



ICAO

## INTERNATIONAL CIVIL AVIATION ORGANIZATION

### Twenty seventh Meeting of the Africa-Indian Ocean Planning and Implementation Regional Group (APIRG/27) and Tenth Meeting of the Regional Aviation Safety Group for the Africa-Indian Region (RASG-AFI/10), Joint sessions

4 and 8 November 2024

#### Agenda Item 3: APIRG and RASG-AFI Coordination

#### 3.4. AFI Airspace Monitoring

#### SCRUTINY ACTIVITIES IN THE AFI RVSM AIRSPACE

(Presented by ARMA)

SUMMARY	
<p>This working paper highlights the changes in the AFI Reduced Vertical Separation Minimum (RVSM) Scrutiny activities, The Tactical Action Group (TAG) and AFI Air Traffic Service Incident Analysis Group (AIAG).</p> <p>The action by the Meeting is in <b>paragraph 3</b></p>	
<b>Strategic Objectives</b>	This working paper relates to the Strategic Objectives A-Aviation Safety
<b>References</b>	APIRG reports

## 1 INTRODUCTION

- 1.1. ICAO recognized the need to establish a working group to review, analyze and categorize on annual basis the accidents and incidents at the regional level and provide an agreed and harmonized regional dataset of accidents and incidents. It was highlighted that this Group would also, to the extent possible, identify the main root causes and contributing factors of the reviewed accidents and incidents.
- 1.2. The ATS Incident Analysis Working Group (AIA WG) should be composed of safety experts, from relevant fields such as Flight Safety, Pilots, Aerodromes and ANS, with grounded knowledge and experience in Accident and Incident Investigation (AIG), nominated by the AFI RASG Member States and Partners. Accordingly, the meeting urged States and Safety Partners to appoint members with required experience and expertise to the AIA WG, in order to actively support its work.

## 2 DISCUSSION

- 2.1. The initial goal of a meeting of the Scrutiny Group is to examine reports of possible large height deviations (LHD) from archives maintained by States with the objective of determining which reports from those archives influence the risk of collision associated with application of the RVSM. Once the initial volume of reports has been reduced to those associated with application of RVSM, the Scrutiny Group produces an estimate of flight time spent at an incorrect flight level. This value is the primary contributor to the estimation of operational risk in RVSM airspace. An illustration of how this value contributes to operational risk can be found in **Appendix A** to this working paper. The Group examines both technical risk (affected by reliability and accuracy of the avionics within the aircraft and by external meteorological events) and operational risk (affected by the human element) in the development of the safety assessment.
- 2.2. The Scrutiny Group should meet **regularly** to analyze reports of large height deviations so that adverse trends can be identified quickly and remedial actions can be taken to ensure that risk due to operational errors has not increased following the implementation of RVSM.
- 2.3. The activities undertaken by a Scrutiny Group directly support the principles of safety management by “completing the safety cycle.” This is accomplished by synthesizing raw data in relation to current practices into recommendations for change of policies, practices and procedures which improve the safety of the airspace. Recommendations made by a regionally established Scrutiny Group typically proceed through the hierarchy of regional groups to the relevant PIRG for action by States. Where a State-based Scrutiny Group is established, recommendations from that group will normally be coordinated directly with participants in the airspace usage, such as operators and relevant authorities.
- 2.4. ARMA would like to raise concern on the nature and frequency of the scrutiny group meetings in the AFI region, which has been mainly of virtual nature and inconsistent in the last two years. It is important that such scrutiny groups arrange more frequent meetings, and at least one physical meeting in a year.
- 2.5. There is also a concern in the low availability of a repository for ATS events reports provided by accredited member States, as ARMA has only received LHD reports for the 2024 from 5 States out of the 48 States: Kenya, Zambia, Namibia, South Africa and Botswana. Events that are reportable to the RMA when either an aircraft makes a deviation from a cleared level between FL 280 and FL 420 (cleared or actual) or an ATC clearance results in a risk bearing situation, such as loss of separation or TCAS initiated deviation. This repository should be controlled by the RMA as part of the continued process of data collection processing storage and usage for RVSM operations. Hosting the repository under ARMA would speed up the transition to the new scrutiny group as AFI States committed to share their RVSM data with ARMA on a regular basis.

