|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Ansökan om RVSM, Reduced Vertical Separation Minima *Version 2018-02-20* | | |  |
|  | | | | |
| Operatör | | | | | |
|  | | | | | |
| AOC tillståndsnummer | | Ifylld EASA Form 2 | | | |
|  | |  | | | |
|  | | | Bilaga nummer: | | |
| If established, relevant elements defined in the mandatory part of the operational suitability data established in accordance with Regulation (EU) No 748/2012 are taken into account | | |  | | |
| Transportstyrelsen | | | | | |
| Ärendenummer | | Handläggare | | | |
|  | |  | | | |
| Berörda sektioner/samråd | | | | | |
|  | | | | | |
| Information | | | | | |
|  | | | | | |
| Denna checklista är avsedd som stöd vid ansökan om RVSM; den innehåller både Implementing Rules och tillhörande AMC och GM.  Notera att RVSM i China skiljer sig från övriga luftrum och om ansökan även omfattar detta ska procedurerna utförligt beskrivas i manualverket, regelpunkt om regionala procedurer finns med i checklistan.  China Regional Monitoring Agency:  <http://www.chinarma.cn/rvsmvsnonrvsm/index.jhtml>  [Ifalpa, China RVSM](http://www.ifalpa.org/downloads/Level1/Briefing%20Leaflets/Air%20Traffic%20Services/08ATSBL02%20China%20RVSM%20(2008).pdf)  Varje regelparagraf i detta dokument följs av en ruta där operatören anger var i manualverket paragrafen omhändertagits och detta ska skrivas på detaljnivå för att underlätta och påskynda granskning och handläggning; att endast ange OM-A kap 8 är inte acceptabelt.   |  | | --- | | Där grönmarkerade rutor förekommer ska relevanta bilagor sändas in. Bilagans nummer ska anges i checklistan. | | | | | | |
|  | | | | | |
|  | | | | | |
|  | | | | | |
|  | | | | | |
|  | | | | | |

|  |  |  |
| --- | --- | --- |
| SPA.RVSM.100 RVSM operations | | |
|  | | |
| Aircraft shall only be operated in designated airspace where a reduced vertical separation minimum of 300 m (1000 ft) applies between flight level (FL) 290 and FL 410, inclusive, if the operator has been granted an approval by the competent authority to conduct such operations. | | |
| SPA.RVSM.105 RVSM operational approval | | |
|  | | |
| To obtain an RVSM operational approval from the competent authority, the operator shall provide evidence that:  (a) the RVSM airworthiness approval has been obtained; | | |
|  | Detaljerade referenser i OM: | TS notering: |
| (b) procedures for monitoring and reporting height-keeping errors have been established; |  |  |
|  | Detaljerade referenser i OM: | TS notering |
| (c) a training programme for the flight crew members involved in these operations has been established; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (d) operating procedures have been established specifying:  (1) the equipment to be carried, including its operating limitations and appropriate entries in the MEL; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (2) flight crew composition and experience requirements; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (3) flight planning; |  |  |
|  | Detaljerade referenser i OM: |  |
| (4) pre-flight procedures; |  |  |
|  | Detaljerade referenser i OM: |  |
| (5) procedures prior to RVSM airspace entry; |  |  |
|  | Detaljerade referenser i OM: |  |
| (6) in-flight procedures; |  |  |
|  | Detaljerade referenser i OM: |  |
| (7) post-flight procedures; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (8) incident reporting; |  |  |
|  | Detaljerade referenser i OM: | TS notering |
| (9) specific regional operating procedures. (ex. China) |  |  |
| AMC1 SPA.RVSM.105 RVSM operational approval  |  | | --- | | CONTENT OF OPERATOR RVSM APPLICATION | | | |
|  | Bilagor nummer: | TS notering: |
| The following material should be made available to the competent authority, in sufficient time to permit evaluation, before the intended start of RVSM operations:  (a) Airworthiness documents  Documentation that shows that the aircraft has RVSM airworthiness approval. This should include an aircraft flight manual (AFM) amendment or supplement. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (b) Description of aircraft equipment  A description of the aircraft appropriate to operations in an RVSM environment. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (c) Training programmes, operating practices and procedures  The operator should submit training syllabi for initial and recurrent training programmes together with other relevant material. The material should show that the operating practices, procedures and training items, related to RVSM operations in airspace that requires State operational approval, are incorporated. |  |  |
|  | Bilaga/-or nummer: | TS notering: |
