections that will be applied to RVR light distances to avoid an overestimation of the RVR.