INTERNATIONAL CIVIL AVIATION ORGANIZATION

REPORT

TWENTY FIRST AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP MEETING (APIRG/21)
(Nairobi, Kenya, 9 – 11 October 2017)

PREPARED BY THE SECRETARY OF APIRG   **09 February 2018**

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PART I - HISTORY OF THE MEETING

1.   VENUE AND DATE

1.1   The Twenty First Meeting of the Africa-Indian Ocean Region (AFI) Planning and Implementation Regional Group (APIRG/21) was held back to back with the Fourth Regional Aviation Safety Group (RASG/AFI/4), at the InterContinental Hotel, Nairobi, Kenya, from 9 to 11 October 2017 with sponsorship from, ATNS, BOEING, ASECNA and AIRBUS.

2.   LANGUAGES AND DOCUMENTATION

2.1   The discussions were conducted in English and French languages, and the meeting's documentation was also issued in both languages. Translation and simultaneous interpretation services were provided by freelance interpreters.

3.   OFFICERS AND SECRETARIAT

3.1   The meeting was chaired by Mr. Magueye Marame Ndao, Director-General of Agence nationale de l'aviation civile et de la meteorologie (ANACIM), Senegal, Chairman of the APIRG.

3.2   Mr. Barry Kashambo, Regional Director, ESAF Regional Office, Nairobi served as Secretary to the meeting. He was assisted by Mr. Mam Sait Jallow, RD, WACAF Regional Office, Dakar with the participation of Mr. Erwin Lasooij, Chief of Programmes Coordination and Implementation (PCI), ICAO Air Navigation Bureau. They were assisted by the following Officers from ICAO ESAF and WACAF Regional Offices and the African Flight Procedure Programme (AFPP):

Mr. Prosper Zo'o Minto'o	DRD, WACAF Office, Nairobi
Mr. Arthemon Ndikumana	DRD, WACAF Office, Dakar
Mr. Seboseso Machobane	RO/ATM, ESAF Office, Nairobi
Mr. Vitalis Ahago	RO/MET, ESAF Office, Nairobi
Mr. Milton Tumusiime	RO/FS, ESAF Office, Nairobi
Mr. François-Xavier Salambanga	RO/CNS, WACAF Office, Dakar
Mr. Ousman Manjang	RO/FS, WACAF Office, Dakar
Mr. Papa Issa Mbengue	RO/OPS, ESAF Office, Nairobi
Mr. Frederic Legrand	AFPP Manager
Mr. Nika Meheza Manzi	RO/AGA, WACAF Office, Nairobi
Mr. George Baldeh	RO/AIM, WACAF Office, Dakar
Mr. Harvey Lekamisy	RO/CNS, ESAF Office, Nairobi
Mr. Tebogo Maketlo	RTA Officer/CNS, ESAF Office, Nairobi
Ms. Loise Mwangi Njoroge	ATM Aviation Scholarship Recipient

4.   ATTENDANCE

4.1.   The meeting was attended by 171 participants from 38 AFI States and 16 Regional / International Organizations and Industry.

4.2.   The list of participants is provided at **Appendix 1A** to this report.

5.   OPENING OF THE MEETING

5.1.   The 21st APIRG meeting was opened jointly with the 4th RASG-AFI meeting by the Director General of the Kenya Civil Aviation Authority, Captain Gilbert Kibe, representing Mr. James Macharia, EGH, Cabinet Secretary for the Ministry of Transport, Infrastructure, Housing and Urban development.

5.2.   He called for commitment to APIRG to deliver decisions and conclusions that will not only spur aviation safety in the Africa and Indian Ocean Region, but will also provide a framework for international discourse and adoption into various ICAO Standards, Recommended Practices, policies and guidelines. He further recalled concerted effort by all aviation stakeholders in order to create a system-wide web of multi-faceted level of effective implementations (LEIs) and compliance.

5.3.   Mr. Mam Sait JALLOW, Regional Director Western and Central African Regional Office, representing the two AFI ICAO Regional offices, welcomed all participants to the 21st meeting of the AFI Planning and Implementation Regional Group (APIRG/21) and the 4th Meeting of the AFI Regional Aviation Safety Group (RASG-AFI/4) and expressed special gratitude to the Government of Kenya and the Kenya Civil Aviation Authority for having accepted to partner with ICAO in hosting these important regional events.

5.4.   The meeting was informed of the decision to hold APIRG and RASG-AFI back-to-back to provide an opportunity to advance aviation safety and air navigation priorities in the AFI region, within the framework of No Country Left Behind (NCLB) initiative in a better harmonized manner and allow all States have access to the significant socio-economic benefits of safe and reliable air transport, with due consideration to local needs and expectations.

5.5.   The meeting was further informed of the revised Abuja Safety Targets that now include Air navigation systems elements as well as the Air Navigation Performance Indicators adopted by the APIRG in December 2015, in order to ensure their alignment with the requirements of the Global Aviation Safety Plan (GASP) and the Global Air Navigation Plan (GANP) adopted by the 39th Session of the ICAO Assembly in October 2016.

5.6.   The outcomes of the meetings will provide valuable inputs to the Third ICAO World Aviation Forum (IWAF/3) to be held in Abuja (from 20 to 22 November 2017), the Second Global Air Navigation Implementation Symposium (GANIS/2) and 1st Safety and Air Navigation Implementation Symposium (SANIS/1) to be held from 11 to 15 December 2017, in Montreal and subsequently the Thirteen Air Navigation Conference to be held in 2018.

6.   AGENDA

6.1.   **The meeting adopted the following Agenda**:

AGENDA ITEM 0:   Adoption of the Agenda

AGENDA ITEM 1:   Election of APIRG Officials

AGENDA ITEM 2:   Follow-Up on APIRG/20 Meeting Conclusions and Decisions
        2.1   Action taken by the ANC on the report of APIRG/20
        2.2   Status of implementation of APIRG/20 Conclusions and Decisions

AGENDA ITEM 3: **Performance Framework for Regional Air Navigation Planning and Implementation**

    3.0   Air Navigation Global Update and GANP Evolution

    3.1   Status of the AFI Regional Air Navigation Plan (eANP)

    3.2   Outcome of the First APIRG Airspace and Aerodrome Operations Sub-Group (AAO SG/1) – Aerodrome Operations – Airspace Operations

    3.3   Outcome of the First APIRG Infrastructure and Information Management Sub-Group (IIM SG/1) – CNS – AIM– MET

    3.4   Status of APIRG Projects and implementation challenges

    3.5   Safety Management

    3.6   Status of ASBU implementation

    3.7   Revision of the air navigation performance targets developed by APIRG/20

AGENDA ITEM 4: **RVSM Airspace Safety**

AFI RVSM maintenance and operations status report

AGENDA ITEM 5: **Regional Air Navigation Matters**

    5.1   Air Navigation Deficiencies

    5.2   Industry initiatives and other air navigation matters

AGENDA ITEM 6: APIRG/RASG-AFI Coordination

AGENDA ITEM 7: Implementation Monitoring and Annual Reporting

AGENDA ITEM 8: Proposed 2017-2019 APIRG Work Programme

AGENDA ITEM 9: Any Other Business

AGENDA ITEM 10: Venue and Date of the Next Meeting of APIR**G**

7.   CONCLUSIONS AND DECISIONS

7.1.   APIRG records its actions in the form of Conclusions and Decisions with the following significance:

    a)   Conclusions deal with matters which, in accordance with the Group's terms of reference, merit directly the attention of States or on which further action will be initiated by ICAO in accordance with established procedures; and

    b)   Decisions deal with matters of concern only to APIRG and its contributory bodies.

7.2.   A Follow- up Action Plan on APIRG/21 Meeting Conclusions and Decisions is provided at **Appendix 1B** to this report

PART II - REPORT ON AGENDA ITEMS

AGENDA ITEM 0:   ADOPTION OF THE AGENDA

0.1   The meeting reviewed the provisional Agenda which was attached to the invitation letter, and adopted the Agenda for the APIRG/21 Meeting as indicated in paragraph 6 of the History of the Meeting

AGENDA ITEM 1:   ELECTION OF APIRG OFFICIALS

1.1   The meeting proceeded to elect the following:

Chairperson: Mr. Magueye Marame Ndao, Director General (Senegal);
1st Vice chairperson: Mr. Gotz Georg Tobias Günzel (Namibia); and
2nd Vice chairperson: Mr.Martey Boye Atoklo (Ghana)

**AGENDA ITEM 2:   FOLLOW-UP ACTION TAKEN ON APIRG/20 MEETING
CONCLUSIONS AND DECISIONS**

2.1.   Action taken by the ANC on the report of APIRG/20

2.1.1   Under this agenda item, the meeting reviewed the action taken by the Air Navigation Commission (ANC) on the report of APIRG/20 as presented by the Secretariat, for guidance and reference.