| (d) Manuals and checklists  The appropriate manuals and checklists should be revised to include information/guidance on standard operating procedures. Manuals should contain a statement of the airspeeds, altitudes and weights considered in RVSM aircraft approval, including identification of any operating limitations or conditions established for that aircraft type. Manuals and checklists may need to be submitted for review by the competent authority as part of the application process. |  |  |
|  | Bilaga/-or nummer: | TS notering: |
| (e) Past performance  Relevant operating history, where available, should be included in the application. The applicant should show that any required changes have been made in training, operating or maintenance practices to improve poor height-keeping performance. |  |  |

|  |  |  |
| --- | --- | --- |
|  | Bilaga nummer: | TS notering: |
| (f) Minimum equipment list  Where applicable, a minimum equipment list (MEL), adapted from the master minimum equipment list (MMEL), should include items pertinent to operating in RVSM airspace. |  |  |
|  | Bilaga/-or nummer: | TS notering: |
| (g) Plan for participation in verification/monitoring programmes  The operator should establish a plan for participation in any applicable verification/monitoring programme acceptable to the competent authority. This plan should include, as a minimum, a check on a sample of the operator's fleet by a regional monitoring agency (RMA)’s independent height-monitoring system. |  |  |
|  | Bilaga/-or nummer: | TS notering: |
| (h) Continuing airworthiness  Aircraft maintenance programme and continuing airworthiness procedures in support of the RVSM operations. |  |  |
| AMC2 SPA.RVSM.105 RVSM operational approval  |  | | --- | | OPERATING PROCEDURES | | | |
|  | Detaljerade referenser i OM: | TS notering: |
| (a) Flight planning  (1) During flight planning the flight crew should pay particular attention to conditions that may affect operation in RVSM airspace. These include, but may not be limited to:  (i) verifying that the airframe is approved for RVSM operations; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (ii) reported and forecast weather on the route of flight; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (iii) minimum equipment requirements pertaining to height-keeping and alerting systems; and |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (iv) any airframe or operating restriction related to RVSM operations. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (b) Pre-flight procedures  (1) The following actions should be accomplished during the pre-flight procedure:  (i) Review technical logs and forms to determine the condition of equipment required for flight in the RVSM airspace. Ensure that maintenance action has been taken to correct defects to required equipment. |  |  |
|  | Detaljerade referenser i OM/CAME/AMP: | TS notering: |
| (ii) During the external inspection of aircraft, particular attention should be paid to the condition of static sources and the condition of the fuselage skin near each static source and any other component that affects altimetry system accuracy. This check may be accomplished by a qualified and authorised person other than the pilot (e.g. a flight engineer or ground engineer). |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (iii) Before take-off, the aircraft altimeters should be set to the QNH (atmospheric pressure at nautical height) of the airfield and should display a known altitude, within the limits specified in the aircraft operating manuals. The two primary altimeters should also agree within limits specified by the aircraft operating manual. An alternative procedure using QFE (atmospheric pressure at aerodrome elevation/runway threshold) may also be used. The maximum value of acceptable altimeter differences for these checks should not exceed 23 m (75 ft). Any required functioning checks of altitude indicating systems should be performed. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (iv) Before take-off, equipment required for flight in RVSM airspace should be operative and any indications of malfunction should be resolved. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (c) Prior to RVSM airspace entry  (1) The following equipment should be operating normally at entry into RVSM airspace:  (i) two primary altitude measurement systems. A cross-check between the primary altimeters should be made. A minimum of two will need to agree within ±60 m (±200 ft). Failure to meet this condition will require that the altimetry system be reported as defective and air traffic control (ATC) notified; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (ii) one automatic altitude-control system;  (iii) one altitude-alerting device; and  (iv) operating transponder. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (2) Should any of the required equipment fail prior to the aircraft entering RVSM airspace, the pilot should request a new clearance to avoid entering this airspace. |  |  |

|  |  |  |