- 2.6. The collection of LHD and ATS reports in the AFI would be a seamless process if an AFI RVSM online reporting system was available. Member States are reminded of the AFI RAN commitments to the RVSM program which are prescribed in ICAO Doc 9300. The submission of ATS Events that occur in the RVSM Volume of airspace is critical to the scrutiny activities.
- 2.7. All involved States are accountable for the delivery of the agreed level of safety performance in the provision of air navigation services in the Africa Indian Ocean Region. In addition, all involved States are accountable for the delivery of the agreed level of safety performance in aircraft operations in the Africa Indian Ocean Region.
- 2.8. Delays in the calculation of the collision risk estimate are contributed by late data submissions, lack of strategic lateral off-set procedure (SLOP) Implementation, lack of reporting of LHDs and once off meeting intervals of the scrutiny group. The scrutiny group is required to have physical meetings and avoid any hybrid or virtual meetings as this activity requires some breakout sessions workshops to effectively scrutinize ATS events and consequently develop recommendations for safety improvement.
- 2.9. The AFI Region has not been able to meet the Target Level of Safety (TLS) target of  $5 \times 10^{-9}$  since post implementation of RVSM in the AFI Region. Closer collaboration between ICAO, States, ANSPs and relevant stakeholders is required to improve the safety levels in the AFI Region.

### **3 ACTION BY THE MEETING**

- 3.1 The meeting is invited to:
- a) Note the information contained in the WP.
  - b) Note the information in Appendix A to this WP with status update for 2023 and States' contributions to RVSM Safety for scrutiny activities.
  - c) Provide guidance for the amendment of the Terms of Reference for the scrutiny group
  - d) Endorse the proposal for the development of a standard repository for ATS events for the AFI Region that include events that occur between FL280 and FL410 inclusive
  - e) Encourage monthly and timeously RVSM data submission by Member States
  - f) Urge States for a full implementation of Strategic Lateral Offset Procedure (SLOP).
  - g) Urge States to ensure operators registered in their State of Registry comply with Regional Target for RVSM Height Monitoring.
  - h) Encourage the adoption of Just Culture by AFI ANSPs.



ZZ Abidjan	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
ZZ Antananarivo	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ZZ Bamako	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ZZ Brazzaville	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No
ZZ Dakar*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
ZZ Douala	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ZZ Libreville	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
ZZ Lome	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ZZ N'djamena	No	No	No	No	No	No	No	No	No	No	No	No
ZZ Niamey	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ZZ Kigali	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
ZZ Nouakchott	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ZZ Ouagadougou	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**Target Level of Safety Report**

CRA	TOTAL VERTICAL TLS	TOTAL VERTICAL TLS EXCEEDED BY A FACTOR OF
CRA 16	$16.6 \times 10^{-9}$	5.32
CRA 15	$71.9 \times 10^{-9}$	14.38
CRA 14	$10.9 \times 10^{-9}$	2.2
CRA 13	$75.4 \times 10^{-9}$	15.0
CRA 12	$58.6 \times 10^{-9}$	11.7
CRA 11	$36.4 \times 10^{-9}$	7.3
CRA 10	$141.2 \times 10^{-9}$	28.2
CRA 9	$63.7 \times 10^{-9}$	12.7
CRA 8	$31.4 \times 10^{-9}$	6.3
CRA 7	$8.0 \times 10^{-9}$	1.6

Figure 2: Target Level of Safety

**SLOP Implementation**

<b>FIR</b>	<b>Implemented SLOP (Yes/No)</b>
Accra	Yes
Addis Ababa	No
Antananarivo	Yes
Asmara	No
Beira	Yes
Brazzaville	Yes
Cape Town	Yes
Dakar Terrestrial	Yes
Dar Es Salaam	No
Entebbe	Yes
Gaborone	Yes
Harare	Yes
Johannesburg	Yes
Johannesburg Oceanic	Yes
Kano	Yes
Kinshasha	Yes
Lilongwe	No
Luanda	Yes
Lusaka	Yes
Mauritius	No
Mogadishu	Yes
Nairobi	No
N'djamena	Yes
Niamey	Yes
Roberts	Yes
Seychelles	Yes
Windhoek	No

## LHD REPORTS 2023

LHD Categories	Definition	Number of Reports
Cat A	Flight crew failing to climb/descend the aircraft as cleared	15
Cat B	Flight crew climbing/descending without ATC Clearance	4
Cat C	incorrect operation of fully functional FMS, incorrect transcription of ATC clearance or re-clearance in FMS, flight plan followed rather than ATC clearance, original clearance followed instead of re-clearance	1
Cat D	ATC issues incorrect flight level clearance or flight crew misunderstands flight level clearance message	1
Cat E	late or non-existent coordination of flight level due to human error	35
Cat F	Coordination errors in the ATC-to-ATC transfer of control responsibility as a result of equipment outage or technical issues	6
Cat G	Aircraft contingency event leading to sudden inability to maintain assigned flight level	0
Cat H	Airborne equipment failure leading to unintentional or undetected change of flight level	3