2.2.   Status of implementation of APIRG/20 Conclusions and Decisions

2.1.2   Under this agenda item, the meeting reviewed the status of implementation of APIRG/20 conclusions and decisions as presented by the Secretariat, and took appropriate action as at **Appendix 1C** to this report.

**AGENDA ITEM 3:   PERFORMANCE FRAMEWORK FOR REGIONAL AIR
NAVIGATION PLANNING AND IMPLEMENTATION**

3.0   Air Navigation Global Update and GANP Evolution

Air Navigation Global Update

3.0.1   Under this agenda item the meeting was provided with an overview of the global activities by ICAO pertaining to planning and effective implementation and this served as an introduction to the Evolution of the Global Air Navigation Plan (GANP).

3.0.2   The meeting was briefed on the move from about the 2016 GANP six year cycle, performance-based approach and creation of a GANP webpage to a comprehensive improvement in 2019 GANP which will introduce a four-tier layer approach that will include a global managerial level, Global technical level, a Regional and national plan layer and addition of the Basic Building Blocks (BBB) to the Aviation System Block Upgrades (ASBUs) that form the backbone requirements of an air navigation system. The development of the 2019 GANP is in progress with anticipated review by the 13th Air Navigation Conference in October 2018 and approved by the Council in May 2019 before the 40th Session of the Assembly.

3.0.3   The meeting was informed about the new developments in the Air Navigation Bureau at the ICAO Headquarters regarding improved Programmes Coordination and Implementation processes aimed at among others enhanced liaison between the ICAO HQ and the Regional Offices on the technical/operational level and implementation facilitation to States in a prioritised project oriented approach with effective feedback processes.

3.0.4   The meeting was informed that the TORs of the PIRGs/RASGs will be discussed at the upcoming Global PIRG/RASG forum for improvement.

Evolution of the Global Air Navigation Plan (GANP)

3.0.5   The Group recognized the need to develop national air navigation plans aligned with the regional and global plans and encouraged the development of a regional modernization programme in the AFI Region based on strategic air navigation regional performance objectives, aimed to materialize the performance-based approach adopted by the Region for the planning and implementation of new air navigation improvements.

3.0.6   The Group noted the need to prioritise and intensify assistance to States through a mechanism such as the proposed establishment of Regional Air Navigation Supporting Teams. The specific objective of the mechanism is to support States in their efforts to implement air navigation operational improvements taking a harmonized and cost-effective implementation approach.

3.0.7   Furthermore, in order to support achievement of the above objectives, the Group agreed on the following actions:

a) redefine and adopt AFI Air Navigation Regional Performance Objectives;
b) materialize the AFI Performance-based Approach to achieve the defined regional air navigation performance objectives in a Regional modernization Programme;
c) reflect this performance-based approach in Volume III of the regional Air Navigation Plan;
d) APIRG Secretariat to revise the AFI regional implementation strategy in the framework of the Regional modernization programme and APIRG Sub-Groups' activities;
e) States to establish National Air Navigation Plan Multidisciplinary Teams, provided with the adequate resources, including training, to collaboratively develop and implement national air navigation plans initiatives;

3.0.8   In response to concerns raised on the complexity of the GANP, the Secretariat indicated that action was underway to simplify the Plan.

CONCLUSION 21/01:   COORDINATED APPROACH TO AIR NAVIGATION PLANNING AND IMPLEMENTATION

> **That, in order to facilitate harmonization and efficiency in the implementation of SARPs, global and regional requirements that effectively support national and regional development:**
>
> **a) the AFI Region should adopt a coordinated performance-based approach to air navigation planning and implementation based on Regional priorities; and**
> **b) based on the Regional ANP, AFI States develop national air navigation plans linked to national development plans, highlighting the importance of aviation as an enabler to address national socio-economic issues and ensure the availability of sufficient deployment resources.**

DECISION 21/02: **INCREASING THE EFFECTIVE OF APIRG**

That, in order to act as an effective catalyst and support to Regional Implementation,

APIRG should:

a) **play a crucial role in coordinating the implementation of the performance based Regional Air Navigation plan; and**
b) **function as the platform for providing feedback on regional level as well as global level in regard to suitability of provisions and implementation issues.**

DECISION 21/03: **ESTABLISHMENT OF REGIONAL AIR NAVIGATION SUPPORTING TEAMS (RANST)**

That, in order to support AFI States in their efforts to implement air navigation operational improvements, the relevant ICAO Regional Offices (ESAF and   WACAF):

a) **endeavour to include all areas of ANS as part of ROST missions or consider establishment of Regional Air Navigation Supporting Teams (RANST) where applicable to support States in a harmonized Performance based approach, aligned with the Global Air Navigation Plan as well as with the AFI Regional Air Navigation Plan;**
b) **include in their work programmes assistance missions to State aimed to support States in implementing regional and national Air Navigation Plans requirements in a consistent / harmonized manner; and**
c) **promote the development and inclusion of national air navigation plans into their national development plans (NDPs) at the ministerial or higher levels.**

3.1 **Status of the AFI Regional Air Navigation Plan (eANP)**

3.1.1 The Group reviewed the status of development of the AFI eANP and noted with appreciation that on 19 August 2016 the President of the ICAO Council, on behalf of the Council, approved Volume I of the eANP. It was further noted that Vol II had been circulated to States and organizations for comments and Volume III was under review and being coordinated by both ESAF and WACAF Regional Offices following which the updated draft would be submitted to the Air Navigation Bureau for comments before circulation to States, and subsequently presented to APIRG for approval. It was clarified that the amendment of Volume III would not require approval by the Council and that the targeted date for finalization and endorsement of both Volumes II and III was December 2017.

DECISION 21/04: **APPROVAL OF VOL II AND VOL III OF THE AFI eANP**

That, in order to expedite completion and approval of the AFI eANP:

a) **the Secretariat should coordinate with States as soon as possible, for comments where necessary on the revised Volume II and Vol III; and**
b) **the APCC approve AFI eANP Volumes II and III by December 2017 on behalf of APIRG, provided the comments to be received from States have no significant impact on the eANP content.**

3.2   Outcome of the First APIRG Airspace and Aerodrome Operations Sub-Group (AAO SG/1)

Airspace Operations

3.2.1   The meeting noted that the First Meeting of the APIRG Airspace and Aerodrome Operations Sub-Group (AAO SG/1) was held in Dakar, Senegal, from 29 to 31 May 2017, attended by forty-six (46) participants from fourteen (14) States and two (2) Regional and International Organizations. The meeting focused on the operationalization of the new APIRG structure and operational methodology and addressed other matters of high priority. The meeting was informed that a *small working group (SWG)* had been established to complete the items on AAO SG/1 agenda, including APIRG conclusions and decisions applicable to the AAO/SG.

Planning and Implementation issues

3.2.2   **ASBU Module FRTO (Improved Operations through Enhanced En-Route Trajectories**). The Group acknowledged that with regards to AAO/SG projects in the airspace area, there was limited progress in the implementation of the ASBU modules. There was therefore, a need to identify obstacles to implementation and find workable solutions to address them. Recognizing the progress made in the implementation of Module B0-FRTO, the Group acknowledged that there was a level of readiness in some FIRs, and as such it was important to facilitate the transition to B1-FRTO with respect to free routing, as a continuation of the regional progress in the upper airspace optimization.

3.2.3   It was noted with appreciation that some AFI FIRs were ready to begin free routing trials, and that this would also build on the experience gained in establishing Atlantic Ocean Random Routing Area (AORRA). In this respect, the meeting agreed that AAO/SG should facilitate implementation actions by States and ANSPs that are ready to commence free routing trials, with respect to coordination between the applicable FIRs, noting the importance of working on large portions of airspace covering multiple FIRs in order to realize significant benefits for users.

3.2.4   **Remotely Piloted Aircraft Systems (RPAS).** On the matter of the introduction of RPAS into the AFI airspaces, the AAO SG/1 noted that pending the development and adoption of SARPs, ICAO was already providing guidance for States, and that there was a further need to facilitate harmonized implementation in the Region. The matter of RPAS is further discussed under 5.2 below.

