

“Sample Aeronautical Information Circular (AIC/AIP Supplement)” Edition 2 June 2008

Tel: Fax: Telex: AFS: E-mail:	REPUBLIC OF(State Name) CIVIL AVIATION AUTHORITY AERONAUTICAL INFORMATION SERVICE P.O. BOX..... (City Name)	AIC (Number) ... (Date)
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FIR/Airspace: (.....)
Effective date: 25th September 2008.
Type: Permanent

This AIC serves as Notice to implement Reduced Vertical Separation Minimum (RVSM) Airspace in the (.....) FIR effective 25th September 2008

Reduced Vertical Separation Minimum (RVSM) is vertical separation of aircraft by 1,000 ft between FL 290 and FL410. Operators should obtain RVSM aircraft (airworthiness) and operation approval from the appropriate State authority.

With effect from 0001 UTC, 25th September 2008, only RVSM approved aircraft and State aircraft will be cleared to operate in the (.....) FIR RVSM Airspace (between FL290 and FL410 inclusive). Aircraft that are not RVSM approved will only be granted uninterrupted climb or descent through RVSM airspace subject to ATC.

RVSM will be implemented in the (.....) FIR RVSM Airspace 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 rev.1) 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 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, ICAO ESAF; ASECNA and on individual State websites.

To access the FAA, EUROCONTROL, SATMA, ASECNA, ICAO ESAF, and RVSM websites:

www.faa.gov/ats/ato/rvsm1.htm

www.eur-rvsm.com

www.satmasat.com

www.icao.int/esaf

www.asecna.org

www.atns.co.za/arma

The RVSM Documentation section of the FAA, EUROCONTROL websites contains guidance on aircraft/operator approval. Operators must begin coordination with the appropriate State authority as soon as possible to ensure that they are RVSM approved to begin RVSM operations on 25th September 2008.

Further information on the aircraft and operator approval process, policy planning and implementation issues for RVSM can be obtained from ICAO ESAF and AFI Regional Monitoring Agency (ARMA).

APPENDIX A

1. INTRODUCTION

1.1 This AIC provides information on the plan to implement a Reduced Vertical Separation Minimum (RVSM) of 1 000 ft between FL290 and FL410 inclusive in the AFI RVSM airspace, with effect from 25th September 2008. To meet this implementation schedule, operators and their aircraft are required to participate in the RVSM height keeping performance monitoring program.

1.2 The intention of this Circular is to:

- a. provide a brief update on the progress of implementation planning;
- b. re-iterate the RVSM approval requirements for operators and their aircraft;
- c. specify the RVSM compliance deadlines in relation to the height monitoring requirements;
- d. describe the arrangements and procedures for the height monitoring;

2. PROGRESS AFI RVSM PROGRAM

2.1 The AFI RVSM program will enable a significant increased en-route capacity, with an implementation date of 25th September 2008. It is fully supported by all AFI States and airspace user associations, and is progressing on schedule. A major milestone is the height monitoring program and the readiness of operators to participate in this program.

2.2 ICAO approved on 4th June 2007 the amendment to Regional Supplementary Procedures - Doc 7030/4, AFI Part1 describing the area of applicability and aircraft requirements for AFI RVSM. The following paragraphs are an extract from the Doc 7030 amendment outlining the area of applicability for AFI RVSM.

Extract Doc 7030

A minimum vertical separation of 300 m (1 000 ft) between RVSM approved aircraft shall be applied between FL 290 and FL 410 inclusive in:

Accra, Addis Ababa, Algiers, Antananarivo, Asmara, Beira, Brazzaville, Cairo, Canarias, Cape Town, Casablanca, Dakar, Dakar Oceanic, Dar Es Salaam, Entebbe, Gaborone, Harare, Johannesburg, Johannesburg Oceanic, Kano, Khartoum, Kinshasa, Lilongwe, Luanda, Lusaka,

Mauritius, Mogadishu, Nairobi, N'Djamena, Niamey, Roberts, Sal Oceanic, Seychelles, Tripoli, Tunis and Windhoek flight information regions (FIRs).

