CARC Civil Aviation Regulatory Commission	**Flight Operations Standards Directorate** **Commercial Air Transport Section - Special Approvals - RVSM Approval** **RVSM Approval Application Attachments Compliance List**

• **Operator Name**			
• **Airplane Type(s)**			
• **Inspector Name**			
• **Operator Applicant/Holder Focal Point**	**Name**	**Phone No.**	**E-mail**

No	RVSM Operational Approval Application Attachments	JCAR OPS AC No. 06	OMD	YES	NO	NA	Remarks
A	**Operations Manual Part D Training Program**						
1	**Training Program.**						
a	Submit training syllabus for initial and recurrent training programs together with other appropriate material to the CARC.	11.3 (c)					
b	The material will need to show that the operating practices, procedures and training items related to RVSM operations in airspace that requires operational approval, are incorporated	11.3 (c)					
2	**Flight Crew Training Program**						
a	**Ground Training.** The ground training of the RVSM shall be incorporated in conversion and recurrent training programs. The training consist of:						
(1)	Knowledge and understating of standard ATC phraseology used in each area of operations	App. 4 para 7					
(2)	Importance of crew members cross checking to ensure that ATC clearances are promptly and correctly complied with	App. 4 para 7					
(3)	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 will need to be readily available on the flight deck	App. 4 para 7					
(4)	Problem of visual perception of other aircraft at 300m (1,000 ft) planned separation during darkness, when encountering local phenomena such as northern lights, for opposite and same direction traffic, and during turns	App. 4 para 7					
(5)	Characteristics of aircraft altitude capture systems which may lead to overshoots	App. 4 para 7					
(6)	Relationship between the aircraft's altimetry, automatic altitude control and transponder systems in normal and abnormal conditions; and	App. 4 para 7					
(7)	Any airframe operating restrictions, if required for the specific aircraft group, related to RVSM airworthiness approval	App. 4 para 7					

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(8)	**Operating procedures to include:**						
(a)	**Flight planning.** 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:						
	• Verifying that the airframe is approved for RVSM operations	App. 4 para 2					
	• Reported and forecast weather on the route of flight	App. 4 para 2					
	• Minimum equipment requirements pertaining to height keeping and alerting systems; and	App. 4 para 2					
	• Any airframe or operating restriction related to RVSM approval	App. 4 para 2					
(b)	**Pre-flight procedures at the aircraft for each flight.** The following actions should be accomplished during the pre-flight procedure:						
	• Review technical logs and forms to determine the condition of equipment required for flight in the RVSM airspace	App. 4 para 3					
	• 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	App. 4 para 3					
	• Before takeoff, the aircraft altimeters should be set to the QNH 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	App. 4 para 3					
	• Before take-off, equipment required for flight in RVSM airspace should be operative, and any indications of malfunction should be resolved	App. 4 para 3					
(c)	**Procedures prior to RVSM airspace entry.** The following equipment should be operating normally at entry into RVSM airspace:						
	• Two primary altitude measurement systems	App. 4 para 4					
	• One automatic altitude-control system	App. 4 para 4					
	• One altitude-alerting device	App. 4 para 4					
	• Operating Transponder. An operating transponder may not be required for entry into all designated RVSM airspace. The operator should determine the requirement for an operational transponder in each RVSM area where operations are intended	App. 4 para 4					

