International Civil Aviation Organization

WORKING PAPER (WP/09)

ICAO Asia and Pacific (APAC)
Fourteenth Meeting of the Meteorological Requirements Working Group (MET/R WG/14)

Bangkok, Thailand, 28 April to 2 May 2025

Agenda Item 6: Any other business

RUNWAY VISUAL RANGE (RVR) LOCATION

(Presented by India)

SUMMARY

This working paper outlines the installation and location challenges of Runway Visual Range (RVR) systems at Indian airports, particularly where RVR sensor placement conflicts with existing navigational aids like ILS, PAPI, and VASI. It proposes reviewing FAA practices for RVR site location and seeks ICAO clarification on the longitudinal and lateral placement of RVR sensors in such scenarios. The meeting is invited to review the information and discuss these issues.

1. INTRODUCTION

- Aviation meteorological instruments are essential for continuous monitoring and display of weather parameters, including wind direction, wind speed, air temperature, dew point, humidity, pressure, runway visual range (RVR), and cloud cover.
- The India Meteorological Department (IMD) has initiated the installation of integrated Automatic Weather Observing Systems (AWOS), including RVR systems, at 18 airports where there are more than 500 weekly flights. These aviation instruments are installed on the runway to observe and report weather elements in accordance with ICAO guidelines.
- The Touchdown RVR Visibility Sensors are located near the touchdown end of the runway and are installed as per the location criteria specified in **ICAO Annex 3.**

4.3 Runway visual range

4.3.1 Siting

4.3.1.1 **Recommendation.**— *Runway visual range should be assessed at a height of approximately 2.5 m (7.5 ft) above the runway.*

4.3.1.2 **Recommendation.**— *Runway visual range should be assessed at a lateral distance from the runway centre line of not more than 120 m. The site for observations to be representative of the touchdown zone should be located about 300 m along the runway from the threshold. The sites for observations to be representative of the mid-point and stop-end of the runway should be located at a distance of 1 000 to 1 500 m along the runway from the threshold and at a distance of about 300 m from the other end of the runway. The exact position of these sites and, if necessary, additional sites should be decided after considering aeronautical, meteorological and climatological factors such as long runways, swamps and other fog-prone areas.*

2. DISCUSSION

The installation of RVR instruments at most airports in India presents a significant challenge in identifying suitable meteorological park locations that comply with ICAO recommendations. According to ICAO guidelines, RVR observation sites should be positioned approximately 300 meters along the runway from the threshold to ensure that the readings are representative of the touchdown zone.
However, this location **often coincides with the placement of critical navigational aids** such as:

- The Instrument Landing System (ILS) Glideslope (GS) antenna
- The Precision Approach Path Indicator (PAPI)
- The Visual Approach Slope Indicator (VASI)

Given this overlap, ICAO clarification is required on the longitudinal and lateral positioning of RVR visibility sensors at runway ends in such scenarios. A key question is whether the RVR instrument can be installed behind the ILS Glideslope (GS) antenna, PAPI, or VASI without affecting the operational integrity of these systems.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) Take note of the information presented in this paper.
b) Consider ICAO clarification on the placement of RVR visibility sensors in situations where their recommended location coincides with existing navigational aids.
c) Review the practices in **Appendix A** and discuss any relevant matter as appropriate.

APPENDIX A: Runway Visual Range (RVR) site location practices in the FAA Region

The following guidelines based on **FAA Appendix A: Runway Visual Range (RVR) site location practices** are being proposed for the installation of RVR instruments:

Longitudinal Location

1. **Touchdown RVR VSs**: Located 0 to 2,500 ft (0 to 750 meters) from the threshold, normally behind the **Instrument Landing System (ILS) Glideslope (GS)** antenna, **Precision Approach Path Indicator (PAPI)**, or **Visual Approach Slope Indicator (VASI)**.
2. **Rollout RVR VSs**: Located 0 to 2,500 ft (0 to 750 meters) from the threshold at the rollout end of the runway, normally behind the **ILS GS antenna**, **PAPI**, or **VASI**.
3. **Midpoint RVR VSs**: Located within ±1,000 ft (300 meters) of the canter point of the runway.
4. **Runways longer than 12,000 ft**: May require four RVR VSs to adequately support low-visibility operations to both ends of the runway. The **Touchdown RVR VS** must be located 0 to 2,500 ft (0 to 750 meters) from the threshold, and **Midfield RVR VSs** will be placed within 1,000 ft (300 meters) of a point one-third of the way down the runway. The "far end" sensor will provide additional information.
5. **Sharing Service with an Adjacent Runway**: The longitudinal location of any RVR VS installation should consider the possibility of sharing service with an adjacent runway.

Lateral Location

1. **RVR VSs**: Installed adjacent to the instrument runway they serve, avoiding conflict with adjacent runways or taxiways.
    - **Single-point RVR VSs**: Must be located at least 400 ft (120 meters) from the Runway Centreline (RCL) and outside any taxiway object-free areas.
2. **Sharing with an Adjacent Runway**: The lateral location of any RVR installation should consider the potential for sharing service with an adjacent runway based on the airport's current and proposed layout.