

CIVIL AVIATION NOTICES
CAN 3-36
REDUCED VERTICAL SEPARATION MINIMA (RVSM)
INDEX

36.1	General	2
36.2	Purpose	2
36.3	Applicability	2
36.4	Cancellation	2
36.5	Effective Date	3
36.6	Application for Operational Approval	3
36.7	Typical Condition of Approval	3
38.8	RVSM Maintenance and Inspection Programme	3
36.9	Height-Keeping Performance Monitoring Programme	4
APPENDIX 1		5
	ALTIMETRY SYSTEM PERFORMANCE REQUIREMENTS FOR OPERATIONS IN RVSM AIRSPACE	5

REDUCED VERTICAL SEPARATION MINIMA (RVSM)

36.1 General

This CANs are issued by the Director-General of Civil Aviation and Regulation from time to time to provide practical guidance or certainty in respect of the statutory requirements for aviation safety. CANs contain information about standards, practices and procedures acceptable to PACA. A CAN may be used to demonstrate compliance with a statutory requirement.

36.2 Purpose

This CAN provides guidance to demonstrate compliance with the requirements regarding, and information related to an application for, an approval for operations in RVSM airspace.

36.3 Applicability

This CAN is applicable to the Omani Commercial Air Transport and General Aviation operator/owner seeking an approval for RVSM operations.

For flights in defined portions of airspace where, based on Regional Air Navigation Agreement, a reduced vertical separation minimum (RVSM) of 300 m (1,000 ft) is applied between FL 290 and FL 410 inclusive, an aeroplane:

- a) shall be provided with equipment which is capable of:
 - 1) indicating to the flight crew the flight level being flown;
 - 2) automatically maintaining a selected flight level;
 - 3) providing an alert to the flight crew when a deviation occurs from the selected flight level.
 - 4) The threshold for the alert (TVE) shall not exceed ± 90 m (300 ft); and
 - 5) automatically reporting pressure-altitude;
- b) shall be authorized by the State of Registry for operation in the airspace concerned; and
- c) shall demonstrate a vertical navigation performance in accordance with Appendix 1.

General aviation (GA) activities. All civil aviation operations other than scheduled air services and non-scheduled air transport operations for remuneration or hire (Annex 6, Part II).

Commercial air transport operator. An operator that, for remuneration, provides scheduled or non-scheduled air transport services to the public for the carriage of passengers, freight or mail. This category also includes small-scale operators that provide commercial air transport services.

36.4 Cancellation

Not applicable.

36.5 Effective Date

This CAN is effective from 15 October 2019.

36.6 Application for Operational Approval

36.6.1 An operator applying for RVSM operation approval shall submit documents to demonstrate compliance with the requirements as set out in CAR-OPS. These documents may include:

- a) relevant pages of Airplane Flight Manual;
- b) Type Certificate, supplemental Type Certificate or Type Certificate Data Sheet;
- c) relevant pages of the operations manual stating its operating policy/procedures as well as crew training requirements; and
- d) relevant pages of the aircraft and component maintenance manuals, structural repair manual, standard practices manuals, illustrated parts catalogue, maintenance schedule, MMEL/MEL.

36.6.2 To process the application, PACA adopts the standard 5-step approach, namely: pre-application meeting, formal submission of application, evaluation and/or assessment of documents, flight proving/validation and final approval or rejection of application.

36.6.3 Subject to completeness and timeliness of documents submission the processing of RVSM operational approval would require thirty (30) working days.

36.7 Typical Condition of Approval

36.7.1 RVSM operational approval is aircraft and operator specific; PACA must be notified without delay if there are any changes to the identity of the aircraft or operator. The changes will be subject to PACA's approval for continued validity of the RVSM operational approval.

36.7.2 The RVSM operational approval is subject to the operator's compliance with ICAO Document 7030, Regional Supplementary Procedures, and State AIPs.

38.8 RVSM Maintenance and Inspection Programme

36.8.1 The maintenance and inspection programme required in PACA regulatory requirement is to ensure that the altimetry system continue to meet RVSM standards. The integrity of the altimetry design features should be verified by scheduled tests and inspections. The programme should include all aspects of continuing airworthiness which may be affected by RVSM requirements.

36.8.2 The programme should contain the maintenance practices outlined in the applicable aircraft and component manufacturer's maintenance manuals for each aircraft type. The operator should include the following if not already addressed by an approved maintenance programme:

- a) All RVSM equipment should be maintained in accordance with the component manufacturer's maintenance requirements outlined in the approved data package.

