

# INTERNATIONAL CIVIL AVIATION ORGANIZATION



## RVSM RNAV RNP TF1 MEETING REPORT

**(Dakar, 17 - 18 June 2002)**

**Prepared by the Secretary of the RVSM//RNAV/RNP/TF1**

The ATS/AIS/SAR Sub-Group is a Sub-Group of the AFI Planning and Implementation Regional Group (APIRG). Its Reports are therefore submitted to APIRG for review and action.

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### AGENDA ITEMS

- Agenda Item 1 :** Review of RVSM/RNAV/RNP Terms of Reference and Work Programme.
- Agenda Item 2 :** Time Scales for the implementation Plan of the RVSM and RNAV/ RNP
- Agenda Item 3 :** Development of guidance material for RVSM and RNAV/RNP implementation.
- Agenda Item 4:** Development of an implementation plan for RVSM.
- Agenda Item 5 :** Future Work Programme and composition of the Task Force
- Agenda Item 6 :** Any other business.
- Attachment A:** List of participants.
- Appendix A:** Terms of Reference of the ICAO RVSM Implementation Task Force
- Appendix B:** SATMA Navigation deviation investigation form  
SATMA Deviation Monitoring Report
- Appendix C:** RVSM Guidance Material
- Appendix D:** AFI RVSM/RNAV/RNP Implementation Plan

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## **PART I - HISTORY OF THE MEETING**

### **1. Introduction**

1.1 The First meeting of the RVSM/RNAV/RNP Task Force (RVSM/RNAV/RNP TF/1) 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, 17-18 June 2001.

1.2 Mr. Henry Daniel Ochieng, from the Directorate of Civil Aviation of Kenya, was unanimously appointed as Rapporteur for the RVSM/RNAV/RNP Task Force meeting.

1.3 Mr. Brou Konan, Air Traffic Management (RO/ATM2) of the ICAO Dakar Regional Office, acted as the Secretary of the meeting. He was assisted by Messrs. A. Kharuga, G. Baldeh, ROs/ATM and Mr.P. Zo'o Minto'o, RO/ CNS of the ICAO Nairobi and Dakar Offices respectively .

1.4 The meeting was opened by Mr. A. D. Mensa, ICAO Regional Deputy 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 and wished the members a fruitful deliberation with a view to further enhance the safety of air navigation in the Region.

### **2. Attendance**

2.1 The meeting was attended by 21 experts from 7 States and 3 Organizations namely ASECNA, IATA and IFALPA. The list of participants is given at **Attachment A** to this report.

### **3. Working Language**

3.1 The meeting was conducted in English language only.

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#### 4. Agenda

4.1 The following Agenda was adopted :

**Agenda Item 1 :** Review of RVSM/RNAV/RNP Terms of Reference and Work Programme.

**Agenda Item 2 :** Time Scales for the implementation Plan of the RVSM and RNAV/ RNP

**Agenda Item 3 :** Development of guidance material for RVSM and RNAV/RNP implementation.

**Agenda Item 4:** Development of an implementation plan for RVSM.

**Agenda Item 5 :** Future Work Programme and composition of the Task Force

**Agenda Item 6 :** Any other business.

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## 5. Conclusions/Decisions

5.1 The Task Force recorded its action in the form of Conclusions/Decisions.

### Summary of Conclusions/Decision

Number	Title
<b>Conclusion 1:</b>	<p><b>RVSM monitoring agency for AFI Region</b></p> <p><b>That:</b></p> <ul style="list-style-type: none"> <li>a) The task of monitoring safety in conjunction with implementation of RVSM and RNAV/RNP in the AFI Region be assigned to the South Atlantic Monitoring Agency(SATMA) located at Canarias ACC.</li> <li>b) The Terms of Reference of the monitoring agency are at <b>Appendix A</b>.</li> </ul>
<b>Conclusion 2:</b>	<p><b>Safety assessment</b></p> <p><b>That:</b></p> <ul style="list-style-type: none"> <li>a) The safety assessment comparative methodology contained in Manual of Airspace Planning Methodology (Doc.9689) be used for application in the implementation of RVSM and RNP in the AFI Region.</li> <li>b) That ICAO, in coordination with SATMA, develop ways and means of carrying safety assessment as soon as possible but not later than 15 April 2003.</li> </ul>
<b>Conclusion 3:</b>	<p><b>Civil/military coordination</b></p> <p><b>That:</b></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>
<b>Conclusion 4:</b>	<p><b>Nomination of an RVSM programme manager</b></p> <p><b>That:</b></p> <ul style="list-style-type: none"> <li>a) States/service providers nominate, as soon as possible, but not later than 15 March 2003, an RVSM Programme Manager who will be responsible for ensuring that the proper mechanism be put in place for the safe implementation of RVSM programme and will also act as the focal point of contact person.</li> <li>b) ICAO consolidate the list of the RVSM programme managers as soon as possible, but not later than 15 March 2003 and circulate it to States and International Organizations.</li> </ul>