A minimum vertical separation of 600 m (2000 ft) shall be applied between non-RVSM approved State aircraft and any other aircraft operating within the AFI RVSM airspace in accordance with FLAS

3. AIRSPACE USER REQUIREMENTS

3.1 State authorities have already been informed about RVSM approval and monitoring requirements and time scales through relevant State Letters), AFI RVSM Seminar, AFI RVSM Task Force Meetings, local briefings, and direct contacts with the AFI RVSM Program OFFICE (ARPO). Information has also been made available on the AFI RVSM web site (www.icao.int/esaf). This AIC re-iterates the RVSM approval requirements, and refers to those requirements as specified in the proposed amendment to Doc 7030.

3.2 According to the ICAO Regional Supplementary Procedures - Doc 7030/4, AFI, Part 1, the following compliance requirements apply: *[extract Doc 7030:]*

Except for State aircraft, Operators intending to conduct flights within the volume of airspace specified in section 2.1 above 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 programs; and**
- c) **that they have instituted flight crew procedures for operations in the AFI RVSM airspace specified in section 2.1.**

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

3.3 Detailed technical guidance material on the airworthiness, continued airworthiness, and the operational practices and procedures for the AFI RVSM airspace is provided in the Joint Aviation Authorities Administrative and Guidance Material, Section 1: General Part 3: Temporary Guidance Leaflet No.6. (Refer as "JAA TGL6"). Given that the technical aircraft

RVSM requirements are global requirements, also guidance developed through RVSM implementation in other regions may be consulted, such as FAA 91-RVSM.

3.4 Operators intending to operate in AFI RVSM airspace need to meet above approval requirements to allow the required safety & feasibility assessments required for the "go-ahead" decision. Aircraft intending to operate in AFI RVSM airspace need to participate in the height keeping performance monitoring program The monitoring program commenced in June 2004 and to be eligible for monitoring, above requirements **a)** and **b)** need to be met.

4. HEIGHT MONITORING

4.1 Requirement for participation in the RVSM height monitoring program.

4.1.1 The requirement for monitoring stems from the initial RVSM feasibility studies and associated guidance as developed by the ICAO Review of the General Concept of Separation Panel (RGCSP), and is specified in ICAO Doc 9574, "Manual on implementation of a 300 m (1 000 ft) Vertical Separation Minimum between FL 290 and FL 410 inclusive". As stated in this document, to support the pre-implementation safety case, the monitoring system has been designed to provide:

- i) confidence that the safety objectives will be met when RVSM is implemented;
- ii) guidance on the efficacy of the RVSM MASPS and on the effectiveness of altimetry system modifications; and
- iii) further evidence of the stability of Altimeter System Error (ASE). (ASE stability is a premise around which the monitoring system has been designed)

To meet these objectives it is necessary to obtain a sufficient set of data across the complete range of airframes and operators flying in the AFI RVSM Area.

4.1.2 In the Doc 7030 amendment the monitoring requirement is expressed as follows:

Monitoring of flight operations in the AFI RVSM airspace shall be conducted to assess the continuing compliance of aircraft with the height-keeping performance requirements.

Note: Monitoring will be conducted in accordance with the appropriate material issued by ICAO. When notified, operators will be required to cooperate in the monitoring program

4.1.3 For AFI RVSM, South Africa (ATNS) is acting as "Regional Monitoring Agency" (RMA) on behalf of ICAO. RVSM compliance and monitoring data is closely being coordinated with the NAT Central Monitoring Agency (NATCMA) and the Asia/Pacific Approvals Registration and Monitoring Organization (APARMO), Euro-Control and MID RMA.

