

INTERNATIONAL CIVIL AVIATION ORGANIZATION



RVSM/RNAV/RNP TF/2 MEETING REPORT

(Dakar, 19 – 21 November 2003)

Prepared by the APIRG RVSM/RNAV/RNP TASK FORCE

The RVSM/RNAV/RNP Task Force is a Task Force of the AFI Planning and Implementation Regional Group (APIRG).

Its Reports are therefore submitted to APIRG through the ATS/AIS/SAR Sub-Group for review and action.

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Table of Contents

	Page
PART I - HISTORY OF THE MEETING	
Table of Contents.....	(i)
Introduction.....	(ii)
Secretariat.....	(ii)
Attendance	(ii)
Working Language	(ii)
Agenda	(iii)
Conclusions.....	(iv - viii)
PART II - REPORT ON AGENDA ITEMS.....	(1 - 4)

PART I - HISTORY OF THE MEETING

1. Introduction

1.1 The Second meeting of the RVSM/RNAV/RNP Task Force (RVSM/RNAV/RNP TF/2) was convened pursuant to AFI/7 RAN Meeting Recommendations 5/7, 5/17 and APIRG/13 Decision 13/58 by the International Civil Aviation Organization at the ICAO WACAF Office, Dakar, from 19 to 21 November 2003.

1.2 The meeting was opened by Mr. A. Cheiffou, ICAO Regional Director of the ICAO Western and Central African Office. He emphasized the preliminary studies which have to be done prior to the implementation of the required procedures aimed at increasing or improving the capacity of a given airspace in order to satisfy the demand of ever growing air traffic. In that regard, the Regional Director emphasized the importance of the RVSM/RNAV/RNP Task Force meeting being organized pursuant to APIRG/13 Decision 13/58 he recalled APIRG 14 Conclusion 14/21 relating to the development an AFI RVSM strategy/action plan within specific target dates and wished the members a fruitful deliberation with a view to further enhance the safety of air navigation in the Region.

Secretariat

1.3 Mr. Apolo Kharuga, Regional Officer, Air Traffic Management of the ICAO Nairobi Regional Office, acted as the Secretary of the meeting. He was assisted by Messrs. Ibrahim Auyo, Brou Konan, George Baldeh, ROs/ATM of the ICAO Dakar Offices and Vic Van Der Westhuizen, ICAO RVSM Consultant.

2. Attendance

2.1 The meeting was attended by 13 experts from 8 States and 3 International Organizations namely ASECNA, IATA and IFALPA. The list of participants is given at **Appendix A** to this report.

3. Working Language

3.1 The meeting was conducted in the English language only.

4. Agenda

4.1. The following Agenda was adopted:

Agenda Item 1 Review of the Terms of Reference and work programme of the implementation Task Force and Review and follow-up of the conclusions and decisions of the First Meeting of the RVSM/RNAV/RNP Task Force.

Agenda Item 2 Review of the RVSM SIP report.

Agenda Item 3 Development of Implementation strategy/action plan for RVSM.

Agenda Item 4 ATC operations

4.1 Development of ATM operational manual

4.2 Development of RVSM standard training programme model for pilots and Controllers.

4.1 Identify airspace and determine the limits where RVSM will be implemented.

Agenda Item 5. Legislation

5.1 Develop a sample national Legislation on RVSM.

5.2 Develop a sample national RVSM plan.

5.3 Develop a sample AIC, NOTAM, AIP Supplement on RVSM

5.4 Develop guidance material for airworthiness and operational approval.

5.5 Develop guidance material on the approval of aircraft and operators for flight in the RVSM airspace.

Agenda Item 6. Safety assessment and monitoring

6.1 Develop a sample deviation investigation form.

6.2 Develop a sample format for the report of large altitude deviation.

6.3 Safety Assessment.

6.4 Develop a sample format for data collection.

Agenda Item 7. Develop Doc 7030 amendment.

Agenda Item 8. Any other business.

5. Conclusions

5.1 The Task Force recorded its actions in the form of Conclusions.

Summary of Conclusions

Number	Title
<p>Conclusion 2/1:</p>	<p>RVSM monitoring agency for AFI Region</p> <p>That:</p> <ul style="list-style-type: none"> a) The task of monitoring safety in conjunction with implementation of RVSM in the AFI Region was assigned to South Africa (ATNS) taking into account the Terms of Reference and Work Programme of the AFI RVSM at Part II paragraph 1.2 (below) to this report. b) South Africa takes appropriate action to establish the AFI RMA as soon as possible but later than 31 March 2004. c) The AFI monitoring agency, duties and responsibilities are at Appendix B.
<p>Conclusion 2/2:</p>	<p>Safety assessment</p> <p>That:</p> <p>AFI RMA, carryout safety assessment as soon as possible but not later than 31 March 2004.</p>
<p>Conclusion 2/3:</p>	<p>Civil/military coordination</p> <p>That:</p> <p>In order to ensure the safe and coordinated implementation of RVSM in the AFI Region, States should ensure that the military aviation authorities are fully involved in the planning and implementation process.</p>
<p>Conclusion 2/4</p>	<p>Nomination of a National RVSM programme manager</p> <p>That:</p> <p>States/service providers nominate, as soon as possible, but not later than 31 December 2003, a National RVSM Programme Manager who will be responsible for ensuring that the proper mechanism be put in place for the safe implementation of the RVSM programme and will also act as the focal point or contact person.</p>

Number	Title
Conclusion 2/5:	<p data-bbox="512 237 1457 304">Reporting of data for monitoring and/or carrying out safety assessment</p> <p data-bbox="512 344 592 378">That:</p> <ul style="list-style-type: none"> <li data-bbox="608 383 1422 562">a) All States institute procedures for reporting of data, incidents and conditions necessary for performing the collision risk calculations prerequisite for RVSM implementation to the AFI monitoring agency. The data will include, but not necessarily be limited to: <ul style="list-style-type: none"> <li data-bbox="608 640 1161 674">i) Height deviations of 300 ft or more <li data-bbox="608 678 1334 712">ii) Total number of IFR movements for each month <li data-bbox="608 716 1457 784">iii) The average time per movement spent in the level band FL 290 to FL 410 <li data-bbox="608 788 1118 822">iv) ATC/ATC coordination failures <li data-bbox="608 826 916 860">v) Turbulence; and <li data-bbox="608 864 863 898">vi) Traffic data. <li data-bbox="608 969 1422 1115">b) All States institute procedures for reporting of data, incidents and conditions necessary for performing the collision risk calculations prerequisite for RVSM implementation to the AFI monitoring agency. <li data-bbox="608 1187 1457 1254">c) AFI Regional monitoring agency should use the reporting format at Appendix C.
Conclusion 2/6:	<p data-bbox="512 1337 1126 1370">Implementation of RVSM in the AFI Region</p> <p data-bbox="512 1411 592 1444">That:</p> <ul style="list-style-type: none"> <li data-bbox="608 1485 1457 1597">a) All RVSM implementation preparations works (safety, assessment, training) be done taking into consideration the FL band between 290 and 410 inclusive. <li data-bbox="608 1668 1457 1780">b) The final decision for implementation be taken at the informal coordination meeting taking into account status of readiness of States and operators. <li data-bbox="608 1852 1457 1964">c) Implementation of RVSM in the AFI Region be harmonized and coordinated with the implementation time frames of adjacent Regions.

Number	Title
Conclusion 2/7:	<p>Training of all personnel involved with the implementation of RVSM in the AFI Region</p> <p>That:</p> <ul style="list-style-type: none"> a) ICAO and IATA explore the possibility of assisting States of the AFI Region through a Special Implementation Project (SIP) for training of personnel involved with the implementation of RVSM in the AFI Region. b) Seminars/Workshops be organized in the Region for training of air traffic services personnel in the RVSM field. c) States having difficulties in implementing RVSM implementation programme, may either individually or in group explore the possibility of seeking outside expertise. d) ASECNA/ATNS develop a harmonized training material for consideration by the RVSM ITF not later than 31 March 2004.
Conclusion 2/8:	<p>Guidance material for Airworthiness and Operational Approval</p> <p>That:</p> <p>States in the AFI Region be urged to include in their national legislation and regulations publish the Airworthiness and Operational Approval process for aircraft and operators intending to operate within a designated RVSM airspace based on provisions of ICAO Annex Part 1 Chapt 7 para. 7.2.3 and the guidance material contained in both FAA interim guidance 91-RVSM and/or JAA Temporary Guidance Leaflet (TGL) N°6. (Appendix D and E refers respectively)</p>
Conclusion 2/9:	<p>Enforcement in national legislation</p> <p>That :</p> <p>States take the appropriate measure in order to:</p> <ul style="list-style-type: none"> a) publish an AIC informing the users of their intention to implement RVSM; and b) include the necessary provisions in their national legislation (AIPs). c) ICAO Regional Office concerned circulate to States the Sample AIC, NOTAM and AIP Supplement on RVSM. Appendix F and G refers.