- b) Any modification, repair, or design change which in any way alters the initial RVSM approval, should be subject to a design review by persons approved by the approving authority.
- c) Any maintenance practices which may affect the continuing RVSM approval integrity, e.g. the alignment of pitot/static probes,
- d) Built-in Test Equipment (BITE) testing is not an acceptable basis for calibrations, (unless it is shown to be acceptable by the airframe manufacturer with the approval of PACA) and should only be used for fault isolation and troubleshooting purposes.
- e) Some aircraft manufacturers have determined that the removal and replacement of components utilising quick disconnects and associated fittings, when properly connected, will not require a leak check. While this approach may allow the aircraft to meet static system certification standards when properly connected, it does not always ensure the integrity of the fittings and connectors, nor does it confirm system integrity during component replacement and reconnections. Therefore, a system leak check or visual inspection should be accomplished any time a quick disconnect static line is broken.

36.8.3 Airframe and static systems should be maintained in accordance with the airframe manufacturer's inspection standards and procedures.

36.9 Height-Keeping Performance Monitoring Programme

36.9.1 The height-keeping performance monitoring programme is mandatory and shall be conducted to get a RVSM approval from PACA.

36.9.2 The Omani operator /owner of Oman registered aircraft holding an RVSM approval shall establish a requirement which ensures that a minimum of two aeroplanes of each aircraft type grouping of the owner/operator have their height keeping performance monitored, at least once every two years or within intervals of one thousand (1,000) flight hours per aeroplane, whichever period is longer. If an owner/operator aircraft type grouping consists of a single aeroplane, monitoring of that airplane shall be accomplished within the specified period.

36.9.3 As part of the programme, the operator should take immediate action to rectify any report of height-keeping error. Additionally, PACA should be informed within seven-two (72) hours with initial analysis of causal factors, as well as measures taken to prevent further occurrence of the following events:

- a) TVE equal to or greater than ± 300 ft (± 90 m);
- b) ASE equal to or greater than ± 245 ft (± 75 m); and
- c) Assigned Altitude Deviation (AAD) or Large Height Deviation (LHD) equal to or greater than ± 300 ft (± 90 m).

36.9.4 Following resolution of the cause(s), the operator will be expected to demonstrate compliance with the RVSM Minimum Aviation System Performance Specification (MASPS) which includes height-keeping performance monitoring of the subject aircraft.

APPENDIX 1**ALTIMETRY SYSTEM PERFORMANCE REQUIREMENTS FOR OPERATIONS IN RVSM AIRSPACE**

1. In respect of groups of aeroplanes that are nominally of identical design and build with respect to all details that could influence the accuracy of height-keeping performance, the height-keeping performance capability shall be such that the total vertical error (TVE) for the group of aeroplanes shall have a mean no greater than 25 m (80 ft) in magnitude and shall have a standard deviation no greater than $28 - 0.013z^2$ for $0 \leq z \leq 25$ when z is the magnitude of the mean TVE in metres, or $92 - 0.004z^2$ for $0 \leq z \leq 80$ where z is in feet. In addition, the components of TVE shall have the following characteristics:
 - a) the mean altimetry system error (ASE) of the group shall not exceed 25 m (80 ft) in magnitude;
 - b) the sum of the absolute value of the mean ASE and of three standard deviations of ASE shall not exceed 75 m (245 ft); and
 - c) the differences between cleared flight level and the indicated pressure altitude actually flown shall be symmetric about a mean of 0 m, with a standard deviation no greater than 13.3 m (43.7 ft), and in addition, the decrease in the frequency of differences with increasing difference magnitude shall be at least exponential.
2. In respect of aeroplanes for which the characteristics of the airframe and altimetry system fit are unique and so cannot be classified as belonging to a group of aeroplanes encompassed by paragraph 1, the height-keeping performance capability shall be such that the components of the TVE of the aeroplane have the following characteristics:
 - a) the ASE of the aeroplane shall not exceed 60 m (200 ft) in magnitude under all flight conditions; and
 - b) the differences between the cleared flight level and the indicated pressure altitude actually flown shall be symmetric about a mean of 0 m, with a standard deviation no greater than 13.3 m (43.7 ft), and in addition, the decrease in the frequency of differences with increasing difference magnitude shall be at least exponential.

Anwar Abdullah AL-Raisi

Acting Director General of Civil Aviation Regulation