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(d)	**In-flight procedures.** The following practices should be incorporated into flight crew training and procedures:						
	• Flight crews will need to comply with any aircraft operating restrictions, if required for the specific aircraft group, e.g. limits on indicated Mach number, given in the RVSM airworthiness approval	App. 4 para 5					
	• 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	App. 4 para 5					
	• 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	App. 4 para 5					
	• When changing levels, the aircraft should not be allowed to overshoot or undershoot the cleared flight level by more than 45 m (150 ft)	App. 4 para 5					
	• 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	App. 4 para 5					
	• Ensure that the altitude-alerting system is operative	App. 4 para 5					
	• At intervals of approximately one 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 notified to ATC	App. 4 para 5					
	• The usual scan of flight deck instruments should suffice for altimeter crosschecking on most flights	App. 4 para 5					
	• Before entering RVSM airspace, the initial altimeters cross check of primary and standby altimeters should be recorded	App. 4 para 5					
	• 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	App. 4 para 5					
	• If the pilot is advised in real time that the aircraft has been identified by a height monitoring system as exhibiting a TVE greater than ±90 m (±300 ft) and/or an ASE greater than ±75 m (±245 ft) then the pilot should follow established regional procedures to protect the safe operation of the aircraft. This assumes that the monitoring system will identify the TVE or ASE within the set limits for accuracy	App. 4 para 5					
	• If the pilot is notified by ATC of an assigned altitude deviation which exceeds ±90 m (±300 ft) then the pilot should take action to return to cleared flight level as quickly as possible	App. 4 para 5					

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(e)	**Contingency Procedures After Entering RVSM Airspace.** The pilot should notify ATC of contingencies (equipment failures, weather) which affect the ability to maintain the cleared flight level, and co-ordinate a plan of action appropriate to the airspace concerned.						
	• Examples of equipment failures which should be notified to ATC: failure of all automatic altitude-control systems aboard the aircraft, loss of redundancy of altimetry systems, loss of thrust on an engine necessitating descent; or any other equipment failure affecting the ability to maintain cleared flight level	App. 4 para 5					
	• The pilot should notify ATC when encountering greater than moderate turbulence	App. 4 para 5					
	• 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 and obtain ATC clearance as soon as possible	App. 4 para 5					
(f)	**Post Flight.** The following information should be recorded when appropriate						
	• Primary and standby altimeter readings	App. 4 para 6					
	• Altitude selector setting	App. 4 para 6					
	• Subscale setting on altimeter	App. 4 para 6					
	• Autopilot used to control the airplane and any differences when an alternative autopilot system was selected	App. 4 para 6					
	• Differences in altimeter readings, if alternate static ports selected	App. 4 para 6					
	• Use of air data computer selector for fault diagnosis procedure	App. 4 para 6					
	• The transponder selected to provide altitude information to ATC and any difference noted when an alternative transponder was selected	App. 4 para 6					
b	**Ground Checking.**						
(1)	The check conducted following the ground element of initial RVSM training may be accomplished by questionnaire (oral or written)	AC No. 06 & AMC 1.945					
c	**Flight Simulator and/or Flight Training.** The flight simulator training of the RVSM shall be incorporated in conversion and recurrent training programs. The training consist of practical training and evaluation on the RVSM operations to include:						
(1)	Pre-flight procedures,	App. 4 para 3					
(2)	Procedures prior to RVSM airspace entry,	App. 4 para 4					
(3)	In-flight procedures	App. 4 para 5					
(4)	Contingency procedures after entering RVSM airspace	App. 4 para 5					
(5)	Post flight	App. 4 para 6					

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d	**Operator Proficiency Check (OPC).**						
(1)	Each flight crew member undergoes operator proficiency checks to demonstrate his/her competence in carrying out normal, abnormal and emergency procedures	OPS 1.965 (b)					
e	**Line Flying Under Supervision.**						
(1)	Line flying under supervision provides the opportunity for a flight crew member to carry into practice the procedures and techniques he has been made familiar with during the ground and flying training of a conversion course to include:	IEM 1.945 1.1					
(a)	Pre-flight procedures	IEM 1.945 1.1					
(b)	Procedures prior to RVSM airspace entry	IEM 1.945 1.1					
(c)	In-flight procedures	IEM 1.945 1.1					
(d)	Post flight procedures	IEM 1.945 1.1					
f	**Line Check.**						
(1)	An operator shall ensure that each flight crew member undergoes a line check on the airplane to demonstrate his/her competence in carrying out normal line operations described in the Operations Manual:	OPS 1.965 (c)					
(a)	Pre-flight procedures at the aircraft for each flight	IEM 1.945 1.1					
(b)	Procedures prior to RVSM airspace entry	IEM 1.945 1.1					
(c)	In-flight procedures	IEM 1.945 1.1					
(d)	Post flight procedures	IEM 1.945 1.1					
g	**3 Years Recurrent Training**						
(1)	The RVSM recurrent training program - ground and flight simulator training shall be under taken every 3 years	11.3 (c) & App.1 to 1.965					

