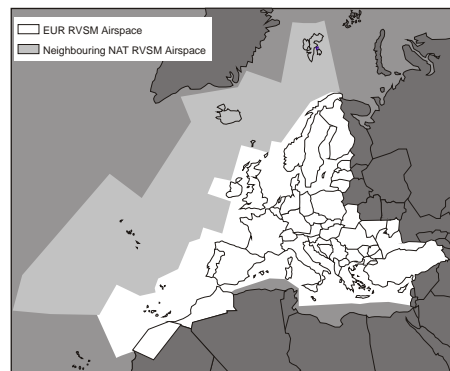


NOTES

GENERAL

RVSM (Reduced Vertical Separation Minimum) of 1,000 ft will be implemented in the European (EUR) RVSM Airspace between FL 290 & FL 410 (inclusive) on 24 January 2002.

EUR RVSM AREA



BENEFITS FOR ATC

RVSM simulations have confirmed the feasibility of EUR RVSM. The six extra Flight Levels (FLs) will:

- reduce controller workload;
- provide potential for increased en-route capacity;
- reduce traffic conflicts, particularly at crossing points;
- enable traffic to be more efficiently handled & controllers to approve more requests for optimum FLs.

RVSM CRUISING LEVELS

FL430*	
	FL410
FL400	FL390
FL380	FL370
FL360	FL350
FL340	FL330
FL320	FL310
FL300	FL290
FL280*	

In accordance with ICAO Annex 2, Appendix 3, para.a

AIRCRAFT RVSM APPROVAL

Accurate aircraft height-keeping is essential to safety in the RVSM environment. All aircraft intending to operate in EUR RVSM Airspace, except State aircraft, must therefore have an RVSM approval issued by the appropriate State authority. From Spring 2000 RVSM capable aircraft must participate in the EUR RVSM Height-Monitoring Programme which makes use of fixed & portable height-monitoring facilities.

FLIGHT IN EUR RVSM AIRSPACE

In summary, the rules for flight in EUR RVSM Airspace are that ATC shall:

- only clear flights conducted under IFR into EUR RVSM Airspace;
- except in transition airspace, only clear RVSM approved aircraft & State aircraft into EUR RVSM Airspace;
- provide a 1,000 ft vertical separation minimum (VSM) between RVSM approved aircraft;
- provide a 2,000 ft VSM between non-RVSM approved aircraft & any other aircraft;
- withhold clearance into RVSM Airspace to all civil formations;
- provide 2,000 ft VSM between all formation flights of State aircraft & any other aircraft.

FLIGHT PLANNING REQUIREMENTS

Specific Flight Planning procedures have been developed for EUR RVSM in ICAO Doc 7030/4 EUR Regional Supplementary Procedures. The flight plan (FPL) shall include:

- the entry point at the lateral limit of EUR RVSM airspace & requested flight level (RFL) after the entry point;
- the exit point at the lateral limit of the RVSM airspace & the RFL after the exit point;
- operators of RVSM approved aircraft shall insert "W" in Item 10 of the FPL regardless of requested FL;
- operators of non-RVSM approved State aircraft with a RFL of 290 or above shall insert "STS/NONRVSM" in Item 18 of the FPL;
- operators of formation flights of RVSM-approved State aircraft shall NOT insert "W" in Item 10 of the FPL;
- in addition to military operations, operators of customs & police aircraft shall insert "M" in Item 8 of the FPL;
- operators filing Repetitive Flight Plans (RPLs) shall include in Item Q of the RPL the RVSM approval status "EQPT/W" for RVSM approved aircraft, & "EQPT/" for non-RVSM approved aircraft;
- if a change of aircraft on an RPL results in a modification of the RVSM approval status in Item Q, the operator shall submit a modification message (CHG).

SYSTEM SUPPORT

The requirement for ATC to provide 2 different VSM in the same RVSM airspace - 1,000 ft & 2,000 ft VSM - generates safety-critical system support requirements:

- radar display systems must provide controllers with continuous & unambiguous information on the RVSM approval status of all flights under their responsibility;
- flight strips must display for controllers the non-RVSM approved status of all civil & State aircraft;
- where applicable, the indication that a non-RVSM approved aircraft is a State aircraft should be displayed;
- automatic conflict alert systems should be modified to use the RVSM approval or non-approval status of aircraft & apply the appropriate VSM of 1,000/2,000 ft.

STATE AIRCRAFT IN EUR RVSM AIRSPACE

State aircraft, i.e. military, customs & police aircraft, are exempted from EUR RVSM requirements. However, evidence from North Atlantic (NAT) RVSM indicates that a large proportion of military transport aircraft are RVSM approved

PROCEDURES FOR OAT CROSSING ATS ROUTES

In principle, in EUR RVSM Airspace State aircraft operating as Operational Air Traffic (OAT) will be considered non-RVSM approved. Therefore, the VSM required between State OAT crossing ATS routes & General Air Traffic (GAT) shall be 2,000 ft

CONTINGENCY PROCEDURES

If an aircraft cannot comply with EUR RVSM height-keeping requirements because of equipment failure, weather, turbulence, etc, ATC will provide 2,000 ft VSM or an appropriate horizontal separation from all other aircraft. Normally, such aircraft should be cleared out of RVSM Airspace.