4.1.4 The height monitoring data will be input to the AFI RVSM pre-implementation safety case. This safety case will be an essential element for the "go-ahead" decisions. The

preparation for this decision determines the monitoring and aircraft compliance time scales.

4.2 Monitoring requirements and time scales

4.2.1 The pre-implementation monitoring is taking place within the existing 2000 ft VSM airspace. However, the pre-implementation safety case requires height keeping performance data which is representative for RVSM approved aircraft. Therefore aircraft can only be monitored after they have been prepared according to the RVSM MASPS airworthiness directives and are being maintained in accordance with the MASPS requirements (i.e. when complying with requirements a) and b) as quoted from Doc 7030).

Note: Aircraft which have been monitored successfully in the NAT, Europe, Middle East, Pacific RVSM and CAR/SAM monitoring programs do not need additional monitoring, and will be taken into account in determining the specific AFI RVSM monitoring requirements.

4.2.2 As referred to above, the monitoring and aircraft compliance time scales are driven by the required activities to prepare the pre-implementation safety case as input for the “go-ahead decision”. This safety case requires, amongst others, height keeping performance data which is representative for operations with RVSM approved aircraft. Consequently, the number of aircraft monitored needs to be representative for the population of aircraft which will operate in AFI RVSM airspace.

4.2.3 On 01 June 2004 the Monitoring facilities became operational and the AFI RVSM monitoring program officially commenced. The endorsed RVSM Program requires that operators intending to operate in AFI RVSM airspace are approved for RVSM operations. **Given:**

- a. the need for results of the monitoring as input to this safety case, and
- b. the time which elapses between aircraft becoming eligible for monitoring and the actual monitoring, and
- c. that the capacity of the monitoring infrastructure is designed to obtain the required data over the entire pre-implementation monitoring period;

It is essential that aircraft intended for operation in AFI RVSM airspace are ready for monitoring. Aircraft are eligible for monitoring when they meet the RVSM MASPS (height keeping performance plus maintenance programs/practices).

4.3 Monitoring Systems

4.3.1 The AFI RVSM monitoring system consists of portable GPS Monitoring Units (GMUs), which would collect the required of data. This system is described briefly below.

- 4.3.2 The **GMU** is a portable carry-on recording system. Using antennas fitted to the rear flight deck windows it can receive and record the GPS data which, together with ground station differential corrections provides accurate 3D aircraft positions. The GMU has been produced to meet aircraft equipment standards and will be accompanied with the appropriate documentation to allow on-board carriage and use.

4.4 Organization of Monitoring Activities

- 4.4.1 As previously stated, South Africa will act is acting as “Regional Monitoring Agency” (RMA). The information obtained through the monitoring program on aircraft compliance status and measured height keeping performance is combined with the information available at the North Atlantic Central Monitoring Agency (NAT CMA), Euro-Control, the Asia/Pacific Approvals Registration and Monitoring Organization (APARMO) and the Middle East RMA (MECMA), so as to make full use of all available data. The RMA tasks are performed by ATNS and the GMU operators.
- 4.4.2 For aircraft operators, the primary contact for the AFI Monitoring Program is the AFI RMA (ARMA). For the AFI RVSM program, the ARMA will support operators (and approval authorities) on any issue related to RVSM approval and monitoring. Further, for the monitoring program the ARMA will require information on the aircraft which are intended to operate in AFI RVSM airspace, and which therefore are required to participate in the monitoring program. To this end, the ARMA will also be in contact with State approval authorities. The ARMA is based at Johannesburg Airport (for contact details see 5).
- 4.4.3 The ARMA manages the measured height keeping performance data. The ARMA informs of any height deviations that are outside the specifications of the RVSM MASPS. This allows the ARMA to perform follow-up activities as required. The ARMA also ensures the availability of the measured data for the required safety assessments.
- 4.4.4 The portable GPS Monitoring Units (GMUs) are operated by a GMU operator contracted by ATNS. After initial agreement between ARMA and aircraft operators on the airframe(s) which are to be monitored by GMU, the aircraft operator will be contacted by the GMU operator to agree on arrangements for the monitoring flight. Based on those arrangements, the GMU operator will deal with installation and operation of the GMU on board of the aircraft.

