



Australian Government
Civil Aviation Safety Authority

SUMMARY OF PROPOSED CHANGE

Changes to publishing standards and calculation of visibility minima

Manual of Standards (MOS) Part 173 Amendment Instrument 2019

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Introduction

CASA is proposing to amend the Part 173 Manual of Standards (MOS) to permanently set in place a longstanding temporary exemption arrangement relating to instrument flight procedure publishing standards, and to clarify the requirements for calculating visibility minima.

Part 173 of *Civil Aviation Safety Regulations 1998 (CASR)* sets the Australian standards for instrument flight procedure design. The regulation and its associated MOS was introduced in 2003.

Purpose and scope of the proposed amendments

Chapters 8 and 9 of the MOS set the design and publishing standards for instrument flight procedures including the methods and formulae for calculating visibility minima.

Publishing standards for instrument flight procedures

Section 8.9 of the MOS sets the publishing standards for instrument flight procedure designs. These standards cover text format. For example it describes the latitude and longitude format for depiction on an instrument approach chart and the pictorial layout for instrument flight procedure charts.

The MOS standards reflected original publishing standards in use at the time of the initial release of the MOS in 2003. Since then, there have been changes to the regulatory arrangements for publication of aeronautical data such as instrument flight procedure charts. Most significantly, Part 175 of CASR (Aeronautical information management) came into effect in 2014. Part 175 introduced a scheme for aeronautical information management. Information, including instrument flight procedure charts, must comply with a data product specification (DPS). Additionally, ongoing product improvement initiatives have revealed shortcomings in the original publishing standards in the MOS.

Until recently, it has not been possible to amend the MOS to reflect the changed situation. Instead, and for several years, CASA has granted exemptions from the publishing requirements in the MOS to the small class of Part 173 certified designers. The terms of these exemptions (the latest being Instrument Number CASA EX 134/17) reflect the current and ongoing arrangements according to CASR Part 175.

However, instruments of exemption are time-limited. This means CASA has had to, from time to time, renew the exemption processes that have a time and financial impact.

CASA proposes to change the MOS to reflect the terms of the latest exemption and intends to replace Section 8.9 – including the sample charts and publishing standards – with a broad requirement for procedures to be prepared in accordance with a DPS given to the designer under regulation 175.160 of CASR. The certified designer would also have to ensure that the operations manual includes a description of the processes and documents used to present the matters mentioned in the DPS. CASA also proposes to make consequential amendments relating to the proposed Section 8.9 changes affecting paragraph 2.1.1.1 (r), 6.1.2.3 and 6.1.3.1 (b).

Calculation of instrument approach visibility minima

There has been an ongoing issue with the Section 8.1 standards for determining visibility minima. Due to the formatting of the requirements, the standards have sometimes been interpreted as requiring designers to adjust vertical minima to account for the visibility minima. However, the intended policy requirement is that visibility minima must be adjusted taking into account the vertical minima, and not vice versa. Further, the calculation standards are restrictive when compared to international standards in terms of allowing an operational benefit (reduced visibility minima) for runways equipped with approach lighting systems that are shorter than the standard 900 m in length.

To address these issues, CASA proposes to consolidate paragraphs 8.1.6.1, 8.1.6.2 and subsection 9.1.1 into a single section. The new section will have standards to the effect that visibility minima calculations will be on the basis of runway alignment and length of approach lighting (if any) provided for the runway. The precise technical details can be found in the draft instrument for amending the MOS that is included on the covering webpage for this consultation.

Consequential and editorial amendments

The proposed changes require some consequential amendments. CASA is taking the opportunity to consolidate various definitions into a new 'Definitions' section and to make some minor editorial changes in the document.

Previous consultations

In 2017, CASA consulted with the affected class of Part 173 certified designers when the current exemption to the Section 8.9 standards was being prepared. In an endeavour to explain the intended policy on calculation of visibility minima, CASA has also held discussions from time to time with instrument flight procedure designers.

Impact on industry

Publishing standards for instrument flight procedures

In relation to amending the publishing standards for instrument flight procedures, CASA assesses the changes as positive. Formally documenting a requirement in the MOS avoids the time and cost impacts of setting the same standards via exemption and the requirement of renewal from time to time.

Because the changes to the MOS will simply reflect the terms of the existing exemption, instrument flight procedure designers will not need to change existing business practices.

Calculation of instrument approach visibility minima

Overall, the changes to the standards for calculating instrument approach visibility minima are expected to be positive.

For aircraft operators, these changes will:

- with respect to differing minimum altitudes and differing lengths of approach lighting, enable approach procedures that show a more gradual and operationally accommodating range of runway visual range (RVR)/visibility values

- allow RVR/visibility credit for localiser and GNSS-based approach procedures.

For approach procedure design organisations, these changes will:

- provide consolidated standards for RVR/visibility calculations thereby simplifying the task of accessing the relevant standards for these calculations
- eliminate the chance of misinterpretation that decision height minima must be upwards adjusted to account for a runway having no approach lighting or short length approach lighting.

For aerodrome operators, the changes will permit instrument approach procedures with closer coupling/alignment, between visibility minima and the existing and likely range of approach lighting systems in Australia. The closer coupling allows better minima and thus greater continuity of landing operations in all weather conditions.

Safety risk analysis

CASA assesses that the proposed changes generally 'refine' the existing requirements of the MOS and existing exempted arrangements and do not introduce new safety risks. However, CASA assessed that safety assessment was required for the proposal to allow credit for approach lighting (where provided for a runway) for non-precision approaches.

An RVR/visibility credit for approach lighting systems, when used with other than precision approaches, is currently not permitted by paragraph 9.1.1.3 of the Part 173 MOS. The underlying argument behind this prohibition was tested during an analysis of the approach lighting lateral coverage standards in the Part 139 MOS. This analysis showed that approach paths offset by up to 10 degree from the approach lighting axis will be within the lateral coverage of the lighting system. This theoretical analysis was flight tested in August 2011 by CASA using the 900 m long approach lighting system associated with the Runway 35 ILS at Canberra Airport, using GNSS for track keeping. The results showed – for approach path angles up to 3.7 degrees – offset angles up to 15 degrees permitted the approach lights to be used without impediment. However, operational useability factors resulted in a maximum offset of 11 degrees. This figure was reduced to 10 degrees for ease of use.

These results were checked against the 335 m approach light system on Runway 22 at RAAF Base, East Sale in May 2012. The check confirmed that the findings from the Canberra test were also applicable to the shorter approach lighting system.

In summary, CASA assesses there is no adverse safety risk introduced by conditionally allowing credit for approach lighting – where provided for a runway – for non-precision approaches. CASA notes that the proposal is consistent with practices in Europe and the USA.

Regulation impact statement

In relation to the proposed changes to the standards for calculating visibility minima, the Office of Best Practice Regulation (OBPR) determined that no further analysis in the form of a Regulation Impact Statement was required (OBPR ID: 22376).

In relation to the proposed changes to the publishing standards, CASA will consider the responses to this Summary of Proposed Change and submit a Preliminary Assessment to the

OBPR outlining the impact of the proposed amendments. CASA will prepare a Regulation Impact Statement if required by the OBPR.

Closing date for comment

CASA will consider all comments received as part of this consultation process and incorporate changes as appropriate. Comments on the draft Part 173 MOS amendments should be submitted through the online response form by close of business 2 June 2019.