Number	Title
Conclusion 2/10:	<p>Amendment to ICAO Doc. 7030</p> <p>That:</p> <p>ICAO initiates as appropriate, an amendment proposal to the AFI SUPPs to include relevant provisions for RVSM and RNP implementation in the AFI Region.</p>
Conclusion 2/11:	<p>Participation of representatives of States and international organizations involved in the implementation of RVSM Approval Process</p> <p>That:</p> <p>Representatives of States with experience in the RVSM approval process of aircraft and operators, be invited to attend the future meetings of the RVSM Task Force.</p>
Conclusion 2/12:	<p>Funding of the RVSM implementation programme</p> <p>That:</p> <p>National Governments, Regulatory bodies, operators, service providers and other stakeholders be granted budgetary allocations for acquisitions and other activities necessary for ensuring that all the requirements be met in a timely manner in order to safely implement RVSM in the AFI Region</p>
Conclusion 2/13:	<p>ATC Manual for an RVSM in AFI Region</p> <p>That:</p> <p>ATC Manual for an RVSM in AFI Region at Appendix H to this report be circulated to States for action.</p>
Conclusion 2/14:	<p>Development of an implementation plan for RVSM</p> <p>That:</p> <p>The material at Appendix I constitutes the AFI/RVSM Implementation Strategy/Action Plan be circulated to States for comments and responses be received by ICAO not later than 31 March 2004.</p>

Number	Title
Conclusion 2/15	<p data-bbox="517 235 1015 271">Aircraft/Operators readiness survey</p> <p data-bbox="517 309 592 344">That:</p> <ul data-bbox="703 383 1458 562" style="list-style-type: none"><li data-bbox="703 383 1458 454">a) ICAO carry out a survey on the reactions of non-IATA/AFRAA operators.<li data-bbox="703 495 1458 562">b) The results of ICAO/IATA surveys be presented at the RVSM ITF/4 meeting for consideration.

APPENDICES:

Appendix A:	List of participants.....	A
Appendix B:	AFI Regional Monitoring Agency/Duties and Responsibilities.....	B
Appendix C:	AFI Regional Monitoring Agency Reporting Format.....	C
Appendix D:	FAA Interim Guidance 91 – RVSM.	D
Appendix E:	JAA Temporary Guidance Leaflet (TGL) No.6.....	E
Appendix F:	Draft AIC, NOTAM and AIP Supplement on RVSM.....	F
Appendix G:	Guidance Material for Airworthiness and Operational Approval for RVSM in AFI Region.....	G
Appendix H:	ATC Manual for RVSM in AFI Region.	H
Appendix I:	AFI RVSM Implementation Strategy/Action Plan.....	I
Appendix J:	Reference documents on RVSM.	J

PART II - REPORT ON AGENDA ITEMS

Agenda Item 1 : Review of the Terms of Reference and Work Programme of RVSM/RNAV/RNP Implementation Task Force and Review and Follow-up action on the Conclusions/Decisions of the First Meeting of RVSM/RNAV/RNP Task Force

1.1 Under this Agenda Item the Task Force noted the Terms of Reference and Work Programme which have been assigned to it pursuant to APIRG/13 Decision 12/58 which *inter alia* stated that:

DECISION 15/38 ESTABLISHMENT OF A TASK FORCE ON RVSM AND RNAV/RNP IMPLEMENTATION

**THAT AN APIRG TASK FORCE DEDICATED TO RVSM AND
RNAV/RNP IMPLEMENTATION BE ESTABLISHED, WITH
THE FOLLOWING TERMS OF REFERENCE, WORK
PROGRAMME AND COMPOSITION:**

Terms of Reference of the ICAO RVSM/RNAV/RNP Implementation Task Force

1.2 The RVSM/RNAV/RNP Task Force was established within the framework of the ATS/AIS/SAR Sub-Group in order to explore ways and means for the implementation of RVSM/RNAV/RNP in the AFI Region.

Terms of Reference of RVSM and RNAV/RNP Task Force

- a) To develop a comprehensive implementation plan for RVSM, RNAV and RNP in the AFI Region, taking into account the requirements contained in the ICAO Doc.9574, Doc.9613, Doc.9689, Doc.4444 and other relevant reference documents.
- b) To identify any areas within the AFI Region where it may be feasible to introduce RVSM and RNAV/RNP in the initial implementation.
- c) To determine the extent to which a cost/benefit analysis is required prior to implementation of RVSM and RNAV/RNP.
- d) To coordinate with the bodies responsible for the implementation of RVSM and RNAV/RNP in adjacent regions in order to harmonize implementation plans.

- e) To develop guidance material for RVSM and RNAV/RNP implementation in the AFI Region, including taking due account of experience gained in the SAT Region and existing material developed by other ICAO Regions (EUR, NAT, ASIA/PAC, etc.).
- f) To address any other matters, as appropriate, which are relevant to the implementation of RVSM and RNAV/RNP.

Work Programme

- a) To address safety and airspace monitoring issues relating to RVSM and RNAV/RNP implementation, including safety assessment as required.
- b) To address all matters relating to air traffic services within the RVSM, RNAV/RNP and transition airspace, including relevant ATS procedures.
- c) To address pilot operations, airworthiness and aircraft approval/certification issues relating to RVSM, RNAV and RNP implementation.
- d) To establish the type of certification for aircraft and operators in the AFI Region following FAA and JAA experiences, and develop standard documents for aircraft and operator RNAV/RNP certification.
- e) To assess the impact of RVSM implementation along the ATS route network in the AFI Region.
- f) To develop RVSM, RNAV and RNP standard training programme models for aircraft operators and air traffic controllers.
- g) To conduct a study on the necessary CNS capabilities for RNAV implementation in the AFI Region.
- h) To assess the possibility of applying PANS/OPS design criteria to the implementation of RNAV procedures in TMAs, and develop a reference document to validate RNAV approach procedures.

Composition : Algeria, Cape Verde, Egypt, Eritrea, Ethiopia, Kenya, Morocco, Nigeria, Senegal, South Africa, Spain, Tunisia, ASECNA, IATA and IFALPA.

1.3 Under this Agenda, the meeting was informed that APIRG/14 in reviewing the ATS SG/7 Report on the conclusions related to RVSM adopted conclusion 1/16 relating to development of a comprehensive implementation strategy/action plan for RVSM and formulated conclusion 14/21 which *inter alia* stated:

CONCLUSION 14/21: IMPLEMENTATION OF RVSM IN THE AFI REGION**THAT:**

- A) THE RVSM IMPLEMENTATION TASK FORCE FINALIZE THE DEVELOPMENT OF A COMPREHENSIVE IMPLEMENTATION STRATEGY/ ACTION PLAN TAKING INTO CONSIDERATION WORK SO FAR DONE AND THOSE OF THE EXPERTS GROUPS (RGSP PANEL, NATSPG, EUROCONTROL, SAT MEETING AND MECMA) TAKING INTO ACCOUNT THE MATERIAL AT APPENDIX F AS SOON AS POSSIBLE AND NOT LATER THAN 31 DECEMBER 2003;**
- B) THE IMPLEMENTATION STRATEGY/ACTION PLAN BE CIRCULATED TO STATES AND INTERNATIONAL ORGANIZATIONS FOR COMMENTS WHICH SHOULD BE RECEIVED NOT LATER THAN 31 MARCH 2004;**
- C) STATES DO THEIR UTMOST TO IMPLEMENT RVSM IN SELECTED AIRSPACES, AS PER PLAN BY AIRAC CYCLE DATE OF JANUARY 2005 CONCURRENTLY WITH THE CAR/SAM REGION; AND**
- D) A COORDINATION MEETING BE CONVENED IN SEPTEMBER 2004 TO TAKE A GO - NO/GO DECISION FOR THE IMPLEMENTATION OF RVSM.**

1.4 Under Conclusion 14/21 APIRG instructed the RVSM/RNAV/RNP/TF to further continue to review other conclusions relating to RVSM and were included in the ATS SG/7 Report. The TF/2 meeting noted that most of the conclusions were still valid and that they would be considered in the discussions under Agenda Item 4, 5, 6 and 7. Similarly these conclusions would be considered in the development of the Strategy/Action Plan under Item 3.

1.5 The meeting took note of the information presented by ASECNA of their plans to establish a sub-regional RVSM monitoring agency for ASECNA FIRs.

Agenda Item 2: Review of RVSM Special Implementation Project (SIP) Report

2.1 The meeting was apprised on the RVSM Implementation Project Report by the expert who conducted the SIP. Most of the material was incorporated in the Strategy/Action Plan for the implementation of RVSM in AFI Region.

Agenda Item 3: Development of Implementation Strategy/Action Plan for RVSM

3.1 The meeting developed the Strategy/Action Plan for the Implementation of RVSM in AFI Region based on the format approved by APIRG/14 and taking into account the RVSM SIP report. The Strategy/Action appears at **Appendix I** to this report. In response to APIRG/14 Conclusion 14/21 the Secretariat is to circulate this strategy/action plan to States to obtain comments.

3.2 **Appendix J** contains relevant reference documents relating to RVSM.

Agenda Items 4, 5, 6 and 7

4.1 Under Agenda Items 4, 5, 6 and 7 the meeting considered all the working papers relating to these items and formulated relevant conclusions and incorporated them in the Strategy/Action Plan. The conclusions relating to RVSM Agenda Item 1 were incorporated. The meeting therefore formulated conclusions 1/1 to 1/15. These appear at paragraph 5 of this report.