No	RVSM Operational Approval Application Attachments	JCAR OPS AC No. 13	OMD	YES	NO	NA	Remarks
3	**Flight Dispatcher Training Program.** The flight dispatcher training program of the RVSM shall be incorporated in conversion and recurrent training programs. The training consist of:						
a	Specific equipments	App. A					
b	Flight plan	App. A					
c	MEL requirements	App. A					
d	Normal procedures	App. A					
e	Contingency procedures	App. A					

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B	**Operations Manuals.**						
1	**Operations Manual Part A.**						
a	Operations manuals and checklists: operations manuals and checklists should be revised to include information/guidance on standard operating procedures for RVSM operations. Manuals should include a statement of airspeeds, altitudes and weights considered in RVSM aircraft approval, including identification of any operating limitations or conditions established for aircraft group	11.3 (d)					
b	**Flight Planning.** 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:						
(1)	Verifying that the airframe is approved for RVSM operations	App. 4 para 2					
(2)	Reported and forecast weather on the route of flight	App. 4 para 2					
(3)	Minimum equipment requirements pertaining to height keeping and alerting systems; and	App. 4 para 2					
(4)	Any airframe or operating restriction related to RVSM approval	App. 4 para 2					
c	**Pre-flight procedures at the aircraft for each flight.** The following actions should be accomplished during the pre-flight procedure:						
(1)	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	App. 4 para 3					
(2)	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 authorized person other than the pilot (e.g. a flight engineer or ground engineer)	App. 4 para 3					
(3)	Before takeoff, the aircraft altimeters should be set to the QNH 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 may also be used. Any required function checks of altitude indicating systems should be performed. Note. The maximum value for these checks cited in operating manuals should not exceed 23m (75ft)	App. 4 para 3					
(4)	Before take-off, equipment required for flight in RVSM airspace should be operative, and any indications of malfunctions should be resolved	App. 4 para 3					

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d	**Procedures prior to RVSM airspace entry.**						
(1)	The following equipment should be operating normally at entry into RVSM airspace:	App. 4 para 4					
(a)	Two primary altitude measurement systems	App. 4 para 4					
(b)	One automatic altitude-control system	App. 4 para 4					
(c)	One altitude alerting device	App. 4 para 4					
(2)	Operating transponder. An operating transponder may not be required for entry into all designated RVSM airspace. The operator should determine the requirement for an operational transponder in each RVSM area where operations are intended. The operator should also determine the transponder requirements for transition areas next to RVSM airspace	App. 4 para 4					
e	**In-Flight Procedures.** The following practices should be incorporated into flight crew training and procedures:						
(1)	Flight crews will need to comply with any aircraft operating restrictions, if required for the specific aircraft group, e.g. limits on indicated Mach number, given in the RVSM airworthiness approval	App. 4 para 5.1					
(2)	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 altitudes, and rechecking for proper altimeter setting when reaching the initial cleared flight level	App. 4 para 5.1					
(3)	In level cruise it is essential that the aircraft be flown at the cleared flight level. This requires that particular care be 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 maneuvers	App. 4 para 5.1					
(4)	When changing levels, the aircraft should not be allowed to overshoot or undershoot the cleared flight level by more than 45m (150 ft); Note: It is recommended that the acquisition of the CFL be accomplished using the altitude capture feature of the automatic altitude-control system	App. 4 para 5.1					
(5)	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	App. 4 para 5.1					
(6)	Ensure that the altitude-alerting system is operative	App. 4 para 5.1					