4.5 Monitoring Procedures

- 4.5.1 This section describes the different steps required to fulfill the AFI RVSM monitoring requirements. The procedures have been developed with the objective to make the monitoring as transparent as possible to operators.

- 4.5.2 Operators provides the State authority with data on aircraft type and series, registration number, manufacturers serial number and aircraft Mode S address code (in hexadecimal format), of all aircraft that they intend to operate in AFI RVSM airspace.
- 4.5.3 Operators inspects and/or modify aircraft in accordance with the appropriate RVSM airworthiness requirements and institute procedures in respect of continued airworthiness (maintenance and repair) practices and programs (e.g. as specified in JAA TGL6) in order to prepare for their aircraft for monitoring.
- 4.5.4 An operator provides the State authority with any documentation that may be required for those aircraft that have been inspected and/or modified in accordance with the RVSM airworthiness documents.
- 4.5.5 Operators notifies the ARMA using **ARMA Form 1** (attached) or by electronic means, of all aircraft that have been modified in accordance with the appropriate airworthiness requirements and for which procedures have been instituted in respect of continued airworthiness (maintenance and repair) practices, i.e. when the aircraft are eligible for monitoring.

Note 1: Given the monitoring program time scales it is imperative that operators notify (using the form) the ARMA as soon as possible after an aircraft has met the requirements for monitoring.

Note 2: If, for a particular airframe, the ARMA has already been informed, through a questionnaire or otherwise, that it has met the requirements to become eligible for monitoring (i.e. satisfying both items a. and b. as specified in Doc 7030,) a form for that airframe does not need to be submitted again.

- 4.5.6 The ARMA will ask the operator for initial agreement for a GMU monitoring flight. Based on this agreement, arrangements will be made for the GMU operator to install and operate the system on a suitable flight in the AFI airspace. The GMU operator, on behalf of ARMA, will contact the operator to agree on GMU flight details. The GMU operator will be responsible for installation of the GMU on the flight deck. Whether the GMU operator will stay with the GMU during the measurements, is subject to the agreement with the aircraft operator.
- 4.5.7 If aberrant or anomalous height keeping performance is measured and is deemed to require follow-up, the ARMA then contacts the operator to address the issue.
- 4.5.8 It is important for the ARMA to have an accurate record of a point of contact for any queries that might arise from ongoing height monitoring. Operators are therefore requested to include a completed **ARMA Form 2** with their first reply to the USC. Thereafter there is no further requirement unless there has been a change to the details requested on the form.

5 RVSM APPROVAL

- 5.1 Meeting the pre-requisites for monitoring, i.e. satisfying the appropriate RVSM airworthiness requirements and institute procedures in respect of continued airworthiness (maintenance and repair) practices and programs is not sufficient for RVSM approval.
- 5.2 To obtain RVSM approval, Operators will need to satisfy the said State that all three requirements specified in Doc 7030 have been met, i.e. the requirements which make the aircraft eligible for monitoring and those they have instituted flight crew procedures for operations in the AFI RVSM airspace.
- 5.3 Once the Authority is satisfied that all the steps (ref Doc 7030) have been completed satisfactorily, an RVSM approval, with notified airframes, can be granted. This will be recorded on the State Authority RVSM Approvals database and will be shared with relevant monitoring and verification agencies, in this case for AFI RVSM the ARMA.
- 5.4 Operators and their aircraft that are approved for RVSM in another region will be considered as approved for AFI RVSM operations, on the understanding that States have ensured that those particular operators have amended their operations manuals and training program for operations in AFI RVSM airspace;
- 5.5 As explained in Para 4.2.3, RVSM approval should be obtained before the implementation date