3.2.5   **Contingency Plans**. The meeting recalled that the lack, incomplete, uncoordinated, or non-publication of CPs was a long standing deficiency in the AFI Region. It was noted that in 2015 the ESAF Regional Office conducted implementation workshops for ESAF FIRs and ANSPs as well as some assistance FIRs in the ESAF/WACAF interface to develop Contingency Plans (CPs) required under Annex 11 to the Chicago Convention, and to coordinate the related contingency routes. Accordingly the beneficial States were considered to have the ability readiness to complete and publish their CPs subject to their approval as per Annex 11 provisions. This partial progress should be boosted as a matter of priority with support to FIRs in the WACAF area to develop CPs and accelerate completion of the Regional CP including the effecting of the inter-FIR contingency route coordination in the WACAF area.

3.2.6   It was reported that the AAO/SG had urged update or development of CPs, incorporating provisions for Public Health Emergency (PHE) and Volcanic Ash Contingency (VACP) by 31st August 2017, and to publish the updated CPs. The meeting was informed that not much progress had been made in this regard and accordingly concerned States were urged to include the said provisions as soon as practical.

3.2.7   The meeting noted that the AAO/SG had deliberated on the differences between the CPs required under Annex 11 to the Chicago Convention, and the aerodrome emergency plans required under Annex 14. Some States had therefore, not prioritized the development of CPs, on account that they had developed aerodrome emergency plans. The Group recalled that there were overlaps of certain requirements and events. Amongst others, there could be emergency occurrences at an aerodrome, which affect air traffic services (ATS) facilities located at the aerodrome, resulting in the unavailability ATS in the concerned FIR. Similarly, PHE issues could also overlap and affect both the aerodrome and the airspace far beyond. However, the meeting highlighted that the provisions for aerodrome emergency Plans are dealt in a separate Annex 14, with supporting guidance, and that States should fully implement the provisions. In this respect, the Group agreed on the following Conclusions:

CONCLUSION 21/05:   IMPLEMENTATION OF CONTINGENCY PLANS

>   **That,**
>
>> a)   **States develop or update Contingency Plans (CPs) that include Public Health Emergencies (PHE) and Volcanic Ash (VA) provisions and publish them as soon as practical; and**
>> b)   **ICAO provide assistance to States in the development and coordination of the CPs to enable their publication and completion of the Regional CP**

Aerodrome Operations

3.2.8   With regard to APIRG projects in the area of aerodrome operations, the meeting noted with concern the slow progress in the implementation of the identified projects and the need to take remedial action but appreciated the progress of initiatives such as the aerodromes certification project in nineteen (19) AFI States, for 20 international aerodromes and runway safety programme implementation under the AFI Plan and other mechanisms.

3.2.9   The meeting was appraised on the Aerodrome certification project launched in Dakar and Nairobi in August 2016, followed by familiarization workshops from which States submitted their action plans for the implementation, including the resolution of deficiencies found by the APEX reviews of these airports. Resolution of deficiencies which is part of the States action plans is monitored through an appropriate mechanism established by the Project.

3.2.10   The Group noted that under the AFI Plan project; only four international aerodromes have so far completed the certification process with the certification of the remaining airports still ongoing. It's anticipated that the remaining thirteen certified aerodromes will be certified by end of 2018. States and aerodromes operators were encouraged to address the challenges and deficiencies hindering the project implementation through enhanced commitment, involvement and support to the project, training of technical personnel and availing experts for the participation in the project Team.

3.2.11   The Group noted that with regard to the project related to the Runway safety programme, training materials have been developed and coordination made with stakeholders for the Go-Teams establishment in ESAF and WACAF. Go-Team missions were conducted in 15 States, resulted in 30 aerodromes with established Runway Safety Teams which assess and report aerodrome deficiencies and monitor the implementation recommended corrective actions.

3.2.12   The meeting noted the limitations in skills in the area of rescue and firefighting (RFF) services and tasked the secretariat to disseminate information of available recognised RFF training centres in the AFI Region and encouraged States to take optimum advantage of these facilities to address the shortcomings in the area of RFF.

3.2.13   The Group noted that existing guidelines regarding membership to the APIRG Sub-Groups required improvement in order to facilitate States' nomination of officials with the required expertise to participate in the Sub-Group. Accordingly, the meeting agreed that guidelines in the APIRG Procedural Handbook should be revised.

CONCLUSION 21/06:   MEMBERSHIP OF APIRG SUBSIDIARY   BODIES

> **That, in order to facilitate States' nomination and organizations' of members to the APIRG Sub-Groups and avail the Sub-Groups with required expertise:**
>
>> a) **The APIRG Procedural Handbook provisions relating to membership to the Sub-Groups be revised and sufficient detail included to ensure that all fields of air navigation applicable to the respective Sub-Group are covered; and**
>> b) **States and organizations that have been identified to provide core expertise to the Sub-Groups and Project Teams, and have not already so, nominate as matter of priority and in accordance with the APIRG Procedural Handbook, appropriately qualified officials to the APIRG Sub-Groups and Project Teams as applicable.**

Upper Airspace Management and SSR Code Allocation Plan

3.2.14   The meeting noted with appreciation progress made by the East African Community (EAC) Partner States with regard to establish seamless operations airspace in the with the collective FIRs in which the Partner States are responsible for the provision of ATS. The meeting also acknowledged and recognized the benefits to be realized from implementation of such models airspace management by the EAC as well as initiatives in other sub-regions, which were in various stages of planning and implementation.

3.2.15   Concern was however, raised on the delay in updating AFI Air Navigation Plan (ANP) with respect to the Regional SSR Code Allocation Plan and assignment procedures, which was impeding the implementation of the seamless airspace services. It was also noted the outdated Regional SSR Code Allocation Plan and assignment procedures were affecting many other FIRs on their individual basis. In this respect, the Secretariat was requested to prioritize progress with respect to the APIRG Project approved for the purpose of update the Regional SSR Code Allocation Plan and assignment procedures in the AFI ANP.

3.2.16   The meeting noted that, enhanced benefits could be realized from the cost-effective and comprehensiveness of an AFI –wide seamless air traffic management services as opposed to the sub-regional approaches currently being pursued, and accordingly encouraged AFI to continue efforts towards single AFI airspace ATS system.

DECISION 21/07:   UPDATE OF THE AFI SECONDARY SURVEILLANCE RADAR (SSR) CODE ALLOCATION PLAN AND ASSIGNMENT PROCEDURES

> **That, in order to enable States to meet their increasing air traffic services safety, capacity and efficiency obligations, the Secretariat prioritize the activity of the APIRG AFI SSR Code Allocation and Assignment Review (ASCAAR) Project to update the SSR Code Allocation Plan and Assignment Procedures in the AFI Air Navigation Plan.**

CONCLUSION 21/08:   **SEAMLESSNESS OF AIR TRAFFIC MANAGEMENT
IN AFRICA**
That, in order to facilitate the synergetic implementation of an AFI Seamless   Sky:

a) **All the Regional Economic Communities (e.g. EAC, ECCAS, ECOWAS, COMESA, SADC) and ANSPs serving multiple States (e.g. Roberts FIR, and ASECNA), are invited to develop a clear and agreed roadmap, in consultation with users, for the implementation of seamless, harmonized, interoperable Air Traffic Management systems and procedures with clear benefits to the aviation stakeholders;**

b) **Sub-regional economic bodies be requested to establish mechanisms that will facilitate timely, coordinated and efficient implementation of future technologies and procedures, while taking advantage of existing ones in order to achieve a coordinated implementation of Seamlessness of Air Traffic Management in the Region; and**

c) **AFCAC is requested to facilitate and provide support where political sensitization is necessary.**

PBCS implementation

3.2.17   The Group recalled that APIRG/20 in December 2015, discussion on Performance Based Communication and Surveillance (PBCS) and conclusion 20/24: *Establishment of a Project Team for the implementation of a data link central monitoring and reporting agency (DL/CMRA)*as adopted and also noted the adoption of Amendment 7 to the Fifteenth edition of the Doc 4444, which became applicable in November 2016, with implications on users, ANSPs and regulatory authorities.

3.2.18   The Group also noted that at the South Atlantic Group (SAT) meeting Paris, France 5-9 June 2017, AFI States involved in the EUR/SAM Corridor Task Force agreed on the application of 5 minutes longitudinal separation . Furthermore, the Group noted the establishment of a "mandate" affecting users operating in the NAT region by 29 March 2018, with regards to PBCS implementation, which requires readiness concerning, inter alia, State regulations for PBCS Operations approval and Statements of Compliance (SoC) from manufacturers for certain aircraft types.