Agenda Item 8: Any Other Business

8.1 None.

**INTERNATIONAL CIVIL AVIATION ORGANIZATION
WESTERN AND CENTRAL AFRICAN OFFICE**

**SECOND MEETING OF THE RVSM/RNAV/RNP TASK FORCE (TF/2)
(Dakar, 19 - 21 November 2003)**

List of Participants

COUNTRY/ PAYS	NAME/NOM	DESIGNATION/FONCTION	ADRESS/ADRESSE	E-MAIL	TEL./FAX
NIGERIA	Mr. E.O. ONASANYA	General Manager, Airspace Planning & Tech. Evaluation	NAMA HQ, P-M-B 21084 Ikeja, Lagos, Nigeria	eonasanya@nama-nig.com onasanyaeo@yahoo.co.uk	Tel.: 234 1 4931330 Fax: 234 1 4931330
	Mr. K. N. OTEGHILE	Director, Air Traffic Services	NAMA - MM Airport, P-M-B 21084 Ikeja, Lagos, Nigeria	noteghile@nama-nig.com Koteghile@yahoo.com	Tel.: 234 1 4970994 Fax: 234 1 4937427
	Mr. M.S. OBE	Airspace Manager, Port-Harcourt Airport	Port-Harcourt Airport, Nigeria		Tel.: 08033408745 Fax: 084231904
	Mr. H.K. OKORO	Air Traffic Operations Manager, Murtala Muhammed Airport	Nama, MMIA, Lagos, Nigeria	kwashy2002@yahoo.co.uk	Tel.: 08033002411
SENEGAL (ASECNA)	Mr. Mamadou NIANG	Chef Bureau Circulation Aérienne	Aéroport Léopold Sédar Senghor	niangmam1@asecna.org	Tel.: 869 23 05 Fax: 820 06 00
	Mr. Sidy GUEYE	Cadre ENA	Aéroport Léopold Sédar Senghor	sgueye@yahoo.fr	Tel.: 221 869 23 05

COUNTRY/ PAYS	NAME/NOM	DESIGNATION/FONCTION	ADRESS/ADRESSE	E-MAIL	TEL./FAX
SENEGAL (ASECNA)	Mr. Martin SACRAMENTO	Chargé de Mission du Directeur de l'Exploitation	Direction de l'exploitation B.P. 3144, Dakar, Sénégal	sacramentomar@asecna.org	Tel.: 221 869 5746
	Mr. Armand BOUKONO	Ingénieur Service Etudes et Normalisation des Systèmes ATM	B.P. 3144 Dakar, Sénégal	boukonoArm@asecna.org	Tel.: 221 869 56 88
SOUTH AFRICA	Mr. Robert RANDS	Manager Operational planning	Private Bag X 15 Kempton Park, 1620 South Africa	robr@atns.co.za	Tel.: 27 11 961- 0303 Fax: 27 11 392- 3946
	Mr. Kevin V. EWELS	Air Traffic Management Specialist	Private Bag X 15 Kempton Park, 1620 South Africa	kevine@atns.co.za	Tel.: 27 11 961- 0273 Fax: 27 11 392- 3946
TUNISIA	Mr. Imed BEN SAAD	Chef Service Etudes de la Circulation Aérienne	Office de l'Aviation civile et des Aéroports - Direction de la Navigation aérienne, Aéroport Tunis Carthage	balaya.mdali@planet.tn	Tel.: 216 71 848000 Fax: 216 71 753211
IATA	M. Meissa NDIAYE	Ag. Director, IATA	POB 47979, Nairobi, Kenya	ndiyem@iata.org	Tel.: 254 2 2710 100 Fax: 254 2 2723 978
IFALPA	Mr. E.S. MILLS	Vice Secretary - Galpa	C/o Ghana Airways P.O. Box 1636, Accra, Ghana	lanttei@hotmail	Tel.: 233 21 777672
ICAO	A. CHEIFFOU	ICAO Regional Director	15 Bld. de la République, Dakar Sénégal	icao.dkr@icao.sn	Tel.: 221 839.93.93 Fax: 221 823.69.26
	Mr. A.K. MENSAH	Deputy ICAO Regional Director	15 Bld. de la République, Dakar Sénégal	icao.dkr@icao.sn	Tel.: 221 839.93.93 Fax: 221 823.69.26

COUNTRY/ PAYS	NAME/NOM	DESIGNATION/FONCTION	ADRESS/ADRESSE	E-MAIL	TEL./FAX
ICAO	Mr. Vic Van Der WESTHUIZEN			vanderwesv@sympatico.ca	Tel.: 514 457 8928 Fax: 514 457 6438
	Mr. Apolo KHARUGA	RO/ATM	ICAO Nairobi	Apolo.kharuga@icao.unon.org	Tel: 254 2 622 395
	Mr. I. U. AUYO	RO/ATM	ICAO Dakar 15 Bld. de la République, Dakar Sénégal		Tel.: 221 839.93.90 Fax: 221 823.69.26
	Mr. BROU Konan	RO/ATM	ICAO Dakar 15 Bld. de la République, Dakar Sénégal	kbrou@icao.sn	Tel.: 221 839.93.89 Fax: 221 823.69.26
	Mr. George BALDEH	RO/AIS/MAP	ICAO Dakar 15 Bld. de la République, Dakar Sénégal	g.baldeh@icao.sn	Tel.: 221 839.93.81 Fax: 221 823.69.26

AFI Regional Monitoring Agency Duties and Responsibilities
Source : Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum
Between F1 290 and F1 410 Inclusive,
International Civil Aviation Organization
Doc 9574 (Second Edition – 2002)

The duties and responsibilities of a regional monitoring agency are:

- 1) establish a database of aircraft approved by the respective State authorities for operations at RVSM levels in that region.
- 2) to receive reports of those height deviations of non-compliant aircraft which are of a magnitude equal to or greater than the following criteria:
 - 1) TVE – 90 m (300 ft)
 - 2) ASE – 75 m (245 ft)
 - 3) AAD – 90 m (300 ft)
- 3) to take the necessary action with the relevant State and operator to:
 - 1) determine the likely cause of the height deviation; and
 - 2) verify the approval status of the relevant operator
- 4) to recommend, wherever possible, remedial action;
- 5) to analyse data to detect height deviation trends and, hence, to take action as in the previous item.
- 6) To undertake such data collections as required by the RPG to:
 - 1) investigate height-keeping performance of the aircraft in the core of the distribution.
 - 2) Establish or add to a database on the height-keeping performance of:
 - the aircraft population
 - aircraft types or categories, and
 - individual airframes
- 7) to monitor the level of risk as a consequence of operational errors and in-flight contingencies as follows
 - 1) establish a mechanism for collation and analysis of all reports of height deviations of 90 m (300 ft) or more resulting from the above errors/actions;

- 2) determine, wherever possible, the root cause of each deviation together with its size and duration;
 - 3) calculate the frequency of occurrence;
 - 4) assess the overall risk (technical combined with operational and in-flight contingencies) in the system against the overall safety objectives (see 2.1 of Doc 9574); and
 - 5) initiate remedial action as required
- 7) to initiate checks of the “approval status” of aircraft operating in the relevant RVSM airspace (see 4.3.3 to 4.3.6 of Doc 9574), identify non-approved operators and aircraft using RVSM airspace and notify the appropriate State of Registry/State of the Operator accordingly.
 - 8) to circulate regular reports on all height-keeping deviations, together with such graphs and tables necessary to relate the estimated system risk to the TLS, employing the criteria detailed in 6.2.8 of Doc 9574, for which formats are suggested in Appendix to Doc 9574, and;
 - 9) to submit annual reports to the regional planning group.

AFI RMA Reporting Format

NAVIGATION DEVIATION INVESTIGATION FORM				
Type of Report: PILOT – Flight CONTROLLER – ATC Unit				
Date/Time (UTC):	Type of Deviation: VERTICAL Type (A to O) (*) LATERAL Type (A to G)			
Causes: WEATHER (See 2-G) OTHERS (Specify)				
Conflict Alert Systems:				
<hr/>				
DETAILS OF AIRCRAFT		First Aircraft		Second Aircraft (for vertical)
Aircraft Identification:				
Name of Owner/Operator:				
Aircraft Type:				
Departure Point:				
Destination:				
Route Segment:				
Flight Level:	Cleared	Actual	Cleared	Actual
Cleared Track:				
Extent of deviation - magnitude and direction: (NM for lateral; feet for vertical)				
Amount of time at incorrect Flight Level/Track:				
Position where deviation was observed: (BRG/DIST from fixed point or LAT/LONG)				
WAS ATC Clearance obtained: YES NO		<u>If ATC clearance NOT obtained</u>		
		WERE Contingency procedures followed: YES NO		
Action Taken by ATC/Pilot:				
Other comments:				

(*) See deviation classification

NAVIGATION DEVIATION INVESTIGATION FORM

- _ The ATCO/Pilot should fill as many items as possible.
- _ Complementary data can be attached.

- _ The notification of any deviation (vertical or lateral) has to be classified, when possible, according to the following types:

1.- For Large Height Deviations (vertical deviation)

A
B
C
D
E
F
G
H
I
J

2.- For lateral deviations

A
B
C
D
E
F
G

Note that there are data that have to be notified by the pilot.

