

Advisory Circular

REDUCED VERTICAL SEPARATION MINIMA (RVSM)

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GENERAL

Advisory Circulars (ACs) are issued by the Director-General of Civil Aviation (DGCA) from time to time to provide practical guidance or certainty in respect of the statutory requirements for aviation safety. ACs contain information about standards, practices and procedures acceptable to CAAS. An AC may be used, in accordance with section 3C of the Air Navigation Act (Cap. 6) (ANA), to demonstrate compliance with a statutory requirement. The revision number of the AC is indicated in parenthesis in the suffix of the AC number.

PURPOSE

This AC provides guidance to demonstrate compliance with the requirements regarding, and information related to an application for, an approval for operations in RVSM airspace in accordance with ANR-98.

APPLICABILITY

This AC is applicable to the operator seeking an approval for RVSM operations.

RELATED REGULATIONS

This AC relates specifically to Division 3 in Part 2 of ANR-98.

RELATED ADVISORY CIRCULARS

- AC 98-1-1 Application for an Approval to Conduct a Special Operation

CANCELLATION

This AC supersedes AC AOC-15.

EFFECTIVE DATE

This AC is effective from 1 October 2018.

OTHER REFERENCES

- ICAO Doc 9574 Manual on a 300 m (1000 ft) vertical separation minimum between FL 290 and FL 410 inclusive
- FAA AC 91-85A Authorization of Aircraft and Operators for flight in Reduced Vertical Separation Minimum (RVSM) airspace
- EASA/JAA TGL 6 (Rev 1) p Guidance material on the approval of aircraft and operators for flights in airspace above Flight Level 290 when a 300 m (1000 ft) vertical separation minimum is applied

1 APPLICATION FOR OPERATIONAL APPROVAL

- 1.1 An operator applying for RVSM operation approval shall submit documents to demonstrate compliance with the requirements as set out in Division 3 in Part 2 of ANR-98. 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.
- 1.2 To process the application, CAAS adopts the standard 5-step approach (as described in AC 98-1-1), namely: pre-application meeting, formal submission of application, evaluation and/or assessment of documents, flight proving/validation and final approval or rejection of application.
- 1.3 Subject to completeness and timeliness of documents submission the processing of RVSM operational approval would require 30 working days.

2 TYPICAL CONDITIONS OF APPROVAL

- 2.1 RVSM operational approval is aircraft and operator specific; CAAS must be notified without delay if there are any changes to the identity of the aircraft or operator. The changes will be subject to CAAS's approval for continued validity of the RVSM operational approval.
- 2.2 The RVSM operational approval is subject to the operator's compliance with ICAO Document 7030, Regional Supplementary Procedures, and State AIPs.

3 RVSM MAINTENANCE AND INSPECTION PROGRAMME

- 3.1 The maintenance and inspection programme required in Regulation 17 of ANR-98 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.
- 3.2 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, dents, or the deformation around static plates, should be referred to CAAS.

- (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 CAAS) 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.

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

4 HEIGHT-KEEPING PERFORMANCE MONITORING PROGRAMME

4.1 The height-keeping performance monitoring programme required in Regulation 18 of ANR-98 should be set up as soon as possible, and the height-keeping performance monitoring flight should be conducted within 6 months of the RVSM operational approval.

4.2 CAAS will facilitate the conduct of this height-keeping performance monitoring flight. The operator should complete a MAAR Form F2 (USC Form 2 for EUROCONTROL User Support Cell) for CAAS to submit to the RMA (Regional Monitoring Agency), which is MAAR for Asia region, for conduct of Aircraft Height-Keeping Performance Monitoring flight.

4.3 As part of the programme, the operator should take immediate action to rectify any report of height-keeping error. Additionally, CAAS should be informed within 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).

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