3.2.19   The meeting recognized the impact of the said mandate on AFI air operators who operate in the airspace in which the mandate has been established, including the States of Operator's ability to effectively meet the operations approval requirements. The meeting further noted the obligations of AFI States with regard to airspaces in which data-link operations have been or are planned to be established, which would require effective planning, as well as regional harmonization in implementation.

3.2.20   Considering the forthcoming NAT PBCS mandate and OPS approval issue for African Carriers that operate in Europe and America, AFI States are encouraged to consider establishing a framework for PBCS OPS approval for their respective registered aircrafts that operate in NAT Region being done in the same context of the planned PBCS implementation in the NAT Region. The meeting acknowledged the need to establish prerequisite foundations before moving towards the implementation.

CONCLUSION 21/09:   **PBCS PLANNING, IMPLEMENTATION AND MONITORING**

That, in order to enable uninterrupted operation of aircraft flying in areas where PBCS mandates have been established, and to facilitate timely and harmonized regional implementation of PBCS in the AFI Region:

a) **AFI States with operators operating into areas where PBCS approval is required should prioritize establishment of necessary capacity to carry out the operational approvals and effective oversight of their operators;**

b) **APIRG Should develop further guidance and criteria to facilitate for consideration by States with respect to PBCS implementation in the AFI Region;**

c) **States should develop PBCS implementation plans as part of the National aviation Plans; and**

d) **Establishment of PBCS Regional Monitoring should be based on detailed analysis of the status and maturity of implementation as well as the expected benefits.**

3.3   Outcome of the First APIRG Infrastructure and Information Management Sub-Group (IIM SG/1) –

3.3.1   The meeting reviewed the outcome of the First meeting of the APIIRG Infrastructure and Information Management Sub Group (APIRG IIM SG/1) in the areas related to aeronautical Communications, Navigation, Surveillance (CNS) and Radiofrequency Spectrum, Aeronautical Information Management (AIM), Aeronautical Meteorology (MET) including planned actions for the operationalization of the IIM/SG.

3.3.2   The meeting was reminded that the requirements governing planning and implementation of the air navigation infrastructure, systems, services and spectrum provisions were identified by the **7**th AFI Regional Air Navigation Meeting (AFI/7) Abuja, May 1997, the Special AFI RAN/08 Meeting, Durban, November 2008 (SP AFI/08) and the AFI Regional Plan as revised by APIRG.

3.3.3   In this regard the meeting reviewed the regional Projects identified by the IIM/SG and approved by the APIRG Projects Coordination Committee (APCC) in line with the AFI ANS regional Priorities and Targets, and the related ICAO ASBU prioritized modules identified by the AFI Region. Fourteen (14) Regional Projects were identified in areas of AIM (3), CNS & Spectrum (9) and MET (2). The meeting approved AFI IIM/SG Regional Projects and Project Teams attached at **Appendices 3.3.1A** to **3.3.1N** and **Appendices 3.3.2A** to **3.3.2N** to this report further tasking the Secretariat to finalize the catalogue providing a standardized description of all APIRG projects and ensures its continued update and uploading on the respective Regional Offices websites.

DECISION 21/10:   DEVELOPMENT OF A CATALOGUE OF APIRG PROJECTS

> **That, the Secretariat should finalize the consolidated catalogue providing a standardized description of all APIRG projects by 31 of December 2017, and ensure its continued update and posting on ICAO ESAF and WACAF Regional Offices' websites.**

3.3.4   The meeting was informed that the Project Teams initiated identification of linkage between the regional projects aimed at developing coordination mechanisms to avoid duplication and ensure compatibility and interoperability of the envisaged solutions and their cost effectiveness. The meeting recognised the need to ensure a strong coordination between the two AAO/SG and IIM/SG APIRG Sub Groups in planning and implementation of regional Air Navigation projects.

DECISION 21/11:   LINKAGE BETWEEN PROJECTS

> **That:**
> a) **The Project Teams finalize the detailed linkage between the IIM Projects; and**
> b) **The IIM and AAO Sub Groups identify the operational requirements to be considered in the linkage between regional projects**

3.3.5   The meeting noted the necessity for a survey to establish the baseline of the IIM regional projects and agreed in this regard that the Project Teams Coordinators should submit a questionnaire to the Secretariat for consolidation and circulation to Administrations/Organization.

3.3.6   The meeting agreed that specific arrangements be instituted to facilitate the implementation of regional IIM projects and in particular the development of proposals for amendments of the AFI Surveillance strategy in the area of Aeronautical Surveillance by the secretariat.

CONCLUSION 21/12:   AERONAUTICAL SURVEILLANCE IMPLEMENTATION STRATEGY

That, considering the deployment of new technologies and the need for a rationalized aeronautical infrastructure, the IIM/SG develops proposals for amendments to the AFI Aeronautical Surveillance implementation strategy to be submitted for APIRG approval through the APCC by 31 March 2018.

3.3.7   In the area of Aeronautical frequency spectrum, the meeting was reminded of the ICAO Position for WRC 19 sent to States through ICAO Secretary General States Letter Ref.: E 3/5-17/82 dated 14 July 2017.

3.3.8   The meeting was informed of the need for States and organizations to maintain continuous vigilance on the threats to the aeronautical frequency spectrum and protection of the aeronautical spectrum and the reporting on harmful interferences on this spectrum as well as the continuous update of the frequencies list. This would provide ICAO with information on occurrences to be brought to the attention of spectrum regulators.

CONCLUSION 21/13:   AERONAUTICAL SPECTRUM ISSUES

That, in order to protect and maintain continuous vigilance on ongoing threats to the aeronautical frequency spectrum:

a)   **ANSPs and airlines should regularly report cases of harmful radio interference within the aeronautical frequency spectrum to the national Telecommunication authorities through the Civil aviation authorities, ICAO and IATA; and**

b)   **The IIM/SG with the support of ICAO, should accordingly develop and maintain a regional database on reported cases of such harmful interference.**

3.3.9   In the area of Aeronautical Information Management, the meeting was informed on the outcome of the Global IFAIMA Conference and recalled the methodology for reporting and assessing the progress related to AIS to AIM transition. Furthermore, regarding the implementation of the AFI regional AIM projects it was agreed to revise the project schedule by extension of the timeline with focus on the implementation of AIXM.

CONCLUSION 21/14:   AIXM IMPLEMENTATION

That, in order to comply with the schedule for AIXM implementation based on the project deliverables for the AFI-Region as defined by the IIM/SG, States are urged to comply with the migration process to the identified Regional AIS Regional Databases in accordance with the AFI-CAD Concept.

3.4   Status of APIRG Projects and implementation challenges

3.4.1   The meeting reviewed the status of APIRG Projects as reviewed and updated by the AAO and IIM Sub-groups, as well as the APCC, as stipulated in the APIRG Procedural Handbook.

3.4.2   The meeting recognised the challenges faced in application of project management principles of cost, time, and quality and that mobilization of resources in the implementation of air navigation facilities and services in Africa. The Group reiterated APIRG's mandate to explore assistance and funding mechanisms in cooperation with regional and sub-regional organizations such as the African Union, AFCAC , Regional Economic Communities (RECs) and financial institutions, in accordance with APIRG Conclusion 20/49.

3.4.3   In this regard, the meeting was informed that the third ICAO World Aviation Forum (IWAF/3), a No Country Left Behind Initiative will be hosted by Nigeria in Abuja, from 20 to 22 November 2017, in collaboration with AUC, AfDB, NPCA, UNECA and AFCAC, which Forum will provide an opportunity to share information and best practices and to collaboratively foster partnerships and harness resources for sustainable aviation and development of aviation infrastructure that will ultimately enable national economic growth.

CONCLUSION 21/15:   INPUTS TO THE 3RD ICAO WORLD AVIATION FORUM (IWAF/3) AND AU'S PROGRAMME FOR INFRASTRUCTURE DEVELOPMENT IN AFRICA

    That, in order to facilitate the financing and support the implementation of   APIRG projects:

        a) **The Secretariat is tasked to coordinate APIRG inputs to be submitted to the 3rd ICAO World Aviation Forum (IWAF/3) to be held in Nigeria, Abuja, 20-22 November 2017, in order to assist in the following:**

           i). **Determination of the aviation infrastructure needs of African States, through appropriate gap-analyses, taking in to consideration requirements of the ICAO Global Plans, Regional Plans and existing and future capacity requirements; and**

           ii). **Preparation and incorporation of an aviation infrastructure development plan for Africa in the Work Plan of the AU's Programme for Infrastructure Development in Africa (PIDA) and coordinate its implementation.**

        b) **APIRG is to be updated and its subsidiary bodies involved in the work related to the above tasks.**

Note: APIRG inputs to IWAF/3 should be finalized and submitted to the APCC for review by 31 October 2017.