Remarks:

- 1.
- 2.

DEVIATIONS MONITORING REPORT**AREA CONCERNED :****ALTITUDE :** From FL 290 up TO FL 410 both included**ACC/AO :****MONTH :****YEAR :**

- (Number) Deviation Report Form attached (including TCAS RA and Airproxes)
- NO Deviations reported (mark with an X)

The ACC/AO Responsible**Name :****Phone/E-mail :**

Send to**E-mail :****Fax :**

The activities undertaken by the AFI RMA are performed through the two components of the permanent structure:

- The AFI RMA coordinator who will be responsible for performing the functions assigned by the Agency and maintaining permanent communication with the representatives of the ACC's of the AFI Region.
- A Secretariat to facilitate the technical, operative and administrative tasks required by the Agency in order to follow the AFI RMA Coordinators' guidelines.

4. SUBMISSION OF STATISTICAL AND EQUIPMENT DATA

4.1 States and Organizations concerned are requested to submit to the AFI RMA Monitoring Agency (AFI RMA) the necessary statistical data to assist in the timely completion of the safety analysis.

4.2 The Operators flying through the AFI Region corridor are requested to notify AFI RMA, in an independent stage of the state regulator authorities, the aircraft equipment certification on RVSM and RNP-5.

4.3 In order to arrange sufficient data for safety assessment and testing for the implementation of CNS/ATM systems, aircraft operators are requested to include all the navigation and communications system availability, including ADS and CPDLC capability, in the flight plans (box no.10).

4.4 The ACC's of the AFI Region and the aircraft operators are also requested to send to AFI RMA the "Navigational Deviation Investigation Form" at page 1 above.

5. AFI RMA COOPERATIVE REQUEST

Any other cooperation in whatever way which may be required by the AFI RMA will ensure that all those tasks commissioned to AFI RMA by the corresponding ICAO forum may be duly performed.

6. ADDITIONAL INFORMATION

The AFI RMA is located in the ACC-..... and can be reached at the following E-mail address:

.....

The coordinator,, can also be contacted by telephone and Fax:

Tel:..... Fax:.....

The Secretariat,can be contacted at:

Tel:..... Fax:.....

An AFI RMA WEB page is also in progress and will be ready by

FAA Interim Guidance 91 - RVSM

To be obtained at the FAA website

http://www.faa.gov/ats/ato/150_docs/91-RVSM-CHI.doc

**Joint Aviation Authority (JAA) Temporary Guidance Leaflet No.6 (TGL 6)
Guidance Material on the approval of aircraft and operators for flight in
airspace above FL290 where a 300 m (1000 ft) vertical separation minimum is
applied**

- Explanatory Notes -

Introduction

1. The JAA TGL 6 provides a Minimum Aircraft Systems Performance Specification (MASPS) for altimetry to support the use of RVSM above FL 290. It establishes an acceptable means, but not the only means, that can be used in the approval of aircraft and operators to conduct flights in airspace or on routes where RVSM is applied. The document contains guidance on airworthiness, continued airworthiness, and operational practices and procedures for RVSM airspace. RVSM airspace is any airspace or route between FL 290 and FL 410 inclusive where aircraft are separated vertically by 300 m (1000 ft).
2. The original version of this Leaflet was adopted by JAA in 1994 and published in the JAA Information Leaflet No. 23 (IL 23). This leaflet is derived directly from IL 23. The material has been updated to reflect the current status of RVSM operations in general, and to add guidance concerning the application of RVSM within designated airspace in the Africa- Indian ocean (AFI) Region.

RVSM Approval Process

3. Specific aircraft type or types that an operator intends to the use will need to be approved by the responsible authority before the operator conducts flights within the RVSM airspace. In addition, where operations in specified airspace require approval in accordance with an ICAO Regional Navigation Agreement, an operational approval will be required.
4. Operators intending to conduct flights within the volume of airspace where RVSM is applied, will require an RVSM Approval either from the State in which the Operator is based or from the State in which the aircraft is registered. To obtain such an RVSM approval, Operators will need to satisfy the said State:
 - a) that aircraft for which the RVSM Approval is sought have the vertical navigation performance capability required for RVSM operations through compliance with the criteria of the RVSM Minimum Aircraft Systems Performance Specifications (MASPS);
 - b) that they have instituted procedures in respect of continued airworthiness (maintenance and repair) practices and programmes; and
 - c) that they have instituted flight crew procedures for operations in the AFI RVSM airspace.

Important Note

An RVSM approval is not restricted to a specific region. Instead, it is valid globally on the understanding that any operating procedures specific to a given region, in this case the AFI region, should be stated in the operations manual or appropriate crew guidance.

- Aircraft Airworthiness Requirements

5. Each aircraft type that an operator intends to use in RVSM airspace should satisfy the responsible authority with regard to the RVSM airworthiness requirements, including the approval of continued airworthiness programmes, in accordance with the paragraph 9 of the TGL 6, prior to approval being granted for RVSM operations. These requirements are those specified in 4 a) and b) above:

- **that aircraft for which the RVSM Approval is sought have the vertical navigation performance capability required for RVSM operations through compliance with the criteria of the RVSM Minimum Aircraft Systems Performance Specifications (MASPS);**
- **that operators have instituted procedures in respect of continued airworthiness (maintenance and repair) practices and programmes; and**

6. It is accepted that aircraft which have been approved in compliance with JAA Information Leaflet No. 23, RVSM satisfy the airworthiness criteria of the TGL No. 6. Therefore, all the aircraft that have already been approved for RVSM will not require any further certification. Operators are also advised to check existing approvals and the Aircraft Flight Manual for redundant regional constraints.

7. It is also important to note that the monitoring process is not part of the airworthiness approval process for RVSM. *Therefore, the responsible authority will be satisfied by following the steps mentioned in paragraphs 9 and 10 of TGL No.6 have been followed.*

8. Aircraft intending to operate in AFI RVSM airspace must participate in the height keeping performance monitoring programme. The monitoring programme commences in To be eligible for monitoring, the two requirements mentioned in para. 5 must be met. Given the time scales of the monitoring programme, it is essential that aircraft are ready for monitoring before the end of the year The monitoring programme will be used to evaluate the RVSM aircraft MASPS/certification in order to ensure that the RVSM implementation meets the Target Level of Safety (TLS) from a technical perspective.

9. Detailed information on the monitoring programme is presented in a separate Information Bulletin.

- **Operational Approval**

10. For certain airspace, as defined by the ICAO Regional Air Navigation Agreements, operators are required to hold State approval to operate in that airspace, which may or may not include RVSM. Paragraph 11 of TGL 6 contains guidance on operational procedures that an operator may need to adopt for such airspace where RVSM is applied, including advice on the operational material that may need to be submitted for review by the responsible authority.

11. Depending on the National Regulations, approval will be required for each operator and the responsible authority will need to be satisfied that:

- each aircraft hold airworthiness approval according to paragraph 9 to TGL 6;
- each operator has continued airworthiness programmes (maintenance procedures) according to paragraph 10 of TGL 6;
- where necessary, operating procedures unique to the airspace have been incorporated in operations manual (guidance in the Appendices 6 and 7 of TGL 6);
- high level of aircraft height keeping performance can be maintained.

12. Depending on the National Regulations, the following material may be asked to be made available to the responsible authority, in sufficient time to permit evaluation, **before the intended start of RVSM operations:**

- **Airworthiness Documents** - Documentation that shows that the aircraft has RVSM airworthiness approval
- **Description of aircraft equipment**
- **Training Programmes and Operations Practices and Procedures**
- **Operations Manuals and Checklists**
- **Past Performance**
- **Minimum Equipment List**
- **Maintenance**
- **Plan for participation in Verification/Monitoring Programmes** – For airspace where a numerical Target Level of Safety is prescribed, monitoring of aircraft height keeping performance in the airspace by an independent height monitoring system is necessary to verify that the prescribed level of safety is being achieved. *However, an independent monitoring check of aircraft is not a prerequisite for the grant of the operational approval.*

13. For the holders of an Air Operator Certificate (AOC), approval will be granted by the responsible authority in accordance with JAR OPS 1 for the airlines located in JAA Member States, or in compliance with National Regulations where operational approval is required by an ICAO Regional Agreement. Each aircraft group for which the operator is granted approval will be listed in the Approval.

14. Subject to compliance with applicable criteria, an RVSM approval combining the airworthiness approval (as detailed in the paragraph 9.1, of the TGL 6) and the operational approval (as detailed in the paragraph 11, of the TGL 6) is available from the State Authorities.

15. The full RVSM approval, as depicted in paragraph 4 must be obtained before
.....

Training Programmes and Operating Practices and Procedures

16. Based on National Regulations, holders of AOCs may be required to submit training syllabi for initial, and where appropriate recurrent training programmes together with the appropriate material to the responsible authority. The material will need to show that the operating practices, procedures and training items, related to RVSM operations are incorporated. Guidance on the content of training programmes and operating practices and procedures is given in the Appendix 4 of TGL 6. In broad terms, this covers flight planning, pre-flight procedures, aircraft procedures before RVSM airspace entry, in-flight procedures, and flight crew training procedures.