6 FURTHER INFORMATION

- 6.1 Information on the RVSM program is available through the Internet by addressing the AFI RVSM Web site www.icao.int/esaf. Aircraft that are successfully monitored will be promulgated via the ARMA
- 6.2 For exchange of data on aircraft RVSM compliance status and for any information on the AFI RVSM approval and monitoring aspects, please contact the
ARMA;
ATNS,
Private Bag X1
Bonaero Park
South Africa
1622
Tel: 27-11- 928-6506
Fax: 27-11- 928-6420
Email: afirma@atns.co.za
- 6.3 For any further information on policy, planning and implementation issues for RVSM in the AFIRVSM area, please contact the
AFI RVSM Program Office,
ICAO Eastern and Southern Africa Office

United Nations Accommodation
 Limuru Road,
 Gigiri,
 Nairobi,
 Kenya
 Tel: +254 20 7622-372/4
 Fax: +254 20 7621-092
 Email: icao@icao.unon.org

AFI REGIONAL MONITORING AGENCY (ARMA)

ARMA forms for use in obtaining information from State authorities and/or Service Providers

NOTES TO AID COMPLETION OF ARMA FORMS

1. Please read these notes before attempting to complete forms for the ARMA.
2. It is important for the ARMA to have an accurate record of a point of contact for any queries that might arise. States are therefore requested to identify their National Program Manager with their first reply to the ARMA. Thereafter, there is no further requirement unless there has been a change to the information requested on the form.
3. If recipients are unable to pass the information requested to the ARMA through the Internet, by direct electronic transfer, or by data placed on a floppy disk/CD, a hard copy must be completed.
 - (1) Enter the single letter ICAO identifier as contained in ICAO Doc 7910. In the case of their being more than one identifier designated for the State, use the letter identifier that appears first.
 - (2) Enter the operator's 3 letter ICAO identifier as contained in ICAO Doc 8585. For International General Aviation, enter "IGA". For military aircraft, enter "MIL". If none, place an X in this field and write the name of the operator/owner in the Remarks row.
 - (3) Enter the ICAO designator as contained in ICAO Doc 8643, e.g., for Airbus A320-211, enter A320; for Boeing B747-438 enter B744.
 - (4) Enter series of aircraft type or manufacturer's customer designation, e.g., for Airbus A320-211, enter 211; for Boeing B747-438, enter 400 or 438.
 - (5) Enter ICAO allocated Aircraft Mode S address code.
 - (6) Date example: For October 26, 1998 write 10/26/98.
 - (7) Use a separate sheet of paper if insufficient space available.

AFI REGIONAL MONITORING AGENCY (ARMA)**POINT OF CONTACT DETAILS/CHANGE OF POINT OF CONTACT DETAILS
FOR MATTERS RELATING TO RVSM APPROVALS**

This form should be completed and returned to the address below on the first reply to the ARMA or when there is a change to any of the details requested on the form (PLEASE USE BLOCK CAPITALS).

STATE OF REGISTRY: enter State here

STATE OF REGISTRY (ICAO 2 LETTER IDENTIFIER): enter 2 letter State I

Enter the 2-letter ICAO identifier as contained in ICAO Doc 7910. In the event that there is more than one identifier for the same State, the one that appears first in the list should be used.