Number	Title
<b>Conclusion 5:</b>	<p><b>Reporting of data for monitoring and/or carrying out safety assessment</b></p> <p><b>That:</b></p> <p>a) All States institute procedures for reporting of data, incidents and conditions necessary or performing the collision risk calculations prerequisite for RVSM implementation to the AFI monitoring agency. The data will include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> <li>(i) Height deviations of 300 ft or more</li> <li>(ii) total number of IFR movements for each month</li> <li>(iii) the average time per movement spent in the level band FL 290 to FL 410</li> <li>(iv) ATC/ATC coordination failures</li> <li>(v) turbulence; and</li> <li>(vi) traffic data.</li> </ul> <p>b)The AFI monitoring agency shall ensure that further processing and/or evaluation of this data within its Terms of Reference and identify or develop methodologies for assessing risk associated with traffic and conditions prevailing within the AFI Region.</p> <p>c) AFI monitoring agency should use the reporting format at <b>Appendix B</b>.</p>
<b>Conclusion 6:</b>	<p><b>Monitoring requirements</b></p> <p><b>That:</b></p> <p>Operators having met the monitoring requirements for a given fleet/type of aircraft, in other Regions, will be accepted as having satisfied the RVSM monitoring requirements for the AFI Region.</p>
<b>Conclusion 7:</b>	<p><b>Implementation of RVSM in the AFI Region</b></p> <p><b>That:</b></p> <p>a) RVSM will be implemented in the AFI Region in the airspaces that have met the criteria in the RVSM Manual (Doc. 9574) between FL 350 and FL390 initially on the AIRAC date of 27 November 2003 and extension from FL 290 to FL 410 inclusive by the year 2005.</p> <p>b) Implementation of RVSM in the AFI Region be harmonized and coordinated with the implementation time frames of adjacent Regions.</p>

Number	Title
<b>Conclusion 8:</b>	<p><b>Training of all personnel involved with the implementation of RVSM in the AFI Region</b></p> <p><b>That:</b></p> <ul style="list-style-type: none"> <li>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/RNP in the AFI Region.</li> <li>b) Seminars/Workshops be organized in the Region for training of air traffic services personnel in the RVSM/RNP field.</li> <li>c) States be invited to approach training institutions for the development of a training module in the RVSM field representative of the AFI Region.</li> <li>d) States having difficulties in implementing RVSM implementation programme, may either individually or in group explore the possibility of seeking outside expertise.</li> </ul>
<b>Conclusion 9:</b>	<p><b>Guidance material for Airworthiness and Operational Approval</b></p> <p><b>That:</b></p> <p>States in the AFI Region be urged to include in their national legislation and 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 6 Part 1 Chapter 7 para. 7.2.3, and the guidance material contained in both FAA interim guidance 91-RVSM and JAA Temporary Guidance Leaflet (TGL) N° 6.</p>
<b>Conclusion 10:</b>	<p><b>Airworthiness and Operational Approval for RNP 5 and RNP 10 Operation in the AFI Region</b></p> <p><b>That:</b></p> <p>That with a view to facilitate and harmonize the airworthiness and operational approval procedures for RNP5 and RNP10 in the Region.</p> <ul style="list-style-type: none"> <li>(i) The European Joint Airworthiness Authority (JAA) temporary guidance leaflet N°.2, guidance material on airworthiness approval and operational criteria for the use of navigation systems in the European airspace designated for basic RNAV operations be endorsed as the official guidance material for airworthiness and operational approvals for RNP5 operations in the AFI Region.</li> </ul>