17. With regard to training programmes and operating practices and procedures, *it is essential to be aware of the fact that the ATC procedures for the Africa-Indian Ocean RVSM airspace may be slightly different from those for the adjacent EUR and MID RVSM airspaces. The training programmes and the operating practices and procedures must make clear this difference.*

18. *The specific procedures for operations within the AFI RVSM airspace are presented in a separate Information Bulletin. They cover the definition of the AFI RVSM airspace, flight planning procedures, pre-flight procedures, aircraft procedures before RVSM airspace entry, in-flight procedure, contingency procedures, etc.*

**AFRICA- INDIAN OCEAN RVSM SAMPLE
AIC, NOTAM, AIP SUPPLEMENT**

AERONAUTICAL INFORMATION CIRCULAR (AIC)

IMPLEMENTATION OF REDUCED VERTICAL SEPARATION MINIMA (RVSM) IN (.....) FIR

FIR/Airspace : (.....)

Effective date : 20 January 2005.

Type : Permanent/Temporary

Appendix – A

This AIC serves as Notice of Intent to implement RVSM in the (.....) FIR effective 20 January 2005.

Reduced Vertical Separation Minimum (RVSM) is vertical separation of aircraft by 1,000 ft above FL 290. By 20 November 2004, operators should have received RVSM aircraft (airworthiness) and operational approval from the appropriate State authority. Operator/aircraft approval by 20 November 2004 will enable air traffic services (ATS) to plan for orderly RVSM implementation.

Starting 20 January 2005, only RVSM compliant aircraft will be cleared to operate in the (.....) FIR between FL290 and FL410 (inclusive). Aircraft that are not RVSM compliant (e.g., ferry and maintenance flights) will only be cleared to operate in the (.....) FIR between FLs 290 and FL410 (inclusive) after prior co-ordination with the appropriate center. 2,000 ft vertical separation will be applied to such aircraft. (.....) center contacts will be published on websites (if established) and in follow-up NOTAMS.

RVSM will be implemented in the (.....) FIR in accordance with ICAO regional agreements. ICAO recommends that State authorities and operators use FAA Interim Guidance 91-RVSM (as amended); Joint Airworthiness Authorities (JAA) Temporary Guidance Leaflet 6 (TGL 6) or equivalent State documents as the basis for approving aircraft and operator programs for RVSM.

The AFI Region has established that the task of monitoring safety in conjunction with implementation of RVSM and RNAV/RNP in the AFI Region be assigned to the South Africa. Current information and RVSM approval documents, including revisions, can be found on the website maintained by the FAA, EUROCONTROL, SATMA, MECMA and on individual State websites.

To access the FAA, EUROCONTROL, SATMA and MECMA RVSM websites, type :

<http://www.faa.gov/ats/ato/rvsm1.htm>

<http://www.eur-rvs.com>

<http://www.satmasat.com>

<http://www.mecma.com>

The RVSM Documentation section of the FAA, EUROCONTROL websites contain guidance on aircraft/operator approval. Operators must begin coordination with the appropriate State authority as soon as possible to ensure that they are approved to begin RVSM operations on 20 January 2005.

Further information on the aircraft and operator approval process, policy planning and implementation issues for RVSM can be obtained from South Africa (ATNS) being responsible for setting up the AFI Regional Monitoring Agency.

NOTAM RELATED TO FLIGHT LEVEL ALLOCATION

In relation with the implementation of the RVSM in the AFI Region (see AIC and AIP/AMDT.....) and in order to avoid the excessive FL's changes for the users, the AFI Region Flight Level Allocation will be established based on the anticipated date to implement RVSM in selected airspace by the AIRAC cycle date of 20 January 2005, concurrently with the CAR/SAM Region.

CRUISING LEVELS APPLICABLE IN AFI RVSM AIRSPACE

The cruising levels that will apply within AFI region airspace will be in accordance with ICAO Annex 2, Appendix 3 a).

All ATS Routes in the upper airspace :

Eastbound Track from 000° to 179° : ODD LEVELS; 410,390,370,350,330,310,290

Westbound Track from 180° to 359° : EVEN LEVELS; 400,380,360,340,320,300

Operators are requested to plan their flights under this flight levels allocation scheme.

TEXT TO NOTAM FOR SUSPENSION OF RVSM

Procedures for Suspension of RVSM

Air Traffic Service providers will consider suspending RVSM procedures within affected area within theFIR and adjacent transition areas when there are pilot reports of greater than moderate turbulence. Within areas where RVSM procedures are suspended, the vertical separation minimum between all aircraft will be 2,000 ft.

AIP SUPPs FOR THE IMPLEMENTATION OF RVSM WITHIN THE (.....) FIR

(NAME OF STATE)

Address : AIP SUPPLEMENT N°
Telephone : DATE OF PUBLICATION
Fax :
E-mail :
Other information:

(to be developed)

GUIDANCE MATERIAL FOR AIRWORTHINESS AND OPERATIONAL APPROVAL FOR RVSM IN AFRICA-INDIAN OCEAN (AFI) REGION

AIRWORTHINESS AND OPERATIONAL APPROVAL

1. Introduction:

1.1 Airworthiness approval must in all cases be against the requirements of the MASPS, which must be developed to meet the objectives and provisions of this guidance material. The complete MASPS will comprise specifications and procedures for the separate aspects of type approval, release from production, and continued airworthiness. These separate aspects of approval, and their applicability to the approval of existing aircraft, below.

1.2 All approvals will be applicable to an individual aircraft or to a group of **aircraft that are nominally identical in aerodynamic design and items of equipment contributing to height-keeping accuracy.**

1.3 The Minimum Aircraft System Performance Specification (MASPS) has been published by the Joint Aviation Authorities (JAA) as a Temporary Guidance Leaflet (TGL). This document details the airworthiness, continuing airworthiness, and operations programmes necessary to approve operators and airplanes to conduct flight in airspace where RVSM is implemented.

The requirements, which were the basis for development of the MASPS where the followings:

- a) the mean Altimetry System Error (ASE) of the group shall not exceed ± 25 m (± 80 ft);
- b) the sum of the absolute value of the mean ASE for the group and three standard deviations of ASE within the group shall not exceed 75 m (245 ft); and
- c) errors in altitude keeping shall be symmetric about a mean of 0 m (0ft) and shall have a standard deviation not greater than 13 m (43 ft) and shall be such that the error frequency decreases with increasing error magnitude at a rate which is at least exponential.

2. **Joint Aviation Authority (JAA) Temporary Guidance Leaflet (TGL) No.6**

(See explanatory note at APPENDIX A)

TGL provides detailed information on:

- a) the RVSM approval process
- b) RVSM performance requirements
- c) Aircraft system requirements
- d) Airworthiness approval
- e) Continued airworthiness (maintenance procedures)
- f) Operational approval

Together with the following Appendices:

Appendix 1 – Explanation of W/ δ

Appendix 2 – Altimetry System Error (ASE) Components

Appendix 3 – Establishing and Monitoring Static Source Errors

Appendix 4 – Training Programmes and Operating Practices and Procedures

Appendix 5 – Review of ICAO Doc-9574 – Height Keeping Errors.

TGL No.6 Rev-1 details the following minimum equipment fit for aircraft seeking airworthiness approval for RVSM operations :

- a) Two independent altitude measurement systems. Each system will need to be composed of the following elements:
 - Cross-coupled static source/system, provided with ice protection if located in areas subject to ice accretion;
 - Equipment for measuring static pressure sensed by the static source, converting it to pressure altitude and displaying the pressure altitude to the flight crew;
 - Equipment for providing a digitally coded signal corresponding to the displayed pressure altitude, for automatic altitude reporting purposes;
 - Static source error correction (SSEC), if needed to meet the performance criteria;
 - Signals referenced to a pilot selected altitude for automatic control and alerting. These signals should be derived from an altitude measurement system meeting the criteria of this document (TGL Rev.1), and, in all cases, enabling the criteria relating to Altitude Control Output and Altitude Alerting to be met.
- b) One Secondary Surveillance Radar (SSR) transponder with an altitude reporting system that can be connected to the altitude measurement system in use for altitude keeping.
- c) An altitude alerting system
- d) An automatic altitude control system.

3. Aircraft type approval

3.1 Individual or group approval should be granted only where the minimum equipment fit requirements are satisfied as embodied in the MASPS.

3.2 Individual or group approval should be granted only where it has been demonstrated that the detailed specifications developed are satisfied as embodied in the MASPS. Care should be taken when assessing an approval package that flight calibration data used as a basis for evaluating residual position error are representative of the whole aircraft group and full operational envelope in RVSM airspace, and that all error sources and variabilities, including uncertainties inherent in such flight calibration data, are accounted for in the approval process.

3.3 Good design, manufacturing, certification and maintenance practices produce a level of equipment reliability which supports RVSM. In order to ensure that over-all system integrity remains at a high level, it should be demonstrated analytically during the airworthiness approval process that the occurrence of undetected altimetry system failure should be better than 1×10^{-5} per flight hour. It is acceptable in this analysis to take into account the requirement for redundant altimetry systems and the ability of the flight crew to detect altimetry system failure through cross-checking procedures

4. Definition of aircraft type groupings

4.1 When grouping similar aircraft together, from the viewpoint of approval or evaluation of height-keeping standards or requirements, it must be recognized that aircraft with closely similar or apparently identical types or series designations are in some cases substantially different in aerodynamic design and avionic equipment. Conversely, aircraft with different series designations can be identical in all characteristics contributing to height-keeping ability.