3.5   Safety Management

Enhancing Support for Safety Management Implementation

3.5.1   The Group was informed of the tasks identified and completed by ICAO to enhance the support for the implementation of State Safety Programmes (SSPs) and Safety Management Systems (SMS) subsequent to the adoption of Amendment 1 to Annex 19.

3.5.2   The meeting noted that the tasks that included ,a revision to the *Safety Management Manual (SMM)* (Doc 9859); the development of an ICAO Safety Management Implementation website with examples to complement the 4th edition of the SMM; updated SSP tools; an update to the ICAO Safety Management Training Programme; and ICAO SSP implementation promotional activities.

3.5.3   The meeting was informed that recognizing the challenges faced in implementing SSP and Safety Management System (SMS) "commensurate with the size and complexity" of each organization and the wide range of service providers addressed by Annex 19, the ICAO Safety Management Implementation website as a complement to the 4th edition of the Safety Management Manual would include some examples currently found in the third edition of SMM (updated) and provide a mechanism for the sharing of multiple tools and examples. This will emphasize the need for an SSP or an SMS to be tailored to the specific needs of each State and service provider. States, regional and international organizations would be invited to share their examples beginning in October 2017

CONCLUSION 21/16:   SAFETY MANAGEMENT IMPLEMENTATION

> **That, States, regional and international organizations are invited to share tools and examples which support effective safety management implementation to be considered for posting on the ICAO safety management implementation website through an ICAO validation process.**

3.6   Status of ASBU Implementation

Review of the status of implementation of ASBU modules

3.6.1   The meeting was presented with a summary on the status of implementation of ASBU Block 0 Modules in the AFI Region as provided in **Appendix 3.6A** to this report. States were urged to develop their national air navigation plans based on regional/national operational needs and priorities and to cooperate and actively participate in surveys conducted by the Secretariat or relevant stakeholders to assist the AFI Region in the monitoring of, and reporting on ASBU implementation which will be reflected in Volume III of the Regional Air Navigation Plan, and incorporated in the APIRG Annual Air Navigation Report.

3.6.2   It was noted with concern that the majority of the States did not respond to the survey launched by the secretariat to establish the actual implementation Status of ASBU Block 0 in the AFI Region. The Secretariat was requested to conduct a more comprehensive survey before the end of the year 2018.

**CONCLUSION 21/17:   DEVELOPMENT OF NATIONAL AIR NAVIGATION ASBU
                                              PLANS**

> **That, States that have not yet done so develop their national ASBU plans (as a component of their national Air Navigation Plan) based on APIRG's categorization and prioritization of ASBU Modules, by not later than 30 June 2018.**

CONCLUSION 21/18:   SURVEYS ON ASBU IMPLEMENTATION STATUS

> **That:**
> a) **The Secretariat should carry out a more comprehensive survey before 31 December 2017 in order to establish the extent of ASBU Block 0 Modules implementation in the AFI Region; and**
> b) **States/Organizations cooperate and actively participate in surveys conducted by the Secretariat or relevant stakeholders to assist the AFI Region in the monitoring of, and reporting on ASBU implementation.**

3.6.3   The meeting recalled that Air Navigation Reporting Forms (ANRFs) had been adopted in order to monitor implementation of ASBU in the Region and acknowledged the challenges related to feedback from States. Accordingly the meeting identified the need for a complementary mechanism to more specifically track implementation of the ASBU using information from States and other stakeholders including users.

CONCLUSION 21/19:   INCLUSION OF ASBU TRACKER   REVIEW AND ANALYSIS IN FIR   COORDINATION MEETINGS

   That:
   a) **All ANSPs should include in their FIR coordination meetings, the ASBU tracker review and analysis to ensure that the implementation of the ASBU modules in FIRs boundaries are done in a proper manner to facilitate interoperability of the systems;**
   b) **For that purpose, each state and each ANSP designate a focal point for ASBU trackers**

African Flight Procedure Programme

3.6.4   With respect to the implementation of performance-based navigation (PBN), a global Air Navigation priority which is related to ASBU Block 0 modules such as B0-APTA, B0-CDO, B0-CCO, the meeting was updated on the implementation of the African Flight Procedure Programme (AFPP), with the first phase launched on 2nd June 2014 and the second phase (Phase II) will start in 2018. The meeting noted that States commitment through signing of the updated Programme Document (under development) and payment of membership contributions including arrears is critical to its successful implementation.

CONCLUSION 21/20:   SUPPORT TO THE IMPLEMENTATION OF THE AFRICAN FLIGHT PROCEDURE PROGRAMME (AFPP)

   That AFI States support the continuation of the AFPP through the following:

   a) **Payment of the AFPP membership contributions, including arrears related to Phase I of the programme; and**
   b) **Signing of the AFPP Programme Document for Phase II.**

Exchange of OPMET data

3.6.5   The meeting recalled that APIRG/20 meeting, through Conclusion20/44,   had requested AFI OPMET data banks to develop capabilities for handling OPMET information in digital format and appreciated South Africa implementation of IWXXM 2.0 XML/GML schema for digital OPMET exchange as well as an Aeronautical Message Handling System (AMHS). The meeting further noted that Amendment 77 to Annex 3 to the Chicago Convention recommended exchange of OPMET data in digital format and States were encouraged to adopt the amendment.

CONCLUSION 21/21:   EXCHANGE OF OPMET DATA IN DIGITAL FORMAT

   That, to improve the exchange of OPMET data in digital format in the AFI Region, States that have developed capabilities for exchange of OPMET data in digital format are encouraged to implement Amendment 77 to ICAO Annex 3 to the Chicago Convention, with regard to the dissemination OPMET data.

3.7   Revision of the Abuja safety targets and inclusion of Air navigation performance targets developed by APIRG/20

3.7.1   The meeting was presented with the proposed revised Abuja Safety Targets in accordance with the recommendations of the African Union Commission (AUC) Specialized Technical Committee (STC) meeting on Transport, Infrastructure, Energy and Tourism, which included Air Navigation performance targets. With respect to the AN Targets, the meeting noted the amendment proposals to the targets adopted by APIRG/20 Meeting as developed by the 3rd meeting of the RASG-AFI Steering Committee (RASC/3), and recommended the following improvements for further consideration by the APIRG Project Coordination Committee (APCC):

a)   introduction of intermediary steps leading to the aspirational goal of attaining and maintaining zero AIRPROX,

b)   reformulation of the targets related to the establishment of seamless air navigation services and participation in the African ANS Peer Review programme respectively, to make them more precise and measurable; and

c)   reinforcement of the methodology for setting targets by determining baselines for all proposed items.

3.7.2   Accordingly, the meeting requested the APIRG/RASG-AFI Coordination Task Force to finalize the revision of AFI AN Targets, and submit the results to the APCC by 15 November 2017.

AGENDA ITEM 4:   RVSM AIRSPACE SAFETY

4.1   AFI RVSM maintenance and operations status report

ARMA Responsibilities

4.1.1   The Group recalled that the AFI Regional Monitoring Agency (ARMA), which is responsible for monitoring the AFI RVSM system, is required under the provisions of ICAO Document 9937, *Operating Procedures and Practices for Regional Monitoring Agencies in Relation to the Use of a 300 m (1000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive*, to provide APIRG with an annual overview relating to RVSM system risk within the AFI Region based on the annual quantitative RVSM Collision Risk Assessment.

Collision Risk Assessment

4.1.2   The meeting further recalled that AFI Collision Risk Assessments (CRA) were, inter alia, compiled by making use of the monthly RVSM safety assessment and traffic data which is collected by all accredited State/FIR Area Control Centre's and submitted to the ARMA to monitor RVSM system safety and risk. In addition, Unsatisfactory Condition Reports (UCR) deposited into the central database managed by the AFI Tactical Action Group (TAG) are reviewed and where applicable processed into the CRA. RVSM Large Height Deviations reported directly or indirectly to ARMA are also processed for inclusion into the assessment.