ADDRESS:

CONTACT PERSON:

Full Name: enter full name here

Title:

Surname:

Initials:

Post/Position:

Telephone #:

Fax #:

E-mail:

Initial Reply/Change of Details (*Delete as appropriate*)

When complete, please return to the following address:

RMA Address: Mr. Kevin Ewels, Manager: ARMA Private Bag X1, Bonaero Park South Africa 1622

Telephone: 27-11- 928-6433

Fax: 27-11- 928-6420

E-mail: afirma@atns.co.za

AFI REGIONAL MONITORING AGENCY (ARMA)

HEIGHT DEVIATIONS

(Form 1)

STATE:		ACC:		MONTH:	
State of Registry					
Flight Identification					
Operator					
State of Operator					
Aircraft Type and Series					
Registration					
Serial Number					
Mode S Address					
Total height deviation					
Total time of deviation					
Cause of Deviation ¹					
Date and Time of Measurement	Assigned Flight Level	Observed Flight Level	Air route	Geographical Location	
Provide description of incident including total height profile if available					
¹ Include Number from List Below <ol style="list-style-type: none"> 1. Error in altimetry or altitude-keeping system of an aircraft 2. Turbulence or weather related phenomena 3. Emergency descent by aircraft without crew following established contingency procedures 4. Response to Airborne Collision Avoidance System (ACAS) advisories 5. Error in following a correctly issued ATC clearance, resulting in flight at an incorrect flight level 6. Error in issuing an ATC clearance, resulting in flight at an incorrect flight level 7. Errors in coordination or transfer of control responsibility for an aircraft between adjacent ATC units, resulting in flight at an incorrect flight level 8. Other reason, include reason in Description of incident. 					
NOTE: Complete with available information					

<u>AFI REGIONAL MONITORING AGENCY (ARMA)</u>		
<i>MONTHLY MOVEMENTS</i>		(FORM 2)
STATE:	ACC:	MONTH:
TOTAL IFR MOVEMENTS FOR THE MONTH:		
<i>TOTAL MONTHLY IFR MOVEMENTS IN THE BAND F290 – F410</i>		
AVERAGE TIME PER MOVEMENT IN LEVEL BAND F290 – F410		
	<i>LEVEL FLIGHT</i>	
	<i>CLIMBING AND DESCENDING</i>	

AFI REGIONAL MONITORING AGENCY (ARMA)*AIRCRAFT TRAFFIC FLOW DATA*(Form 4)
*Revised by RVSM/TF/6
May 2005

STATE: ACC: MONTH:

Please include information on all flights within the flight level band F290 – F410 (inbound, outbound and over flights)

<i>DATE</i>	<i>ROUTE</i>	<i>CALLSIGN</i>	<i>AIRCRAFT TYPE</i>	<i>OPERATOR</i>	<i>DEPARTURE AERODROME</i>	<i>DESTINATION AERODROME</i>	<i>NAV EQUIPMENT</i>	<i>WAYPOINT/ REPORTING POINT</i>	<i>TIME AT WAYPOINT/ REPORTING POINT</i>	<i>FLIGHT LEVEL</i>
01-01-2005	UR978	AFR827	A319	AFR	FCPP	LFPG		ERKEL	00:24	350
								KAMER	03:02	350
								ATAFA	01:04	350
								BOD	01:21	350
								ELO	02:11	350
								NADJI	02:21	350
01-01-2005	UR978	KQA310	B744	KQA	HKJK	VABB		ERKEL	00:59	370

Note: Please include all waypoints/reporting points, times and FL for the entire route per FIR

AFI REGIONAL MONITORING AGENCY (ARMA)

AIRCRAFT TRAFFIC FLOW DATA

(Form 4)
*Revised by RVSM/TF/6
May 2005

STATE: ACC: MONTH:

Please include information on all flights within the flight level band F290 – F410 (inbound, outbound and over flights)

<i>DATE</i>	<i>ROUTE</i>	<i>CALLSIGN</i>	<i>AIRCRAFT TYPE</i>	<i>OPERATOR</i>	<i>DEPARTURE AERODROME</i>	<i>DESTINATION AERODROME</i>	<i>NAV EQUIPMENT</i>	<i>WAYPOINT/ REPORTING POINT</i>	<i>TIME AT WAYPOINT/ REPORTING POINT</i>	<i>FLIGHT LEVEL</i>

Note: Please include all waypoints/reporting points, times and FL for the entire route per FIR

-END-