RVSM ATC MANUAL

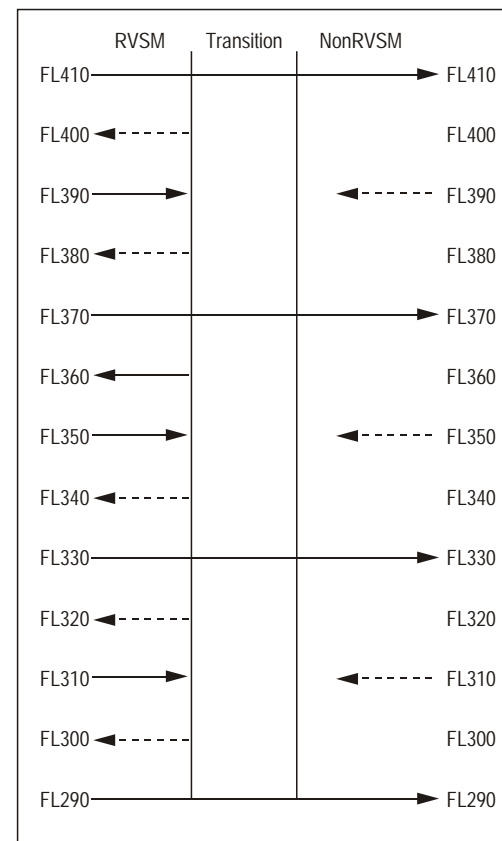
ATC procedures & phraseology for EUR RVSM are contained in the EUROCONTROL ATC Manual for a Reduced Vertical Separation Minimum (RVSM) in Europe (EUROCONTROL Doc ASM.ET1.ST13.5000). The Manual contains detailed procedures for flight operations in EUR RVSM Airspace including non-RVSM approved State aircraft operating as GAT, State aircraft crossing ATS routes as OAT, flight planning, inter-centre co-ordination, contingencies, transition, phraseology & communications failure.

CIRCUMSTANCE	PHRASEOLOGY
ATC wish to know RVSM status of flight	CONFIRM RVSM APPROVED
Pilot indication that flight is RVSM approved	AFFIRM RVSM
Pilot indication that flight is NON RVSM approved	NEGATIVE RVSM
Pilot of State aircraft indicating that flight is NON RVSM approved	NEGATIVE RVSM STATE AIRCRAFT
ATC denial of clearance into RVSM Airspace	UNABLE CLEARANCE INTO RVSM AIRSPACE, MAINTAIN [or DESCEND TO, or CLIMB TO] FL ...
Pilot reporting severe turbulence / weather affecting ability to maintain RVSM height-keeping requirements	UNABLE RVSM DUE TURBULENCE
Pilot reporting equipment degraded below RVSM requirements	UNABLE RVSM DUE EQUIPMENT
ATC requesting pilot to report when able to resume RVSM	REPORT ABLE TO RESUME RVSM
Pilot ready to resume RVSM after equipment/weather contingency	READY TO RESUME RVSM

RVSM TRANSITION PROCEDURES

ATC units on the interface of EUR RVSM Airspace shall:

- establish RVSM approved & non-RVSM approved State aircraft entering RVSM Airspace at the appropriate RVSM FL (see Transition Levels diagram);
- apply 1,000 ft VSM between RVSM approved aircraft, otherwise apply 2,000 ft VSM;
- establish non-RVSM approved civil aircraft below FL 290 if landing at an aerodrome below the RVSM Airspace;
- establish non-RVSM approved civil aircraft above FL 410 if transiting above the RVSM Airspace & landing at an aerodrome outside EUR RVSM Airspace;
- for aircraft leaving EUR RVSM Airspace, apply 2,000ft VSM and establish them at the appropriate non-RVSM levels.



ACAS

TCAS Version 6.04A is designed for a non-RVSM environment. ACAS II (TCAS Version 7.0) has improved compatibility with RVSM. The Mandatory Carriage and Operation of ACAS II for aircraft above 15000 kgs and more than 30 passengers started on 1 January 2000 with a transition period ending in March 2001.

WAKE TURBULENCE

The implementation of RVSM in the European traffic environment is not expected to increase the occurrence of hazardous wake vortex incidents although nuisance encounters may increase. ATC needs to better understand the character of wake vortexes and typical encounters.

TRAINING FOR RVSM

Briefings for ATC personnel have taken place detailing the RVSM Programme, flight planning, operational procedures, phraseology, airspace & systems changes. National RVSM ATC training should take place during Winter 2000/2001; refresher training should take place shortly before RVSM implementation on 24 January 2002.

CONTACTS

For more information on EUR RVSM please see the

EURRVSM website:
[Http://www.eur-rvsm.com](http://www.eur-rvsm.com)

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