4.1.3   The Group was provided with a briefing on the status of CRA 10, which covers the year 2015, and noted that CRA 11 for 2016 would be presented to APIRG/22. It was noted that the CRA 10 estimate of the Technical Vertical Collision Risk was below the agreed to AFI Technical Vertical TLS of 2.5×10^{-9} fatal accidents per flight hour which was a positive indication. However, the Group noted with concern that the estimated Total Vertical Collision Risk was above the agreed TLS of 5×10^{-9} fatal accidents per flight hour. The Group urged AFI States and ANSPs to effectively manage all the RVSM system elements towards reducing the Total Vertical Collision Risk. The mid-air collision event, September 2015, was included into the risk.

4.1.4   More specifically, it was noted that the Technical Vertical Collision Risk was below

the Technical TLS by a factor of 13 and had moved only slightly upwards towards the TLS 2.5×10^{-9}. The CRA 10 estimate of the Total Vertical Collision Risk was calculated as 141.2×10^{-9} fatal accidents per flight hour. Measured against the AFI TLS, this result is 28.2 times greater than the TLS. Furthermore, the estimate is approximately two times larger than the estimate for CRA 9. While CRA 11 was still under processing, it was noted that its raw data was not encouraging and it was important to complete the process before determining the trend. The meeting noted that causal and contributing factors for the high Total Vertical Risk estimate include human factors, lack of or improper coordination between ATC sectors and FIRs, and lack of or non-adherence to procedures.

4.1.5 The meeting requested the ARMA to provide more insight into specific RVSM hotspots and present this on a map at future meetings towards generating discussion for remedial actions.

Strategic Lateral Offset Procedure (SLOP).

4.1.6 Recognizing that the lateral navigation accuracy facilitated by GNSS presented an increased risk of collision, the meeting highlighted that the risk mitigation effects of Strategic Lateral Offset Procedure (SLOP) would significantly contribute to improvement in CRA if implemented throughout the Region. To this end, it was noted that as of the time of the APIRG/21 Meeting, only 50% of AFI FIR's had implemented SLOP as per APIRG Conclusion 17/43. As the implementation has not been completed, and the SLOP had not been worked into the CRA/10, the benefits thereof could not be assessed.

4.1.7 The meeting urged AFI States that had not already done so, to implement SLOP as provided for in APIRG Conclusion 17/43 without further delay, taking into consideration guidance in provided in ICAO Circular 331.

4.1.8 It was also noted that incidents pointing to risk associated with the effect of clear air turbulence (CAT) as well as descending wake turbulence from heavy aircraft appeared to be on the increase. This was therefore a compelling indication to implement SLOP in all AFI FIRs including those in which ATS was provided with the support of surveillance. In order to support States to find practical solutions to significantly reduce RVSM risk, the meeting agreed on the need for training and ICAO RVSM implementation workshops.

RVSM National Programme Managers (NPM) Workshops

4.1.9 The meeting requested the ARMA, with the support of the ESAF and WACAF Regional Offices, to conduct workshops for AFI States' RVSM National Programme Managers as early as practical in 2018, in order to enhance the effectiveness of NPMs in:

a) addressing specific shortcomings identified within the framework of APIRG and by the TAG;
b) coordinating the roles and efforts of various stakeholders in States;
c) coordinative tasks with adjacent FIRs, on a regional basis, and for FIRs in the interface of regions, interregional basis; and
d) generally discharging the tasks of NPMs adopted listed in detailed in the NPM Terms of Reference adopted by APIRG, to support the enhancement of safety in the RVSM airspace and reversing the *abovementioned trend in the CRA.*

Transfer of Algeria to EUR RMA

4.1.10 The meeting recalled that Algeria had been accredited to the ARMA for RVSM system performance monitoring during the planning phase of RVSM in the AFI Region in 2008. However, Algeria made application to be accredited to the EUR RMA as part of the alignment of the Air Navigation Plan areas adopted by the Twelfth Air Navigation Conference (AN Conf./12) in November 2012.

4.1.11   The meeting was briefed on the transfer of Algeria from the ARMA to EUR RMA for all RVSM System Performance Monitoring activities and it was noted the transfer of Algeria had since been presented to and discussed at the EANPG and the RMACG.

4.1.12   The Group noted that pursuant to the above developments, at its Fifty Sixth Meeting in Paris, France, the EANPG adopted EANPG Conclusion 56/31: *Inclusion of Algeria within the EUR RVSM region,* giving effect to the inclusion of Algeria in the EUR RMA. Following the APIRG/21 Meeting, final processes would be undertaken through the Regional Directors of ICAO ESAF and EUR/NAT Regional Offices. The Group acknowledged the positive contribution that Algeria has made to the AFI RVSM safety since its implementation in 2008 and endorsed transfer of the State to the EUR Region and called on concerned parties to support the transfer. Accordingly, the Group agreed on the following Conclusion:

CONCLUSION 21/22:   TRANSFER OF ALGERIA FROM THE ARMA TO THE EUR RMA

> **That, pursuant to alignment of Regional ANPs adopted by the Twelfth Air Navigation Conference (AN Conf./12) in November 2012:**
>
> a) **APIRG endorses the transfer of Algeria from the ARMA to the EUR RMA; and**
> b) **request concerned parties, in particular the ARMA and the Secretariat to take necessary action to facilitate the transfer without any undue delay, in any case by 31 December 2017.**

AGENDA ITEM 5:   REGIONAL AIR NAVIGATION MATTERS

5.1   Air Navigation Deficiencies

5.1.1   The Group recalled that APIRG/17 meeting in August 2010 agreed on AFI Air Navigation Deficiency Database (AANDD) August 2010 (Conclusion 17/100). The Group also recalled that APIRG/20 in December 2015, called on States to provide information on status of implementation and the Secretariat to take necessary action to bring the AANDD into operation (Conclusion 20/11).

5.1.2   The meeting also recalled that APIRG/18 in March 2012, the Group adopted under Conclusion 18/62 the approach of using a list of minimum reporting areas to as a facilitative reference for minimum reporting of air navigation deficiencies in the Region. It was further highlighted that the intent of the list was not to replace reporting based on ICAO Council policy, but to encourage reporting, noting on one hand the critically low level of reporting, and on the other hand the expanse of SARPs and requirements on which reporting may be effected.

5.1.3   In this regard, the meeting noted with appreciation that in May 2017, ICAO circulated State Letter ES AN 1/6 – 0392 dated 24 May 2017, indicating readiness of the AANDD, and requesting AFI States and concerned that had not already done so, to respond to State Letter and nominate focal points as soon as practical, for interaction with the web-based database, so that they may be issued with access credentials. However, only 10 States and two organizations had provided focal points by October 2017.

5.1.4   In view of the above, the Group urged States, Regulators and ANSPs, users, and professional organizations to report on deficiencies using the tool to allow formulation of corrective actions in a harmonised manner throughout the Region, as well as to facilitate follow up and resolution of deficiencies.

CONCLUSION 21/23:   **AFI AIR NAVIGATION DEFICIENCY DATABASE (AANDD).**

> **That, pursuant to its mandate, in particular to identify, record and address specific deficiencies in the air navigation field in the AFI Region:**
>
> a) **APIRG formally adopt and launch with immediate effect, the AFI Air Navigation Deficiency Database (AANDD);**
> b) **AFI States, other concerned States and users effectively make use of the AANDD; and**
> c) **AFI States and concerned organizations that have not already done so, nominate focal points for interaction with the web-based database, so that they may be issued with access credentials**

5.1.5   **Missing Flight Plans**. The meeting recalled that the issue of missing (loss or non-existence of) air traffic services messages and flight plans had been a perennial challenge posing safety risks for many years, and for which definitive long lasting solutions were yet to be implemented. Missing flight plans contributed to many ATS incidents including aircraft proximity (AIRPROX) with high risk of collision as well as deterioration in the regional RVSM Collision Risk Assessments. It was also recalled that the following were amongst the main causes of missing flight plans:

> a) **Not sending a flight plan** - This is not likely for scheduled flights that operate the same route daily, but these messages do have a tendency of going missing from time to time.
> b) **Addressing** - Sending a flight plan, but not addressing the flight plan correctly.
> c) **Error in transmission** - A flight plan is sent but does not reach its destination.
> d) **Error in reception** - The flight plan is sent and delivered, but cannot be interpreted by the receiving system (this could be because of formatting differences, or corruption of the flight plan in transit).
> e) **Rejected flight plan** - The flight plan is transmitted and received, however the flight plan may need corrective action by the originator.

5.1.6   The meeting discussed a number of solutions and mitigation that should be implemented to reduce the number of missing ATS Messages including flight plans and address the primary challenge of lack of or inconsistent implementation of the agreed measures. Where agreed measures had been implemented, by both ANSPs and users, significant improvements had been achieved. The Group urged States to review and implement the measures adopted as APIRG Conclusions at past meetings.