4.2 It is therefore necessary to ensure that all individual aircraft deemed to comprise a group are of identical design and build with respect to all details which could influence the accuracy of height-keeping performance. These details should be taken to include airframe, engines, all elements of the required altimetry systems, weight, operational envelope and automatic altitude-keeping equipment.

4.3 This should not be taken to exclude approval by similarity, but where there are differences, the possible influence of the above should be assessed before granting approval or extending approval to cover such variations.

5. Release for flight from production

5.1 Specifications and procedures should be developed, and incorporated in the release requirements of the MASPS, for ensuring that all individual aircraft covered by a group approval that are manufactured or modified to meet approval standard subsequent to the granting of that approval satisfy the requirements developed accordingly. These procedures would ideally include a flight test at a minimum of one point in the operational envelope on all aircraft to demonstrate production similarity,

but they may be relaxed to an appropriate level of sample testing, depending on the level of production repeatability which the manufacturer is able to validate. It may be possible to use data already available from TVE measurements to demonstrate a particular manufacturer's capability for production repeatability, but in that case it must also be shown that the uncertainties associated with the data, including their applicability to the individual aircraft group under consideration, do not invalidate the conclusions.

6. Continued airworthiness

6.1 Specifications and procedures should be developed and incorporated in the maintenance requirements of the MASPS for ensuring that all individual aircraft continue during their service life to satisfy the requirements developed accordingly. These procedures should include some type of periodic flight test demonstration of height-keeping accuracy. It may be acceptable to use independent Total Vertical Error (TVE) monitoring facilities to satisfy this requirement, provided that the errors and uncertainties associated with the measurements are shown to be consistent with the requirements, and provided that the separate contributions to TVE of airframe, avionics and Flight Technical Error (FTE) can be assessed. The periodic interval required will not necessarily be the same for all aircraft, and it may be possible to use data already available from TVE measurements to determine the appropriate validation interval.

7. Approval of existing aircraft

7.1 Before approval of existing aircraft, it is preferable that the requirements of the airworthiness be satisfied. The difficulty of applying "new build" requirements to existing airframes is recognized, however, and the following guidance is given regarding how the elements of the MASPS should be applied:

a) Type approval

The MASPS requirements are applicable. In many cases it is likely that there will already be sufficient flight test data available from the type development programme to satisfy that part of the approval requirements. In other cases it may be possible to use independent TVE data to satisfy the flight test approval requirements, when they have been developed, provided that a detailed assessment of the type groupings to which those data are applicable can be made, and provided that the errors and uncertainties associated with those data are shown to be consistent with the requirements. If the original flight test data and independent TVE data are insufficient to support the approval requirements, it will then be necessary to generate new data. When assessing design capability from data obtained from aircraft which have been in service for an extended period, it is permissible to make an allowance for degradation with age attributable to ASE, within the limits imposed. Specialists should assess whether there are also aging effects due to autopilot systems. When using performance data to assess design capability, it will be necessary to gather more extensive data, for a given level of confidence, than if design capability could be assessed directly.

b) Repeatability control and continued airworthiness

For in-service aircraft it will be necessary to consider the requirements of release for flight from production and continued airworthiness together. It is unlikely that many existing aircraft can be shown to have undergone the production release controls envisaged above, but the objectives of those requirements may well be satisfied for aircraft which have been in service for an extended period by the continued airworthiness requirements. Such aircraft should undergo individually the appropriate continued airworthiness checks developed, as well as meeting the type approval requirements, before being granted approval. For young in-service aircraft it should be acceptable to assume that normal production repeatability has been achieved, as developed above, except where there is evidence of unusually large variations. It should be a requirement to reveal such evidence. Translation of such evidence, as is available for some aircraft from independent TVE data, into additional and specific approval requirements will depend on how well the manufacturer and/or operator can identify the source of the problem and whether it is identified as originating in production or in service.

Note: – The definitions of “extended period” and “young”, as used above, should be interpreted relative to the appropriate continued airworthiness validation interval developed against continued airworthiness.

8. State Data Base (SDB)

8.1 In order to adequately monitor the RVSM airspace in the vertical plane, State aviation authorities will be expected to maintain an SDB of all approvals that they have granted for operations within the RVSM airspace. The details of the compilation and formatting of the data and the system operating parameters are under development. Ideally, the SDBs will input to South Africa (ATNS monitoring Agency) on a regular basis, which will facilitate the tactical monitoring of aircraft approval status and the exclusion of non-approved users.

9. RVSM Documentation

9.1 Further information on the aircraft and operator approval process, policy planning and implementation issues for RVSM can be obtained at the following websites: FAA, EUROCONTROL, SATMA, MECMA and on individual State websites:

<http://www.faa.gov/ats/ato/rvsm1.htm>

<http://www.eur-rvsm.com>

<http://www.satmasat.com>

<http://www.mecma.com>

ATC Manual for RVSM in AFI Region

“To be developed”

(Use EUR material)

website: <http://www.eur-rvsm.com/documents/ATC manual V2-0.pdf>

**STRATEGY/ACTION PLAN FOR IMPLEMENTATION
OF REDUCED VERTICAL SEPARATION MINIMA
IN THE AFRICA-INDIAN OCEAN REGION**

22 NOVEMBER 2003

Prepared by the APIRG RVSM Implementation Task Force

AFI STRATEGY/ACTION PLAN FOR RVSM IMPLEMENTATION

EXECUTIVE SUMMARY

1. INTRODUCTION

It will be recalled that the Air Navigation Commission in approving APIRG Conclusion 13/85 relating to initial implementation of RVSM in the AFI Region, recommended that the Commission, prior to determination of a Target implementation date, make an Implementation Strategy available for approval. APIRG 14 mandated the AFI RVSM Task Force to develop a strategy for the implementation of RVSM in the AFI Region.

2. OBJECTIVES

To implement RVSM in the AFI Region the following objectives must be achieved:

- Develop an AFI RVSM Implementation Plan;
- Develop an AFI RVSM Implementation Program

3. RVSM IMPLEMENTATION PLAN

An AFI RVSM Implementation Plan shall be developed to set out the scope of the work needed to safely implement RVSM at the earliest realistic date, in an efficient manner and taking into account RVSM plans in adjacent Regions. Work completed by the AFI RVSM Task Force (ARTF) will be incorporated in the AFI Plan (See Attachment A)

4. RVSM PROGRAM MANAGEMENT

Successful and timely implementation of RVSM will be dependent on the establishment of a Program Office to manage the RVSM Program and appointment of dedicated staff with the required expertise. The Program Office will act as the AFI RVSM Implementation focal point, report to the ARTF and provide guidance to National Program Managers, who will in-turn report to the Program Office. (*See Attachment B*).

5 RVSM Program Management Plan

The AFI RVSM Task Force (ARTF) should direct the development of an RVSM Program Plan to implement the RVSM Plan. This should be accomplished in consultation with National Program Managers and other RVSM stakeholders. The Program Office shall develop a detailed Program Management Plan, which will provide a baseline and communication tool against which to monitor the cost, schedule and performance aspects of the RVSM Program. (*See Attachment B*).

5.1 National RVSM Program Manager (NPM)

States shall appoint National RVSM Program Manager. These managers will be responsible for the day-to-day management of the National RVSM Program, coordinate RVSM activities at national level and provide required inputs to the Program Office.

5.2 RVSM Program Structure

The RVSM Program will include many stakeholder activities up to and including the implementation of RVSM, as well as activities following implementation. Identified activities should be developed into a Work Schedule. The Work Schedule can be summarized into five sub-programs (See Attachment B).

5.2.1 Sub-Program 1 - RVSM Program Management.

The main deliverable is the RVSM Plan and full Stakeholder commitment to the implementation of RVSM at the agreed date. It includes program management activities throughout the required period, in particular progress monitoring and progress/status reports to States and the ARTF.

5.2.2 Sub-Program 2 - Aircraft Operations and Airworthiness

To ensure timely RVSM approvals for Aircraft Operations and Airworthiness by States, technical, operational and regulatory directives shall be available for airspace users. It will also assist and monitor the approval process. Aircraft height-keeping accuracy must be verified through the operation of a height-monitoring infrastructure system. The monitoring program will provide the technical data to confirm that safety objectives are met.

5.2.3 Sub-Program 3 – Air Traffic Management (ATM)

This sub-program will ensure that all ATS provider units are well prepared and ready for the introduction of RVSM on the agreed date. Tasks should be identified to allow States to make airspace restructuring, introduce RVSM Procedures. Modify ATC systems, provide ATC Training and resolve legislative issues, etc.

5.2.4 Sub-Program 4 - RVSM Safety Assurance

RVSM safety assurance constitutes the safety assessments necessary prior to implementation, just after implementation and at the end of the RVSM Program to ensure that the agreed safety objectives are met. This includes amongst others the development of an agreed RVSM safety policy, and identifies the possible need for States to prepare RVSM safety cases.