Number	Title
	(ii) The guidance material developed by the United States, FAA order 8400.12 be used by States for the development of RNP10 operational approval process.
<b>Conclusion 11:</b>	<p><b>Enforcement in national legislation</b></p> <p>That: States take the appropriate measure in order to:</p> <ul style="list-style-type: none"> <li>a) publish an AIC informing the users of their intention to implement RVSM between FL 350 and FL 390 on 27 November 2003; and</li> <li>b) include the necessary provisions in their national legislation (AIPs).</li> <li>c) ICAO Regional Office concerned circulate to States the Sample AIC and Sample National Legislation on RVSM.</li> </ul>
<b>Conclusion 12:</b>	<p><b>Amendment to ICAO Doc. 7030</b></p> <p><b>That:</b></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>
<b>Conclusion 13:</b>	<p><b>Participation of representatives of States and international organizations involved in the implementation of RVSM Approval Process</b></p> <p><b>That:</b></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>
<b>Decision 14:</b>	<p><b>Funding of the RVSM implementation programme</b></p> <p><b>That:</b></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>
<b>Decision 15:</b>	<p><b>Guidance material for RVSM and RNAV/RNP</b></p> <p><b>That:</b></p> <p>In order to enhance awareness campaign on RVSM and RNAV/RNP the documents at Appendix C to this report be circulated to States.</p>

## **PART II - REPORT ON AGENDA ITEMS**

**Agenda Item1 : Review of RVSM/RNAV/RNP Terms of Reference and work programme.**

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 13/58 which inter alia stated that:

**DECISION 13/58 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, work programme**

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 the ICAO RVSM/RNAV/RNP Implementation 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 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 the 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 the 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.

**Rapporteur :** Kenya.

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### **Agenda Item 2 : Time Scales for the implementation Plan of the RVSM and RNAV/RNP**

2.1 Under this Agenda Item the Task Force was concerned about the identification of some airspaces where RVSM may be implemented taking into account inter-regional interface airspaces.

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**Agenda Item 3 : Development of guidance material for RVSM and RNAV/RNP implementation.**

3.1 Under this Agenda Item the meeting was apprised on the tasks and projects carried out by the South Atlantic Monitoring Agency (SATMA) in the EUR/SAM corridor and the experience gained by that Agency in the Region.

3.2 The meeting also noted the necessity to carry out the collision risk assessment which is a prerequisite to the implementation of a reduced vertical separation and RNP in the AFI Region, and agreed to formulated the following Conclusions and Decision:

**Conclusion 1: RVSM monitoring agency for AFI Region**

**That:**

- a) **The task of monitoring safety in conjunction with implementation of RVSM and RNAV/RNP in the AFI Region be assigned to the South Atlantic Monitoring Agency(SATMA) located at Canarias ACC.**
- b) **The Terms of Reference of the monitoring agency are at Appendix A.**

**Conclusion 2: Safety assessment**

**That:**

- a) **The safety assessment comparative methodology contained in Manual of Airspace Planning Methodology (Doc.9689) be used for application in the implementation of RVSM and RNP in the AFI Region.**
- b) **That ICAO, in coordination with SATMA, develop ways and means of carrying safety assessment as soon as possible but not later than 15 April 2003.**

**Conclusion 3: Civil/military coordination**

**That:**

**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.**

**Conclusion 4: Nomination of an RVSM programme manager****That:**

- a) States/service providers nominate, as soon as possible, but not later than 15 March 2003, an RVSM Programme Manager who will be responsible for ensuring that the proper mechanism be put in place for the safe implementation of RVSM programme and will also act as the focal point of contact person.
- b) ICAO consolidate the list of the RVSM programme managers as soon as possible, but not later than 15 March 2003 and circulate it to States and International Organizations.

**Conclusion 5: Reporting of data for monitoring and/or carrying out safety assessment****That:**

- a) All States institute procedures for reporting of data, incidents and conditions necessary or performing the collision risk calculations prerequisite for RVSM implementation to the AFI monitoring agency. The data will include, but not necessarily be limited to:
  - (i) Height deviations of 300 ft or more
  - (ii) total number of IFR movements for each month
  - (iii) the average time per movement spent in the level band FL 290 to FL 410
  - (iv) ATC/ATC coordination failures
  - (v) turbulence; and
  - (vi) traffic data.
- b) The AFI monitoring agency shall ensure that further processing and/or evaluation of this data within its Terms of Reference and identify or develop methodologies for assessing risk associated with traffic and conditions prevailing within the AFI Region.
- c) AFI monitoring agency should use the reporting format at Appendix B.