5.1.7   ASECNA provided to the meeting assessment of Flight Plans not received by Regions globally indicating that Africa contributed more than 80% to the occurrence of missing flight plans.

Region	FPL not received by continent					% AV.
	2013	2014	2015	2016	2017	
Asia	313	116	76	61	40	**3,94%**
America	332	61	16	38	15	**3,01%**
Europe	802	518	295	186	56	**12,08%**
Oceania	4	1	0	4	1	**0,07%**
Africa	5 728	2 901	1590	1757	459	**80,89%**
Total	**7 179**	**3 597**	**1977**	**2048**	**571**	**100%**

Availability of OPMET data at AFI OPMET data banks

5.1.8　　　The meeting was presented with the report on the monitoring of the Pretoria Regional OPMET Data Bank (RODB) and noted that the monitoring had been implemented in accordance with APIRG Conclusion 20/43, which required that the reporting be based on the Compliance, Availability and Regularity Index. However meeting recognised the need for further improvement on availability of OPMET Data at the two AFI OPMET Data Banks of Pretoria and Dakar.

CONCLUSION 21/24:　　　**AVAILABILITY OF OPMET DATA AT AFI OPMET DATA BANKS**

　　　That, in order to improve on the availability of OPMET data at AFI OPMET data banks:

　　　　　a)　**States should endeavour to make available OPMET Data at the two AFI OPMET Data Banks of Pretoria and Dakar, in compliance with APIRG Conclusion 20/43, for regional and Global distribution; and**

　　　　　b)　**Follow-up actions to be identified to address deficiencies in OPMET reporting as a matter of urgency.**

REVIEW AND UPDATE OF THE LIST OF AIR NAVIGATION DEFICIENCIES

5.1.9　　　The meeting reviewed the list of deficiencies in the areas of air navigation, as reported by the Sub-groups of APIRG, in accordance with the Uniform Methodology for the identification, assessment and reporting of Air Navigation shortcomings and deficiencies approved by the ICAO Council. The meeting noted the challenges facing States in monitoring and reporting on the status of implementation of the Regional Air Navigation Plan (ANP) requirements in a timely and effective manner, and maintaining the AFI Deficiency List.

5.1.10　　　**Deficiencies related to RVSM operations**. The meeting recalled the ICAO Council definition of a Deficiency and acknowledged that RVSM deficiencies constitute an operational safety risk which reflected in the annual AFI RVSM Collision Risk Assessment. In addition, the deficiencies contribute to the causal factors of continuing high levels of Unsatisfactory Condition Reports (UCR) or Air Safety Reports (ASR) include aircraft proximity incidents (AIRPROX). It was therefore critical that States and their ANSPs take effective measures to eliminate the deficiencies.

	No/Limited RVSM Height Monitoring	**RVSM Operations Approvals**	**Lack of or inconsistent provision of monthly RVSM Safety Assessment Data**
1.	Botswana	Djibouti	Angola
2.	Burkina Faso	Eritrea	DRC
3.	Cote d'Ivoire	Ethiopia	Ethiopia
4.	DRC	The Gambia	Tanzania
5.	Djibouti	Ghana	Malawi
6.	Eritrea	Sao Tome	Angola
7.	Equatorial Guinea	Tanzania	
8.	The Gambia	Chad	
9.	Ghana	Zambia	
10.	Kenya		
11.	Mali		
12.	Mozambique		
13.	Sao Tome		
14.	Tanzania		
15.	Chad		
16.	Zambia		
Note: The information provided in the Table hereunder, which has been populated with available information as on 29 September 2017			

5.1.11   The Group noted that a number of States continue to have deficiencies related to
RVSM operation including the lack of provision of data and information to the ARMA. Details of
specifically deficiencies noted thereof are provided in **Appendix 5.1A** to this report.

**CONCLUSION 21/25:   UPDATE OF THE LIST OF AIR NAVIGATION
                                          DEFICIENCIES**

That States:
   a) **continue to provide to the ICAO Regional Offices updated information on
      the status of implementation of the Regional Air Navigation Plan (ANP)
      elements.**
   b) **endeavour to report Air navigation deficiencies specifically deficiencies
      related to RVSM operation**

5.1.12   The meeting was informed on the regional initiatives taken by Air Navigation Service
Providers for the implementation of Air Traffic Inter Facilities Data communication (AIDC). In this
regard, ASECNA informed the meeting on the progressive implementation within ASECNA area and
with its neighbours with full operation in Abidjan, Brazzaville, Cotonou, Dakar, Khartoum, Lomé,
Mauritius, N'Djamena, and Niamey. It was reported that promising trials are currently being carried
out between Abidjan (ASECNA) and Accra (GCAA) and arrangements are under negotiation with
Atlantico, Beira, Dar Es Salam, Johannesburg, Luanda, Roberts FIR, Sal, Seychelles with provisional
planning. The meeting applauded these regional initiatives and encouraged States/Organizations to
strengthen their collaboration in this area.

5.1.13   The IIM/SG Project Team was tasked to coordinate the implementation of new
AIDC capable systems aimed at ensuring the full compliance of their protocols in order to facilitate
interoperability and interconnection.

CONCLUSION 21/26:   IMPLEMENTATION OF AIDC

That:
   c) **The IIM/SG coordinate the implementation by AFI States of new AIDC
      capable systems aimed at ensuring the full compliance of their protocols in
      order to facilitate interoperability and interconnection; and**
   d) **ASECNA and GCAA are encouraged to complete the implementation of
      AIDC between Accra and Abidjan ACCs and share their experience for
      consideration by the relevant APIRG Project.**

5.1.14   The status of implementation and operation of Aeronautical Mobile Service was
assessed by the meeting through the presentation provided by the industry. In this regard ASECNA
reported a continuous improvement of VHF radio communications in its FIRs with a quality of
communications with an average level ranging between 4 and 5. However, it was also highlighted
lack of coverage due to area located at boundaries of FIR and coverage to be improved at some way
points such as GATLA, UVGAD, ONUDA, KAFIA, EDGUM, in air/ground communications,
including the results of the AMS survey conducted from 08th to 22nd February in ASECNA FIRs, in
coordination with IATA.

5.1.15   The same progress was noted in the operation of CPDLC with an increased use in line
with the increase of the equipped fleet in oceanic airspaces (60% in Dakar FIR and 25% in
Antananarivo FIR). CPDLC transactions are reported to be globally satisfactory with quality at 7 in
majority. The meeting encouraged States and the industry to continue the effort to increase the
equipage and operation CPDLC.

5.1.16   The meeting further noted a reduction in the use of the HF and the improvement of the quality of communication with an average level from 3 to 5 when the frequencies are operated adequately since some centers are provided with HF frequencies forecast software in accordance with recommendation 6/20 of Special AFI/RAN/08 meeting.

5.1.17   IATA presented to the meeting the outcome of a survey on Aeronautical Mobile Communication in the AFI conducted from 8th to 22nd February 2017 with the aims to:

    a) Determine the real VHF coverage and the quality of HF and CPDLC/SATCOM service provisions to users;
    b) Identify deficiencies and develop corrective action plans to be addressed with concerned States/ANSPs;
    c) Continue Efforts to address persistent Challenges;
    d) Support improvement of aeronautical mobile communication and the protection of the aviation frequency spectrum; and
    e) Support improvement of quality and timely provisions of ground-to ground services in particular AIDC.

The outcome of IATA regional survey on Aeronautical Mobile Service (AMS) is provided in **Appendix 5.1B** to this report

5.1.18   The meeting deliberated on the issue of accommodation of legacy aircraft in the implementation of PBN. The meeting was however, informed that there were various provisions in place to accommodate non-equipped aircraft. Amongst others, ICAO provisions on PBN implementation including PBN airspace design do take into account implementation for legacy aircraft. It was further highlighted that for effective PBN implementation it is paramount that all airspace stakeholders (service providers, airspace users, stake organs like military, etc.) are involved in the design of the airspace. Accordingly, the Group emphasised that the non-equipage of some aircraft should not slow down/delay the rate of implementation of PBN.

5.1.19   The meeting noted the progress reported, encouraged the Industry to continue the collaboration in order to identify and address the deficiencies emanating from the AMS.