| --- | --- | --- |
|  | Detaljerade referenser i OM: | TS notering: |
| (d) In-flight procedures  (1) The following practices should be incorporated into flight crew training and procedures:  (i) Flight crew should comply with any aircraft operating restrictions, if required for the specific aircraft type, e.g. limits on indicated Mach number, given in the RVSM airworthiness approval. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (ii) Emphasis should be placed on promptly setting the sub-scale on all primary and standby altimeters to 1013.2 hPa / 29.92 in Hg when passing the transition altitude, and rechecking for proper altimeter setting when reaching the initial cleared flight level. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (iii) In level cruise it is essential that the aircraft is flown at the cleared flight level. This requires that particular care is taken to ensure that ATC clearances are fully understood and followed. The aircraft should not intentionally depart from cleared flight level without a positive clearance from ATC unless the crew are conducting contingency or emergency manoeuvres. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (iv) When changing levels, the aircraft should not be allowed to overshoot or undershoot the cleared flight level by more than 45 m (150 ft). If installed, the level off should be accomplished using the altitude capture feature of the automatic altitude-control system. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (v) An automatic altitude-control system should be operative and engaged during level cruise, except when circumstances such as the need to re-trim the aircraft or turbulence require disengagement. In any event, adherence to cruise altitude should be done by reference to one of the two primary altimeters. Following loss of the automatic height-keeping function, any consequential restrictions will need to be observed. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (vi) Ensure that the altitude-alerting system is operative. |  |  |

|  |  |  |
| --- | --- | --- |
|  | Detaljerade referenser i OM: | TS notering: |
| (vii) At intervals of approximately 1 hour, cross-checks between the primary altimeters should be made. A minimum of two will need to agree within ±60 m (±200 ft). Failure to meet this condition will require that the altimetry system be reported as defective and ATC notified.  The usual scan of flight deck instruments should suffice for altimeter cross-checking on most flights. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (viii) In normal operations, the altimetry system being used to control the aircraft should be selected for the input to the altitude reporting transponder transmitting information to ATC. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| ix) If the pilot is notified by ATC of a deviation from an assigned altitude exceeding ±90 m (±300 ft) then the pilot should take action to return to cleared flight level as quickly as possible. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (2) Contingency procedures after entering RVSM airspace are as follows:  (i) The pilot should notify ATC of contingencies (equipment failures, weather) that affect the ability to maintain the cleared flight level and coordinate a plan of action appropriate to the airspace concerned. The pilot should obtain to the guidance on contingency procedures is contained in the relevant publications dealing with the airspace. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (ii) Examples of equipment failures that should be notified to ATC are:  (A) failure of all automatic altitude-control systems aboard the aircraft; |  |  |
|  | Detaljerade referenser i OM: | TS notering. |
| (B) loss of redundancy of altimetry systems; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (C) loss of thrust on an engine necessitating descent; or |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (D) any other equipment failure affecting the ability to maintain cleared flight level. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (iii) The pilot should notify ATC when encountering greater than moderate turbulence. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (iv) If unable to notify ATC and obtain an ATC clearance prior to deviating from the cleared flight level, the pilot should follow any established contingency procedures for the region of operation and obtain ATC clearance as soon as possible. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (e) Post-flight procedures  (1) In making technical log entries against malfunctions in height-keeping systems, the pilot should provide sufficient detail to enable maintenance to effectively troubleshoot and repair the system. The pilot should detail the actual defect and the crew action taken to try to isolate and rectify the fault.  (2) The following information should be recorded when appropriate:  (i) primary and standby altimeter readings; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (ii) altitude selector setting; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (iii) subscale setting on altimeter; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (iv) autopilot used to control the aircraft and any differences when an alternative autopilot system was selected; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (v) differences in altimeter readings, if alternate static ports selected; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (vi) use of air data computer selector for fault diagnosis procedure; and |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (vii) the transponder selected to provide altitude information to ATC and any difference noted when an alternative transponder was selected. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (f) Crew training  (1) The following items should also be included in flight crew training programmes:  (i) knowledge and understanding of standard ATC phraseology used in each area of operations; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (ii) importance of crew members cross-checking to ensure that ATC clearances are promptly and correctly complied with; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (iii) use and limitations in terms of accuracy of standby altimeters in contingencies. Where applicable, the pilot should review the application of static source error correction/position error correction through the use of correction cards; such correction data should be available on the flight deck; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (iv) problems of visual perception of other aircraft at 300 m (1 000 ft) planned separation during darkness, when encountering local phenomena such as northern lights, for opposite and same direction traffic, and during turns; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (v) characteristics of aircraft altitude capture systems that may lead to overshoots; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (vi) relationship between the aircraft's altimetry, automatic altitude control and transponder systems in normal and abnormal conditions; and |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (vii) any airframe operating restrictions, if required for the specific aircraft group, related to RVSM airworthiness approval. |  |  |
| AMC3 SPA.RVSM.105 RVSM operational approval | | |
| CONTINUING AIRWORTHINESS | | |
|  | Detailed reference in CAME/AMP: | TS notering: |
| (a) Maintenance programme  The aircraft maintenance programme should include the instructions for continuing airworthiness issued by the type certificate holder in relation to the RVSM operations certification in accordance with AMC1 ACNS.A.GEN.010. |  |  |
|  | Detailed reference in CAME/AMP: | TS notering: |
| (b) Continuing airworthiness procedures  The continuing airworthiness procedures should establish a process to:  (1) assess any modification or design change which in any way affects the RVSM approval; |  |  |
|  | Detailed reference in CAME/AMP: | TS notering: |
| (2) evaluate any repairs that may affect the integrity of the continuing RVSM approval, e.g. those affecting the alignment of pitot/static probes, repairs to dents, or deformation around static plates; |  |  |
|  | Detailed reference in CAME/AMP: | TS notering: |
| (3) ensure the proper maintenance of airframe geometry for proper surface contours and the mitigation of altimetry system error, surface measurements or skin waviness as specified in the instructions for continued airworthiness (ICA), to ensure adherence to RVSM tolerances.  These checks should be performed following repairs or alterations having an effect on airframe surface and airflow. |  |  |
|  | Detailed reference in CAME/AMP: | TS notering: |
| (c) Additional training may be necessary for continuing airworthiness and maintenance staff to support RVSM approval. Areas that may need to be highlighted for the initial and recurrent training of relevant personnel are:  (1) Aircraft geometric inspection techniques; |  |  |
|  | Detailed reference in CAME/AMP: | TS notering: |
| (2) Test equipment calibration and use of that equipment; and |  |  |
|  | Detailed reference in CAME/AMP: | TS notering: |
| (3) Any special instructions or procedures introduced for RVSM approval. |  |  |
|  | Detailed reference in CAME/AMP: | TS notering: |
| (d) Test equipment |  |  |
|  | Detailed reference in CAME/AMP: | TS notering: |
| The operator should ensure that maintenance organisations use test equipment adequate for maintenance of the RVSM systems. The adequacy of the test equipment should be established in accordance with the type certificate holder recommendations and taking into consideration the required test equipment accuracy and the test equipment calibration. |  |  |