**Conclusion 6: Monitoring requirements****That:**

**Operators having met the monitoring requirements for a given fleet/type of aircraft, in other Regions, will be accepted as having satisfied the RVSM monitoring requirements for the AFI Region.**

**Conclusion 7: Implementation of RVSM in the AFI Region****That:**

- a) **RVSM will be implemented in the AFI Region in the airspaces that have met the criteria in the RVSM Manual (Doc. 9574) between FL 350 and FL390 initially on the AIRAC date of 27 November 2003 and extension from FL 290 to FL 410 inclusive by the year 2005.**
- b) **Implementation of RVSM in the AFI Region be harmonized and coordinated with the implementation time frames of adjacent Regions.**

**Conclusion 8: Training of all personnel involved with the implementation of RVSM in the AFI Region****That:**

- 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/RNP in the AFI Region.**
- b) **Seminars/Workshops be organized in the Region for training of air traffic services personnel in the RVSM/RNP field.**
- c) **States be invited to approach training institutions for the development of a training module in the RVSM field representative of the AFI Region.**
- d) **States having difficulties in implementing RVSM implementation programme, may either individually or in group explore the possibility of seeking outside expertise.**

3.2 The meeting was also concerned about the examination and the harmonization of the existing material related to airworthiness, RVSM aircraft and operators approval and other subsidiary matters related to Airworthiness and Operational Approval the meeting then agreed on the following conclusions:

**Conclusion 9: Guidance material for Airworthiness and Operational Approval****That:**

**States in the AFI Region be urged to include in their national legislation and 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 6 Part 1 Chapter 7 para. 7.2.3, and the guidance material contained in both FAA interim guidance 91-RVSM and JAA Temporary Guidance Leaflet (TGL) N° 6.**

**Conclusion 10: Airworthiness and Operational Approval for RNP 5 and RNP 10 Operation in the AFI Region**

**That:**

**That with a view to facilitate and harmonize the airworthiness and operational approval procedures for RNP5 and RNP10 in the Region**

- (i) The European Joint Airworthiness Authority (JAA) temporary guidance leaflet N°.2, guidance material on airworthiness approval and operational criteria for the use of navigation systems in the European airspace designated for basic RNAV operations be endorsed as the official guidance material for airworthiness and operational approvals for RNP5 operations in the AFI Region.**
- (ii) The guidance material developed by the United States, FAA order 8400.12 be used by States for the development of RNP10 operational approval process.**

**Conclusion 11: Enforcement in national legislation**

**That:**

**States take the appropriate measure in order to:**

- a) publish an AIC informing the users of their intention to implement RVSM between FL 350 and FL 390 on 27 November 2003; and**
- b) include the necessary provisions in their national legislation (AIPs).**
- c) ICAO Regional Office concerned circulate to States the Sample AIC and Sample National Legislation on RVSM.**

**Conclusion 12: Amendment to ICAO Doc. 7030**

**That:**

**ICAO initiates as appropriate, an amendment proposal to the AFI SUPPs to include relevant provisions for RVSM and RNP implementation in the AFI Region.**

**Conclusion 13: Participation of representatives of States and international organizations involved in the implementation of RVSM Approval Process**

**That:**

**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.**

**Decision 14: Funding of the RVSM implementation programme**

**That:**

**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.**

**Decision 15: Guidance material for RVSM and RNAV/RNP**

**That:**

**In order to enhance awareness campaign on RVSM and RNAV/RNP the documents at Appendix C to this report be circulated to States.**

**Conclusion 16 : Development of an implementation plan for RVSM and RNAV/RNP**

**That:**

**The material at Appendix D to this report be circulated to States for comments and responses be received by ICAO not later than 20 March 2003.**

**Conclusion 17 : Future Work Programme of the Task Force**

**The Task Force having noted its Terms of Reference of the view that the Task will be pursued at future meeting. The date and the next meeting will be determined later.**

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**Agenda Item 4: Development of an implementation plan for RVSM and RNAV/RNP**