Cat I	Turbulence or other weather related causes leading to unintentional or undetected change of flight level	0
Cat J	TCAS resolution advisory, flight crew correctly climb or descend following the resolution advisory	1
Cat K	TCAS resolution advisory, flight crew incorrectly climb or descend following the resolution advisory	0
Cat L	An aircraft being provided with RVSM separation is not RVSM approved (e.g. flight plan indicating RVSM approval but aircraft not approved, ATC misinterpretation of flight plan)	0
Cat M	Other	1



## NON-APPROVED RVSM VIOLATORS

Registration	Serial Number	24-bit address	Operator	Make	Model	Series	ICAO Type	Date of first Occurrence	State
3CMAG	30393		GEA - Guinea Ecuatorial Airlines - GEASA	Boeing	B767	B767 306 ER	B763	02-10-2022	Equatorial Guinea
3CTM06	1,02E+09		EQG - Government of Equatorial Guinea	Ilyushin	IL76	IL76TD	IL76	04-11-2022	Equatorial Guinea
9UGHN	14500839			Embraer	E145	EMB145LI	E145	20-10-2022	Burundi
TLKPA	83485561			Ilyushin	IL76	IL76TD	IL76	28-11-2022	Central African Rep.
TTABC	49888	084F00	Government of Chad	Mcdonnell Douglas	MD80	MD87	MD87	03-11-2022	Chad
TTDEX	75	08402A		Dassault	FA900EX	FALCON 900EX	F900	31-10-2022	Chad
5NIKO	258547	0642EC		British Aerospace	BAE125	BAE125 800XP	H25B	23-04-2023	Nigeria
ETAWR	41157	40175	CEL - Ceiba Intercontinental	Boeing	B737	B737 8FB	B738	31-07-2023	Ethiopia
ZSFGJ	37542	008DEA	SFR - Safair	Boeing	B737	B737 8AS	B738	05-08-2023	South Africa
5NAMM	20604	0642CD	Albarka Air Services	Boeing	B727	B727 256 ADV	B722	09-10-2023	Nigeria
5NBLW	350	0640B9		Learjet	LJ45	LEARJET 45	LJ45	13-10-2023	Nigeria
5YFQA		04C2D8	Fanjet Express	Boeing	B734	400	B734	15-05-2024	Kenya
5NHMM		0641D7	Max Air	Boeing	B744	B747 4B5	B744	15-05-2024	Nigeria
5NBBN		0642ED	Max Air	Boeing	B777	B777 246	B777	18-05-2024	Nigeria
5HTCQ		0800A0	Air Tanzania	Boeing	B39M	B737 MAX9	B39M	15-05-2024	Tanzania

<b>5NADM</b>		064218	Max Air	Boeing	B747	B747 422	B744	28-05-2024	Nigeria
<b>5YFQC</b>		04C2F2	Fanjet Express	Boeing	B7373	B737 476	B734	20-05-2024	Kenya
<b>XTEBO</b>		09C02E	Liz Aviation	Ilyushin	IL76	IL76TD	IL76	07-06-2024	Burkina Faso
<b>5HTCP</b>		0800AF	Air Tanzania	Boeing	B39M	B737 MAX9	B39M	19-05-2024	Tanzania
<b>TTDAB</b>		084017	Chad Government	Hawker	H25B	900XP	H25B	31-05-2024	Chad
<b>5NBYJ</b>		064270	Air Peace	Embraer	E295	E195 E2	E295	06-06-2024	Nigeria
<b>9SPRR</b>		08CBAA	Onyx Aviation	Ilyushin	IL76	IL76TD	IL76	09-06-2024	DR Congo
<b>5HONE</b>		0800CC	Tanzania Gov	Gulfstream	G700	G700	GA7C	31-05-2024	Tanzania
<b>3XAPL</b>	7926			Canadair	CL600RJ	CL600 2B19 RJ200ER	CRJ2	04-06-2024	Guinea
<b>5NBXK</b>	14501086	64238	NGL - Max Air	Embraer	E135	EMB135BJ	E35L	24-05-2024	Nigeria
<b>5NCCK</b>	10130		FVJ - Valuejet	Canadair	CL700RJ	CL600 2C10 RJ700	CRJ7	22-05-2024	Nigeria
<b>5NIKO</b>	258547	0642EC		British Aerospace	BAE125	BAE125 800XP	H25B	28-04-2024	Nigeria
<b>5NKAL</b>	HA-0158			British Aerospace	BAE125	BAE125 900XP	H25B	21-05-2024	Nigeria
<b>9SPFJ</b>	550-1092			Cessna	C550	CESSNA 550 BRAVO	C55B	30-06-2024	DR Congo
<b>9SPJB</b>	145400		Air Katanga	Embraer	E145	EMB145LU	E145	09-06-2024	DR Congo
<b>TLVIP</b>	26538	06CC40	VID - Via Air	Boeing	B737	B737 529	B735	08-06-2024	Central African Republic