5.2.5 Sub-Program 5 - Regional Monitoring Agency (RMA)

It is recognized that there is a requirement for monitoring of aircraft height keeping performance as part of RVSM implementation program. An AFI Regional Monitoring Agency needs to be established by the AFI RVSM Task Force to provide Safety Oversight Services in connection with implementation and continued safe use of RVSM within the designated airspace.

6 RVSM Program Schedule

A schedule for all the activities must be developed in conjunction with the various stakeholders and, in particular, the RVSM National Program Managers (NPM). The schedule will serve as the benchmark against which the program progress will be assessed. (*See Attachment C*)

7. AFI RVSM COST

It is the responsibility of stakeholders to identify and gain approval for their own budget and resource requirements.

8. CONCLUSION

Implementation planning should be progressed as a priority item. A program for implementation in the earliest possible time frame should be actively pursued, with implementation planning being carried out by the ARTF under the direction of APIRG. The RVSM Program should be fully coordinated by the Program Office for the entire area of future application, and should take full account of the work carried out by the ARTF.

ATTACHMENT A

AFI RVSM IMPLEMENTATION STRATEGY/ACTION PLAN

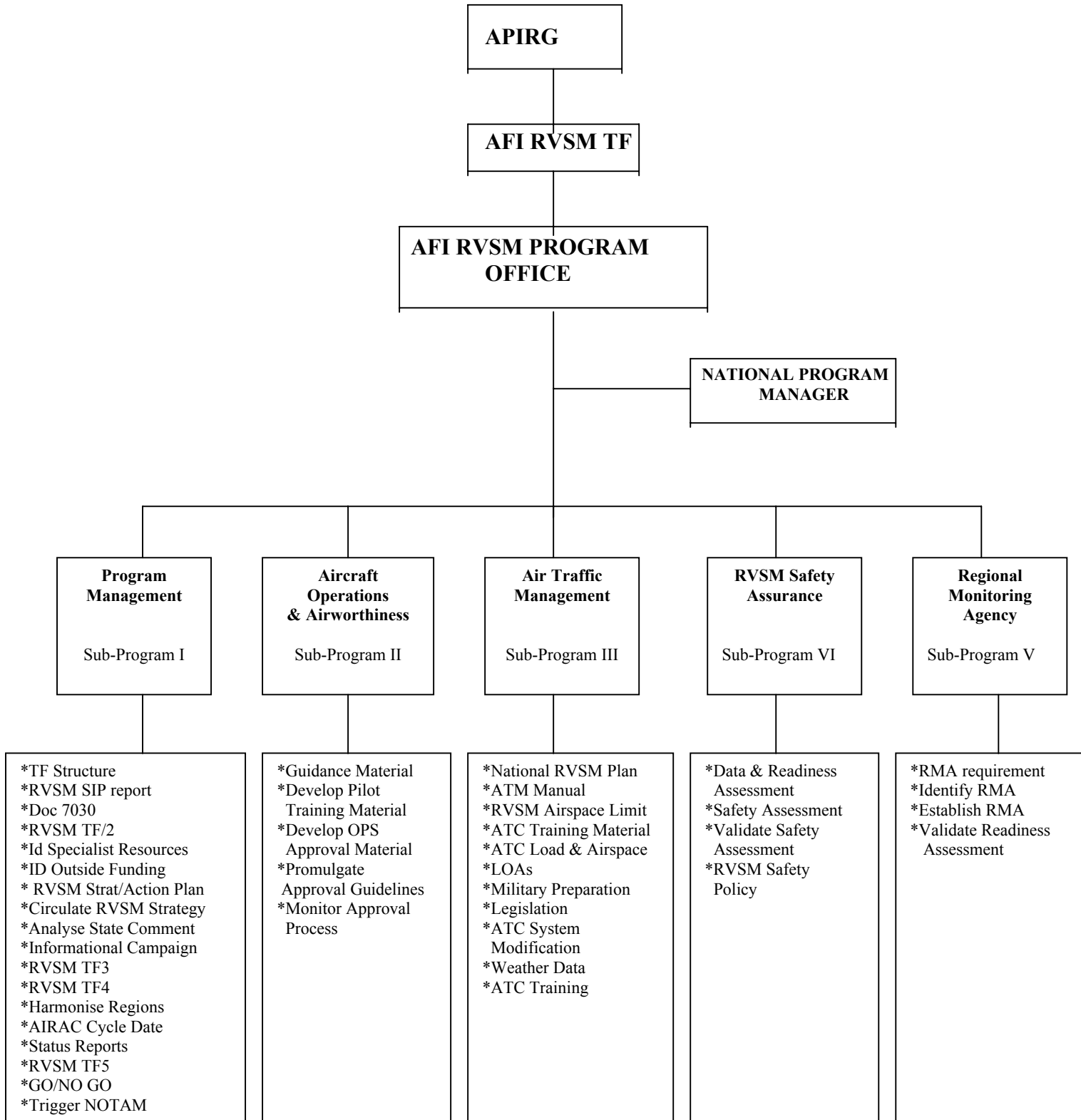
ID	Description	Target Date	Status	Resources
	Program Management			
1	Agree on structure of TF to enable efficient handling of specialist technical tasks	21 November 2003	Action completed.	Secretariat Support Team: ASECNA South Africa, IATA, Nigeria, Tunisia
2	Consideration of the RVSM SIP Report	21 November 2003	Completed	RVSM/ITF2
3	Develop Doc 7030 amendment	21 November 2003	Completed	ICAO
4	RVSM/RNAV/RNP TF/2 Meeting	21 November 2003	Completed	RVSM/ITF2
5.	Identify resources for performing specialist technical tasks	21 November 2003	Action completed	RVSM/ITF2
6	Investigate methods of funding any outside assistance required	31 December 2003	In progress.	ICAO/IATA
7.	Finalize the RVSM Implementation Strategy/Action Plan	31 December 2003	In progress	ICAO
8	Circulate RVSM Implementation Strategy/Action Plan for comments from States	5 January 2004	In progress	ICAO
9	Obtain and analyze the comments from States on RVSM implementation Strategy/Action Plan	31 March 2004	In progress	States, ICAO RVSM/ITF3
10	Develop a regional RVSM informational campaign	31 March 2004	In Progress	IACO/IATA/States
11	RVSM Seminar/Workshops/RVSM ITF3	5 April 2004	In Progress	ICAO
12	RVSM/ITF/4	June 2004	In progress	ICAO/RVSM ITF/4
13	Undertake coordination and harmonization of procedures with adjacent Regions.	30 August 2004	In progress	ICAO and AFI RMA
14	Confirm target AIRAC implementation date (AIP Supplement to be published)	30 September 2004	In progress	Informal coordination meeting/ RVSM ITF/5

ID	Description	Target Date	Status	Resources
15	Prepare/maintain regional status report detailing RVSM implementation plans and circulate to States	30 September 2004	In progress	ICAO
16	RVSM/ITF/5	September/October 2004	In progress	ICAO/RVSM ITF/5
17	Go/No-Go decision	30 September 2004	In Progress	Informal meeting of all Stakeholders ICAO RVSM/TF/5
18	Publish Trigger NOTAM	25 November 2004	In progress	States
	Aircraft Operations and Airworthiness			
19	Develop regional OPS & Airworthiness RVSM Guidance Material	21 November 2003	Completed	ICAO
20	Develop regional RVSM Guidance Material on Pilot Training	31 January 2004	In Progress	States/ICAO/IATA
21	Develop AFI OPS Approval Process	30 July 2004	In progress	RMA/ ICAO
22	Promulgate on the guideline operational approval process	1 July 2004	In progress	States, ICAO
23	Monitor operator approval process	30 July 2004	In progress	RMA
	Air Traffic Management			
24	Develop National RVSM plan	31 March 2004	In progress	States, ICAO
25	Develop ATC Manual for RVSM in AFI Region.	31 March 2004	In progress	South Africa/ASECNA and Nigeria
26	Determine the limits of RVSM airspace	31 March 2004	In progress	States/ICAO
27	Develop Regional ATC Training Guidance Material	31 March 2004	In Progress	South Africa/AESNA/Nigeria
28	Evaluate the need for simulations to assess ATC workload and possible need for airspace/air route/Sector changes	31 March 2004	In progress	Senegal, ASECNA/Nigeria, South Africa
29	Identify issues to be addressed in Letters of Agreement	31 March 2004	In progress	Tunisia
30	Military aviation preparation	31 March 2004	In progress	States, ICAO
31	Develop National RVSM Legislation	31 March 2004	In progress	States, ICAO
32	States assess the impact of RVSM implementation on controller automation systems	30 April 2004	In progress	States

ID	Description	Target Date	Status	Resources
	and plan for upgrades/ modifications			
33	Collect weather and turbulence data for analysis	31 June 2004	In progress	AFI RMA ICAO/States
34	States to conduct local RVSM training for air traffic controllers.	31 June 2004	In progress	States
	RVSM Safety Assurance			
35	Conduct preliminary data collection and readiness assessment	31 March 2004	In progress	RMA – ICAO
36	Complete RVSM Safety assessment	31 March 2004	In progress	AFI RMA/ICAO
37	Validate safety assessment	30 June 2004	In progress	RVSM ITF/4
38	Develop AFI RVSM Safety Policy	31 March 2004	In progress	RVSM/ITF3
	Regional Monitoring Agency (RMA)			
39	Evaluate options for setting up AFI Regional monitoring agency	21 November 2003	Completed	RVSM/ITF2
40	Identify an AFI RMA	21 November 2003	Completed	RVSM/ITF/2
41	Establish an AFI RMA.	31 March 2004	In progress	South Africa/ICAO
42	Validate implementation readiness assessment	31 July 2004	In progress	ICAO, RMA