| GM1 SPA.RVSM.105 RVSM operational approval | | |
|  | | |
| SPECIFIC REGIONAL PROCEDURES  (a) The areas of applicability (by Flight Information Region) of RVSM airspace in identified ICAO regions is contained in the relevant sections of ICAO Document 7030/4. In addition, these sections contain operating and contingency procedures unique to the regional airspace concerned, specific flight planning requirements and the approval requirements for aircraft in the designated region.  (b) Comprehensive guidance on operational matters for European RVSM airspace is contained in ICAO EUR Doc 009 entitled ‘Guidance material on the implementation of a 300 m (1000 ft) vertical separation minimum in the European RVSM airspace’ with further material included in the relevant State aeronautical publications. | | |
| SPA.RVSM.110 RVSM equipment requirements | | |
|  | Detaljerade referenser i OM: | TS notering: |
| Aircraft used for operations in RVSM airspace shall be equipped with:  (a) two independent altitude measurement systems; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (b) an altitude alerting system; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (c) an automatic altitude control system; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (d) a secondary surveillance radar (SSR) transponder with altitude reporting system that can be connected to the altitude measurement system in use for altitude control. |  |  |
| AMC1 SPA.RVSM.110(a) RVSM equipment requirements | | |
| TWO INDEPENDENT ALTITUDE MEASUREMENT SYSTEMS | | |
|  | Detaljerade referenser i OM: | TS notering: |
| Each system should be composed of the following components:  (a) cross-coupled static source/system, with ice protection if located in areas subject to ice accretion; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (b) equipment for measuring static pressure sensed by the static source, converting it to pressure altitude and displaying the pressure altitude to the flight crew: |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (c) equipment for providing a digitally encoded signal corresponding to the displayed pressure altitude, for automatic altitude reporting purposes; |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (d) static source error correction (SSEC), if needed to meet the performance criteria for RVSM flight envelopes; and |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (e) signals referenced to a flight crew selected altitude for automatic control and alerting. These signals will need to be derived from an altitude measurement system meeting the performance criteria for RVSM flight envelopes. |  |  |

|  |  |  |
| --- | --- | --- |
| SPA.RVSM.115 RVSM Height-keeping errors | | |
|  | Detaljerade referenser i OM: | TS notering: |
| (a) The operator shall report recorded or communicated occurrences of height-keeping errors caused by malfunction of aircraft equipment or of operational nature, equal to or greater than:  (1) a total vertical error (TVE) of ± 90 m (± 300 ft); |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (2) an altimetry system error (ASE) of ± 75 m (± 245 ft); and |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (3) an assigned altitude deviation (AAD) of ± 90 m (± 300 ft). |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (b) Reports of such occurrences shall be sent to the competent authority within 72 hours. Reports shall include an initial analysis of causal factors and measures taken to prevent repeat occurrences. |  |  |
|  | Detaljerade referenser i OM: | TS notering: |
| (c) When height-keeping errors are recorded or received, the operator shall take immediate action to rectify the conditions that caused the errors and provide follow-up reports, if requested by the competent authority. |  |  |
| AMC1 SERA.14001 General, ATC Phraseologies:1.1.13 Reduced Vertical Separation Minimum (RVSM) Operations(TSFS 2013:46 Transportstyrelsens föreskrifter och allmänna råd om fraseologi och radiotelefoni, med även svensk fraseologi, 4 kap 15§)  |  |  |  | | --- | --- | --- | |  | Detaljerade referenser i OM: | TS notering: | | Från flygtrafikledning:  CONFIRM RVSM APPROVED  BEKRÄFTA RVSMGODKÄND  -  UNABLE ISSUE CLEARANCE INTO RVSM AIRSPACE,  MAINTAIN (or DESCEND TO, or CLIMB TO) (level)  -  REPORT WHEN ABLE TO RESUME RVSM  ANMÄL NÄR DU KAN ÅTERGÅ TILL RVSM  -  CONFIRM ABLE TO RESUME RVSM  BEKRÄFTA ATT DU KAN ÅTERGÅ TILL RVSM  Från flygplan:  AFFIRM RVSM  BEKRÄFTAR RVSM  -  NEGATIVE RVSM [(supplementary information, e.g. State aircraft)]  NEGATIV RVSM [(tilläggsinformation t.ex. statsluftfartyg)]  -  UNABLE RVSM DUE TURBULENCE  KAN INTE BIBEHÅLLA RVSM PÅ GRUND AV TURBULENS  -  UNABLE RVSM DUE EQUIPMENT  KAN INTE BIBEHÅLLA RVSM PÅ GRUND AV UTRUSTNINGSFEL  -  READY TO RESUME RVSM  REDO ATT ÅTERGÅ TILL RVSM |  |  | | | |