

## **ACJ OPS to Appendix 1 (New) to JAR-OPS 1.430(h)**

*[The ACJ is new text]*

### **1 Introduction**

1.1 Enhanced vision systems use sensing technology to improve a pilot's ability to detect objects, such as runway lights or terrain, which may otherwise not be visible. The image produced from the sensor and/or image processor can be displayed to the pilot in a number of ways including use of a head up display. The systems can be used in all phases of flight and can improve situational awareness. In particular, infrared systems can display terrain during operations at night, improve situational awareness during night and low-visibility taxiing, and may allow earlier acquisition of visual references during instrument approaches.

### **2. Background to EVS rule**

2.1 The rule for EVS was developed after an operational evaluation of two different EVS systems, along with data and support kindly provided by the FAA. Approaches using EVS were flown in a variety of conditions including fog, rain and snow showers, as well as at night to aerodromes located in mountainous terrain. The infrared EVS performance can vary depending on the weather conditions encountered. Therefore, the Rule takes a conservative approach to cater for the wide variety of conditions which may be encountered. It may be necessary to amend the Rule in future to take account of greater operational experience.

2.2 A rule for the use of EVS during take off has not been developed. The systems evaluated did not perform well when the RVR was below 300 metres. There may be some benefit for use of EVS during take off with greater visibility and reduced lighting; however, such operations would need to be evaluated.

2.3 The Rule has been developed to cover use of infrared systems only. Other sensing technologies are not intended to be excluded; however, their use will need to be evaluated to determine the appropriateness of this, or any other rule. During the development of the Rule material in JAR OPS 1.430 (h), it was envisaged what equipment that should be fitted to the aeroplane, as a minimum. Given the present state of technological development, it is considered that a HUD is an essential element of the EVS equipment.

2.4 In order to avoid the need for tailored charts for approaches utilising EVS, it is envisaged that an operator will use Table 9 to determine the applicable RVR at the commencement of the approach.

### **3. Additional Operational requirements**

3.1 An enhanced vision system equipment certificated for the purpose of Appendix 1 to JAR-OPS 1.403(h) should have:

- (i) A head up display system (capable of displaying, airspeed, vertical speed, aircraft attitude, heading, altitude, command guidance as appropriate for the approach to be flown, path deviation indications, flight path vector, and flight path angle reference cue and the EVS imagery),
- (iii) For two-pilot operation, a head-down view of the EVS image, or other means of displaying the EVS-derived information easily to the pilot monitoring the progress of the approach.

Note: If the aircraft is equipped with and radio altimeter, it will be used only as enhanced terrain awareness during approach using EVS and will be not taken into account for the operational procedures development

## **4 Two-pilot operations**

4.1 For operations in RVRs below 550 m, two-pilot operation will be required.

4.2 The requirement for a head-down view of the EVS image is intended to cover for multi-pilot philosophy. The pilot not-flying (PNF) is kept in the 'loop' and CRM does not break down. The PNF can be very isolated from the information necessary for monitoring flight progress and decision making if the PF is the only one to have the EVS image .

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