4.1 Under this Agenda Item, the meeting agreed on the following conclusion:

**Conclusion 16 : Development of an implementation plan for RVSM and RNAV/RNP**

**That:**

**The material at Appendix D to this report be circulated to States for comments and responses be received by ICAO not later than 20 March 2003**

**Conclusion 17 : Future Work Programme of the Task Force**

**The Task Force having noted its Terms of Reference of the view that the Task will be pursued at future meeting. The date and the next meeting will be determined later.**

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**First Task Force meeting of RVSM/ RNAV /RNP (RVSM/RNAV/RNP/ TF1)**

**LIST OF PARTICIPANTS**

**Attachment A**

<b>States/Etats</b>	<b>Names/Noms</b>	<b>Designation/Fonction</b>	<b>Address/Adresse</b>	<b>E. Mail</b>	<b>Telephone/Fax</b>
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**TERMS OF REFERENCE OF AFI RVSM MONITORING AGENCY**

The AFI Monitoring Agency for RVSM implementation has the following Terms of Reference:-

- a) to establish and maintain a central registry of State RVSM/RNP approvals of operators and aircraft using the AFI Region airspace where RVSM will be applied;
- b) to facilitate the transfer of approval data to and from other RVSM regional monitoring agencies;
- c) to establish and maintain a data base containing the results of height-keeping performance monitoring and all altitude deviations of 300 ft or more within AFI Region airspace, and to include in the database the result of AFI Monitoring Agency requests to operators and States for information explaining the causes of observed large height deviations;
- d) provide timely information on changes of monitoring status of aircraft type classifications to State authorities and operators;
- e) to assume overall responsibility for:
  - i) coordination of the Global Positioning System Monitoring System (GMS); and
  - ii) assessing compliance of operators and aircraft with RVSM height-keeping performance in conjunction with RVSM introduction in the AFI Region;
- f) to provide the means of identifying non-RVSM approved using AFI airspace where RVSM is applied; and notifying the appropriate State approval authority; and
- g) to conduct readiness assessments and safety assessments as an aid for the RVSM/RNAV/RNP Task Force for decision making in preparation for RVSM implementation on a specified date.
- h) to establish and maintain a data base containing the results of navigation error monitoring;
- i) to prepare, each six months, reports setting out the results of navigation error monitoring for the preceding six-month period. These reports shall be presented to the ICAO ESAF Regional Office, Nairobi and States as part of their decision process related to safety management;
- j) to conduct safety assessments as an aid for the RVSM/RNAV/RNP Force for decision making in conjunction with expansion or changes to the RNP route structure within the AFI Region;
- k) to liaise with other Regional monitoring agencies and organizations to harmonize RNP implementation and upgrading.

AFI RVSM Monitoring Agency – 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:				
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		If ATC clearance NOT obtained		
		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 - Contingency action due to engine fault
- B - Contingency action due to pressurisation failure
- C - Contingency action due to OTHER CAUSE
- D - Failure to climb/descend as cleared
- E - Climb/descend without ATC clearance
- F - Entry airspace at an incorrect level
- G - ATC FL re-clearance resulting in loss of lateral or longitudinal separation.
- H - Deviation due to TCAS
- I - Aircraft unable to maintain level
- O - Other

2.- For lateral deviations

- A - Committed by aircraft not certified for operation in the RNP airspace
- B - ATC system loop error
- C1 - Equipment control error including inadvertent waypoint error
- C2 - Waypoint insertion error due to the correct entry of incorrect position
- D - Other with failure notified to ATC in time for action
- E - Other with failure notified to ATC too late for action
- F - Other with failure notified/received by ATC
- G - Lateral deviations due to weather when unable to obtain prior ATC clearance

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

Remarks:

1. As contingency procedures have to be followed, if a NO is included in "WERE the contingency Procedures followed", an explanation (WHY) have to be included in "Other comments"
  
2. The EUR/SAM corridor includes the FIR/UIRs: Recife (Atlantico), Dakar Oceanic, Sal Oceanic and Canarias (South and West).

**SATMA 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)

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**The ACC/AO Responsible**

**Name :**

**Phone/E-mail :**

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**Send to**

**SATMA – E-mail :** [satma@aena.es](mailto:satma@aena.es)

**Fax :** +34 928 57 7052

***ACC's: To report monthly until further notice***

***AO's: To report monthly from April 1<sup>st</sup> 2003 until March 31<sup>st</sup> 2004***

## Appendix B

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

- The SATMA 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 SAT Region.
- A Secretariat to facilitate the technical, operative and administrative tasks required by the Agency in order to follow the SATMA Coordinators' guidelines.