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(7)	At intervals of approximately one hour, cross-checks between the primary altimeters should be made. A minimum of two checks must agree within +/-200 ft (+/-60m). Failure to meet this condition will require that the altimetry system be reported as defective and notified to ATC;	App. 4 para 5.1					
(a)	The usual scan of flight deck instruments should suffice for altimeter cross-checking on most flights	App. 4 para 5.1					
(b)	Before entering RVSM airspace, the initial altimeter cross check of the primary and standby altimeters should be recorded	App. 4 para 5.1					
(8)	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	App. 4 para 5.1					
(9)	If the pilot is advised in real time that the aircraft has been identified by a height-monitoring system as exhibiting a TVE greater than +/-300ft (+/-90m) and/or an ASE greater than +/-245 ft (+/-75 m) then the pilot should follow established regional procedures to protect the safe operation of the aircraft. This assumes that the monitoring system will identify the TVE or ASE within the set limits for accuracy	App. 4 para 5.1					
(10)	If the pilot is notified by ATC of an assigned altitude deviation of +/-300 ft (+/-90 m) or more then the pilot should take action to return to the cleared flight level as quickly as possible	App. 4 para 5.1					
f	**Contingency procedures after entering RVSM airspace are:**						
(1)	The pilot should notify ATC of contingencies (equipment failures, weather), which affect the ability to maintain the cleared flight level, and co-ordinate an appropriate plan of action. Guidance on contingency procedures are contained in the relevant following publications dealing with airspace:	App. 4 para 5.2					
(a)	The areas of applicability (by flight information region) of RVSM airspace I identified ICAO regions is contained in the relevant section of ICAO document 7030/4	App. 4 para 5.2					
(b)	For the North Atlantic Minimum Navigation Performance Specification (MNPS) airspace, guidance is contained in ICAO document NAT 001 T13/5NB.5	App. 4 para 5.2					
(c)	Comprehensive guidance on operational matters for European RVSM airspace is contained in EUROCONTROL Document ASM ET1.ST.5000	App. 4 para 5.2					
(2)	Examples of equipment failures which should lead to notification to ATC:	App. 4 para 5.2					

No	RVSM Operational Approval Application Attachments	JCAR OPS AC No. 06	OMA	YES	NO	NA	Remarks
(a)	Failure of all automatic altitude-control system	App. 4 para 5.2					
(b)	Loss of redundancy of altimetry systems	App. 4 para 5.2					
(c)	Loss of thrust on an engine necessitating descent; or	App. 4 para 5.2					
(d)	Any other equipment failure affecting the ability to maintain cleared flight level	App. 4 para 5.2					
(3)	The pilot should notify ATC when encountering greater than moderate turbulence	App. 4 para 5.2					
(4)	If unable to notify ATC and obtain an ATC clearance prior to deviating from the assigned cleared flight level, the pilot should follow the established contingency procedures and obtain ATC clearance as soon as possible	App. 4 para 5.2					
g	**Post Flight**						
(1)	In marking 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	App. 4 para 6		✔			
(2)	The following information should be recorded when appropriate:	App. 4 para 6					
(a)	Primary and standby altimeter readings	App. 4 para 6					
(b)	Altitude selector setting	App. 4 para 6			✔		
(c)	Sub-scale setting on altimeter	App. 4 para 6					
(d)	Autopilot used to control the airplane and any differences when an alternative autopilot system was selected	App. 4 para 6					
(e)	Differences in altimeter readings, if alternate static ports selected	App. 4 para 6					
(f)	Use of air data computer selector for fault diagnosis procedure	App. 4 para 6					
(g)	The transponder selected to provide altitude information to ATC and any difference noted when an alternative transponder was selected	App. 4 para 6					

No	RVSM Operational Approval Application Attachments	JCAR OPS AC No. 06	MEL	YES	NO	NA	Remarks
2	**Minimum Equipment List**						
a	Any MEL revisions necessary to address provisions for RVSM operations must be approved. Operators must adjust the MEL, or equivalent, and specify the required dispatch conditions	11.3 (f)					

• Assessment Result	
☐ Satisfactory	☐ Unsatisfactory

• Remarks	

Flight Operations Inspector Name	Signature	Date