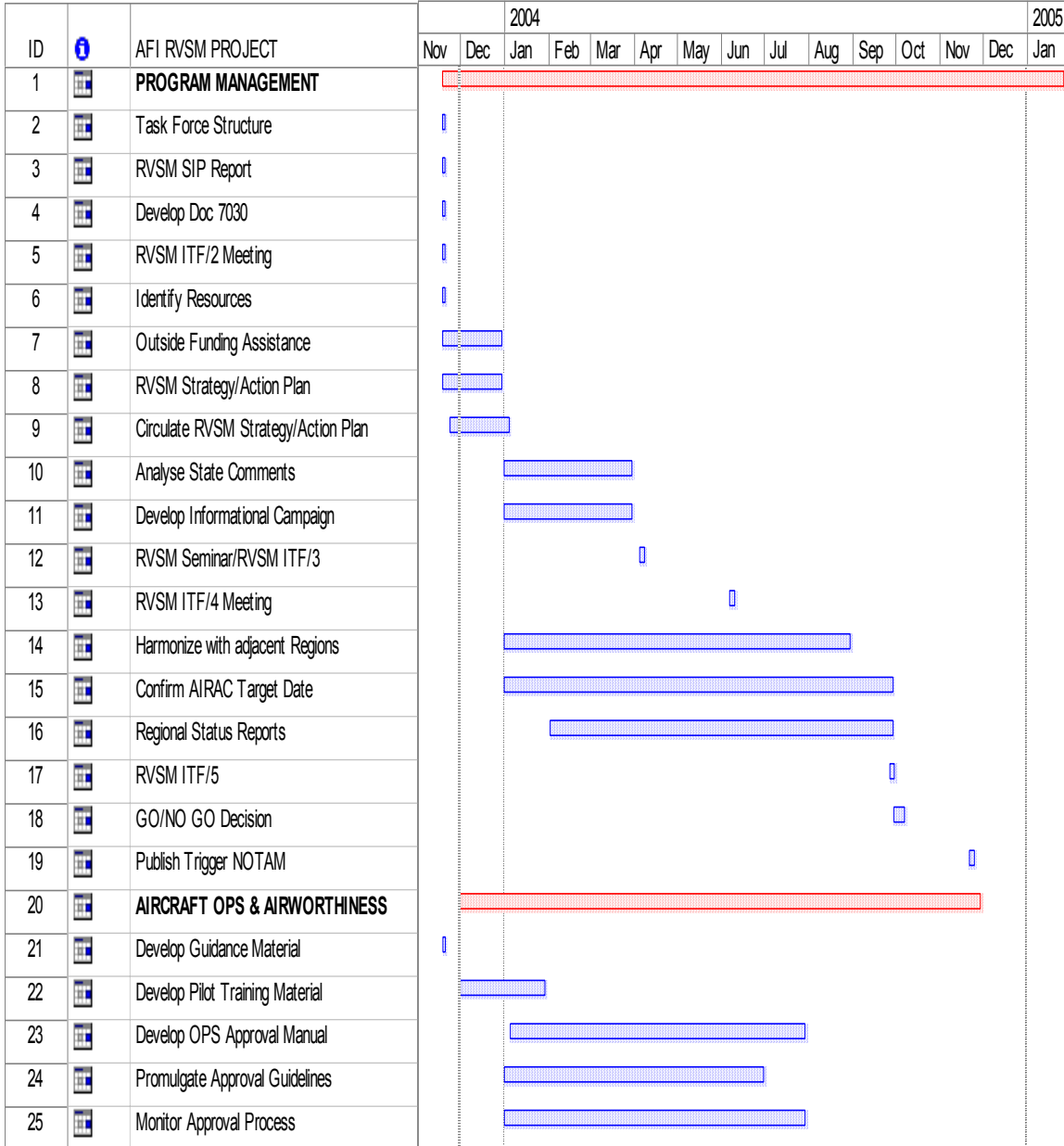
ATTACHMENT B

AFI RVSM PROGRAM



Attachment C

DRAFT SCHEDULE: AFI RVSM IMPLEMENTATION



ID	i	AFI RVSM PROJECT	2004												2005		
			Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
26		AIR TRAFFIC MANAGEMENT															
27		Develop National Plan															
28		Develop ATM Manual															
29		Determine RVSM Airspace Limits															
30		Develop ATC Training Material															
31		Evaluate ATC Load & Airspace Changes															
32		Identify LOA requirements															
33		Military Aviation Preparation															
34		Develop National RVSM Legislation															
35		Evaluate ATC System Modifications															
36		Collect Weather Data															
37		Conduct ATC Training															
38		RVSM SAFETY															
39		Data & Readiness Assessment															
40		Complete Safety Assessment															
41		Validate Safety Assessment															
42		Develop RVSM Safety Policy															
43		REGIONAL MONITORING AGENCY															
44		Evaluate RMA Requirement															
45		Identify RMA															
46		Establish AFI RMA															
47		Validate Readiness Assessment															

- END -

Reference Documents on RVSM

Documents	Explanation	Language	Web site / URL
Reference Documents			
<p>Joint Aviation Authority (JAA) Temporary Guidance Leaflet (TGL N°6).</p>	<p>TGL N°6 Revision 1- Guidance material on the approval of aircraft and operators flight in airspace above flight level 290 where a 300m (1,000ft) vertical separation minimum is applied.</p>	<p>English</p>	<p>http://www.eur-rvsm.com/documents/TGL6rev1.pdf</p>
<p>FAA documents RVSM Approval Checklist - US Operators (01 May 02)</p> <p>RVSM Approval Checklist - Non-US Operators (01 May 02)</p> <p>Example Operator RVSM Application (17 Feb 99)</p> <p>Interim Guidance Material on the Approval of Operators/Aircraft for RVSM Operations 91-RVSM with Change 1 (30 June 99)(Complete RVSM Guidance Material with updated changes).</p>	<p>RVSM Aircraft and Operator Approval Documentation- documents and guidance related to RVSM aircraft and operator approval.</p>	<p>English</p>	<p>http://www.faa.gov/ats/ato/150_docs/91RVSM_CH1.doc</p>

Documents	Explanation	Language	Web site / URL
ICAO Doc 7030/4 Regional Supplementary Procedures amendment for EUR RVSM (requirements and procedures).	This Doc 7030/4 amendment was approved by the ICAO Council on 23 November 2000.	English	http://www.eur-rvsm.com/documents/ApprovedE99-33Doc7030amendment.pdf
Master Plan-European Reduced Vertical Separation Minimum Programme	This EUR RVSM Master Plan has been endorsed in 1999 by all Programme participants. It describes the general programme history, organization, key dates and associated responsibilities.	English	http://www.eur-rvsm.com/documents/A041.pdf
ATC Manual for a Reduced Vertical Separation Minimum (RVSM) in Europe-Version 2.0.	Whilst the English version is the only official version, two language versions are also provided.	English French	http://www.eur-rvsm.com/documents/ATCManualV2_0.pdf
Safety			
EUR-RVSM Pre-Implementation Safety Case Edition 2.0 of 14 August 2001.	This document constitutes the EUROCONTROL Pre-Implementation Safety Case (PISC) for the RVSM Programme.	English	http://www.eur-rvsm.com/documents/safety/EURRVSMPISCV2014AUG2001.pdf
Functional Hazard Assessment Results of 12 February 2001.	This document contains the results of the Functional Hazard Assessment (FHA) for the EUR RVSM Programme conducted during the last quarter of 2000.	English	http://www.eur-rvsm.com/documents/safety/RVSMFHAV1012FEB2001.pdf
National Safety Plan	Guidance material to develop national safety plans.	English	http://www.eur-rvsm.com/documents/safety/GuidancetoStatesJune01.pdf

Documents	Explanation	Language	Web site / URL
EUR RVSM Safety Policy Document	The Reduced Vertical Separation Minimum (RVSM) operational concept, sets out the Safety Policy European RVSM programme, lists the safety objectives and provides a high-level description of the deliverables of the RVSM Safety Sub-Programme.	English	http://www.eur-rvsm.com/documents/safety/A573SafetyPolicyDocV1_0.pdf
Wake Vortices			
The Effect of RVSM on Wake	EUROCONTROL has sponsored a Vortex Turbulence study into the effects RVSM would have on the occurrence of turbulence due to wake vortex encounters. From that page, the full report including programme response is also available for download, as well as the Wake Turbulence Report Form.	English	http://www.eur-rvsm.com/documents/WakeVortexAugust2001.pdf
RVSM Approval Requirements – Training			
Flight Crew Training and Associated RVSM Operational considerations	This brief provides guidance for RVSM operational considerations.	English	http://www.eur-rvsm.com/documents/RVSMFlightCrewtraining&operationalconsiderations.pdf

-END-