### 4. SUBMISSION OF STATISTICAL AND EQUIPMENT DATA

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

4.2 The Operators flying through the EUR/SAM corridor are requested to notify SATMA, in an independent stage of the state regulator authorities, the aircraft equipment certification on RVSM and RNP-10.

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 SATMA the "Navigational Deviation Investigation Form" at page 2 above.

### 5. SATMA COOPERATIVE REQUEST

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

### 6. ADDITIONAL INFORMATION

The SATMA is located in the ACC-Canarias and can be reached at the following E-mail address: satma@aena.es

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

Tel:34-928 577 057 Fax:34-928 577 003

The Secretariat, Tomás Vidriales Bartolomé can be contacted at:

Tel:34-928 557 054 Fax:34-928 577 052

A SATMA WEB page is also in progress and will be ready by January/February 2001.

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## RVSM Guidance Material

Documents	Explanation	Language	Web site / URL
<b>Reference Documents</b>			
Joint Aviation Authority (JAA) Temporary Guidance Leaflet (TGL N°6).	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.	English	<a href="http://www.eur-rvsm.com/documents/TGL6rev1.pdf">http://www.eur-rvsm.com/documents/TGL6rev1.pdf</a>
FAA documents RVSM Approval Checklist - US Operators (01 May 02)  RVSM Approval Checklist - Non-US Operators (01 May 02)  Example Operator RVSM Application (17 Feb 99)  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).	RVSM Aircraft and Operator Approval Documentation- documents and guidance related to RVSM aircraft and operator approval.	English	<a href="http://www.faa.gov/ats/ato/150_docs/91RVSM_CH1.doc">http://www.faa.gov/ats/ato/150_docs/91RVSM_CH1.doc</a>
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	<a href="http://www.eur-rvsm.com/documents/ApprovedE99-33Doc7030amendment.pdf">http://www.eur-rvsm.com/documents/ApprovedE99-33Doc7030amendment.pdf</a>

Documents	Explanation	Language	Web site / URL
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	<a href="http://www.eur-rvsm.com/documents/A041.pdf">http://www.eur-rvsm.com/documents/A041.pdf</a>
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	<a href="http://www.eur-rvsm.com/documents/ATCManualV2_0.pdf">http://www.eur-rvsm.com/documents/ATCManualV2_0.pdf</a>
<b><u>Safety</u></b>			
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	<a href="http://www.eur-rvsm.com/documents/safety/EURRVSMPISCV2014AUG2001.pdf">http://www.eur-rvsm.com/documents/safety/EURRVSMPISCV2014AUG2001.pdf</a>
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	<a href="http://www.eur-rvsm.com/documents/safety/RVSMFHAV1012FEB2001.pdf">http://www.eur-rvsm.com/documents/safety/RVSMFHAV1012FEB2001.pdf</a>
National Safety Plan	Guidance material to develop national safety plans.	English	<a href="http://www.eur-rvsm.com/documents/safety/GuidancetoStatesJune01.pdf">http://www.eur-rvsm.com/documents/safety/GuidancetoStatesJune01.pdf</a>
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	<a href="http://www.eur-rvsm.com/documents/safety/A573SafetyPolicyDocV1_0.pdf">http://www.eur-rvsm.com/documents/safety/A573SafetyPolicyDocV1_0.pdf</a>

Documents	Explanation	Language	Web site / URL
<b>Wake Vortices</b>			
The Effect of RVSM on Wake Vortices.	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	<a href="http://www.eur-rvsm.com/documents/WakeVortexAugust2001.pdf">http://www.eur-rvsm.com/documents/WakeVortexAugust2001.pdf</a>
<b>RVSM Approval Requirements – Training</b>			
Flight Crew Training and Associated RVSM Operational considerations	This brief provides guidance for RVSM operational considerations.	English	<a href="http://www.eur-rvsm.com/documents/RVSMFlightCrewtraining&amp;operational%20considerations.pdf">http://www.eur-rvsm.com/documents/RVSMFlightCrewtraining&amp;operational considerations.pdf</a>

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**AFI RVSM/RNAV/RNP IMPLEMENTATION PLAN**

<b>ID</b>	<b>Description</b>	<b>Start</b>	<b>Finish</b>	<b>Status</b>	<b>Resources</b>
1	Agree on structure of TF to enable efficient handling of specialist technical tasks				
2	Identify resources for performing specialist technical tasks				
3	Investigate methods of funding any outside assistance required				
	<b>Safety Assessment and Monitoring</b>				
4	Conduct preliminary data collection and readiness assessment				
5	Evaluate options for setting up a central monitoring agency				
6	Evaluate options for carrying out the safety analysis				
7	Evaluate options for implementation of a height monitoring program				
8	Develop procedures for reporting large height deviations in existing system				
9	Collect weather and turbulence data for analysis				

ID	Description	Start	Finish	Status	Resources
10	Develop detailed program for safety analysis				
11	Establish requirements for pre and post-implementation monitoring				
12	Undertake initial safety analysis				
13	Carry out pre-implementation safety analysis				
14	Carry out pre-implementation readiness assessment				
15	Carry out post-implementation safety analysis during verification phase				
16	Review of mathematical and statistical techniques to assure their appropriateness for AFI RVSM				
17	Ensure Transferability of aircraft data from other Regions				
18	Devise methodologies for incorporating the effects of projected traffic growth and system changes on occupancy & collision risk in the future environment				

<b>ID</b>	<b>Description</b>	<b>Start</b>	<b>Finish</b>	<b>Status</b>	<b>Resources</b>
19	Perform periodically other data collections (eg. ASE stability) in order to ensure that the parameter values used in the mathematical collision risk models remain current				
	<b>ATC Operational Issues</b>				
20	Determine the limits of RVSM airspace (geographic and vertical)				
21	Develop ATC operational policy & procedures for normal RVSM operations				
22	Identify transition areas and transition procedures				
23	States assess the impact of RVSM implementation on controller automation systems and plan for upgrades/modifications				
24	Develop ATC procedures for non-approved State act to transit RVSM airspace				
25	Develop procedures for handling non-compliant civil aircraft (inc ferry & maintenance)				
26	Develop procedures for suspension of RVSM				
27	Evaluate the need for simulations to assess ATC workload and possible need for airspace/air route/Sector changes				

<b>ID</b>	<b>Description</b>	<b>Start</b>	<b>Finish</b>	<b>Status</b>	<b>Resources</b>
28	Develop ATC regional training guidance material				
29	Identify issues to be addressed in Letters of Agreement				
30	States to conduct local RVSM training for air traffic controllers				
	<b>OPS/AIR Issues</b>				
31	States to examine existing legislation and regulations to identify any changes required for RVSM				
32	Develop and promulgate information on the operational approval process				
33	Develop procedures for aircraft found to be non-compliant through monitoring				
34	Evaluate the need for chart amendments related to RVSM				
35	Develop regional guidance on pilot and dispatcher training				
36	Examine issues related to the use of ACAS in RVSM airspace				
37	Monitor progress with operator approvals				

<b>ID</b>	<b>Description</b>	<b>Start</b>	<b>Finish</b>	<b>Status</b>	<b>Resources</b>
	<b>Joint Tasks</b>				
38	Review preliminary readiness assessment				
39	Set target proportion of RVSM approved aircraft for full RVSM implementation				
40	Set target AIRAC implementation date(AIP Supplement to be published)				
41	Prepare/maintain regional status report detailing RVSM implementation plans				
42	Identify major milestone and target dates				
43	Develop a regional RVSM informational campaign				
44	Develop regional RVSM Guidance Material				
45	Review weather and contingency procedures for applicability under RVSM				
46	Develop model AICs and NOTAMs				
47	Evaluate preliminary readiness and safety assessments				
48	Undertake coordination and harmonization of procedures with adjacent Regions				

<b>ID</b>	<b>Description</b>	<b>Start</b>	<b>Finish</b>	<b>Status</b>	<b>Resources</b>
49	Evaluate the need for tactical offset procedures to mitigate the effects of turbulence and TCAS alerts				
50	Develop Doc 7030 amendment				
51	Review aircraft altitude-keeping performance and operational errors				
52	Develop monitoring and evaluation program for the verification phase				
53	Evaluate final readiness assessment				
54	Evaluate final safety analysis				
55	Go/No-Go decision				

- END -