5.1.20   The Group was briefed by South Africa with the information on the identification of the main causes which contribute to the loss of ATS Messages in the AFI Region and possible solutions to decrease the amount of missing ATS Messages. Taking the example of missing Flight Plans, the following main causes were identified to contribute to missing ATS messages:

    a) Not sending a flight plan - This is not likely for scheduled flights that operate the same route daily, but these messages do have a tendency of going missing from time to time;
    b) Addressing - Sending a flight plan, but not addressing the flight plan correctly;
    c) Error in transmission - A flight plan is sent but does not reach its destination;
    d) Error in reception - The flight plan is sent and delivered, but cannot be interpreted by the receiving system (this could be because of formatting differences, or corruption of the flight plan in transit);
    e) Rejected flight plan - The flight plan is transmitted and received, however the flight plan may need corrective action by the originator.

5.1.21   Actions were presented as successfully implemented to solve/mitigate or decrease the amount of missing ATS Messages:

    a) Request from the originator of the message of missing flights plans of daily repetitive operating flights;

b) Implementation of processes and procedures to ensure that flight plans are addressed correctly;

c) Use of automated flight planning systems capable of addressing flight plans according to the route flown and use of collective addressing is required.

5.1.22 ASECNA presented to the meeting an update on the missing flight plans with regard to the mitigation measures implemented in its centres. It was reported that investigations carried out in each ASECNA centre by a multidisciplinary local team revealed the following main causes in the occurrence in missing flight plans:

a) Lack of awareness of the organization of ASECNA airspace by some airspace users;

b) Omission of AFTN addresses from some air traffic control agencies;

c) Non-use of FPL collective addresses by operators;

d) Incorrect programming of routing tables or lack of knowledge of routing procedures, including redirection and restoration delays in the event of circuit unavailability;

e) Technical problems, including link problems (unstable operation of some circuits);

f) Failure to follow message routing procedures.

5.1.23 The main corrective/mitigation actions conducted to mitigate missing Flight plans consisted of:

a) Implementation of collective addresses for the routing of flight plan messages in the various FIRs;

b) Establishment of a procedure for the collection, monitoring and analysis of flight plans;

c) Monthly data collection of missing flight plans and diligence in treatment in coordination amongst neighbouring centres.

5.1.24 As a result it can be noted a constant decrease of missing flight plans since the implementation of the remedial measures

Improved FPL reception
from 2013 to the first half of 2017

■ Received   ■ Not received

	2013 :178619 FPL	2014 : 305113 FPL	2015 : 223778 FPL	2016 : 149141 FPL	2017 : 40710 FPL
Not received	4,16%	1,18%	1,43%	1,37%	1,40%
Received	95,84%	98,82%	98,57%	98,63%	98,60%
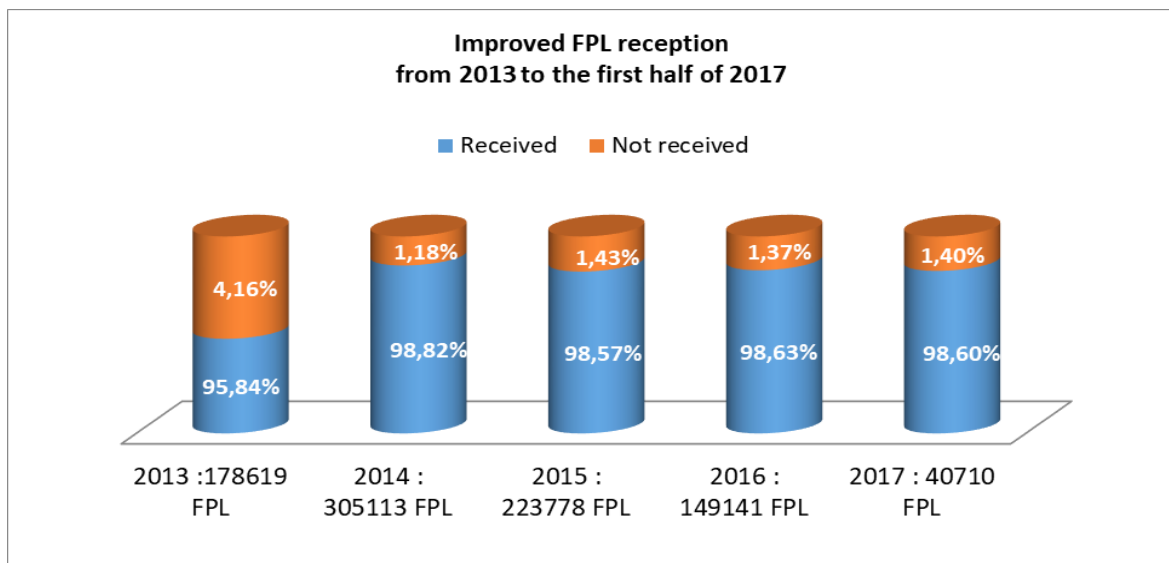
5.1.25 The detailed breakdown of the result of the exercise is attached at **Appendix 5.1.C** to this report.

5.1.26   The meeting appreciated the efforts made by South Africa and ASECNA to reduce the losses related to ATS Messages in particular flight plans and considered these efforts as example of Best Practices to be shared in the AFI Region.

CONCLUSION 21/27:   DEFICIENCIES IN AERONAUTICAL CHARTING

> **a) APIRG IIM Sub-group, in coordination with ICAO, addresses deficiencies in aeronautical charting should Phase 2 of a regional implementation strategy be needed; and**
> **b) States develop solutions and mitigating measures under the IIM/SG to address missing ATS Messages and States to implement automated flight planning systems.**

5.1.27   The meeting recalled that, as a means of addressing the long standing deficiency on availability of SIGMET information in AFI region, APIRG formulated Conclusion 16/56 calling for the conduct of annual SIGMET Tests. In this regard, the Group noted with appreciation that an annual AFI SIGMET test was conducted in November 2016.

5.2   Industry Initiatives and other air navigation matters

African ANSP Peer Review Programme

5.2.1   The meeting noted that, at the initiative of the President of the Council, a meeting of the African ANSPs was held in Montreal on 4 February 2015, to discuss the need to identify ways and means of addressing some challenges the air navigation services are facing in the Africa-Indian Ocean (AFI) region. The importance of effective oversight with a clear delineation between regulator and air navigation services provider (ANSP) functions was emphasized, and it was recognized around the world that this could be further enhanced by cooperation between ANSPs themselves, particularly in enhancing quality assurance.

5.2.2   ANSP Peer Review activities are being carried out in the region. A Cooperation Roadmap adopted by African ANSPs for the period 2017/2018 in May 2017, is provided as **Appendix 5.2A** to this report

5.2.3   The meeting noted the establishment of *an African ANSP Steering Group with a view to developing* a regional framework and a mechanism for improving ANS safety performance in Africa, including peer review, composed of the following members: ASECNA (Chair), ATNS, South Africa (Vice-Chair), CANSO   (Member and Secretariat), Ghana, Kenya, Mozambique and Nigeria ANSPs (Members), ICAO (Member) and AFCAC (Observer).

ANSPs Regional meetings

5.2.4   The meeting was informed that took note of a series of regional meetings in order to further develop a suitable African ANSP cooperation framework, held in Durban, South Africa in June 2015, Yamoussoukro, Cote d'Ivoire in December 2015, Accra, Ghana in September 2016, and Freetown, Sierra Leone in May 2017. The terms of reference were adopted in June 2015, and the regional framework of cooperation was adopted in May 2017, together with the Peer Review Manual as well as CANSO Standard of Excellence to guide the operational implementation of the African ANSP Peer Review Programme. A progress report was presented to the Fourth AFI Week in May 2017 in Gaborone, Botswana.

AFI Plan support

5.2.5   The meeting noted with appreciation that the 17th Meeting of the AFI Plan Steering Committee meeting held during the Third in June 2016 had approved a project dedicated to the implementation of the African ANSP Peer Review Programme, to help ANSPs to continuously improve the safety and quality of air navigation operations in view of the limited ANS regulatory oversight in the African Region. The AFI Plan Project on the implementation of the African ANSP Peer Review Programme was launched in May 2017. It builds on and facilitates on–going initiatives/activities in accordance with the regional framework adopted for this programme.

**CONCLUSION 21/28:   SUPPORT TO THE AFRICAN ANSP PEER REVIEW
PROGRAMME**

> **That:**
> a) **ICAO be encouraged to continue to provide its support to the African ANSP Peer Review Programme, in coordination with the African Air Navigation Services Providers Steering Group; and**
> b) **All African ANSPs should participate in the Peer Review Programme and continue to work together to enhance safety and efficiency of air transport operations in Africa.**

**CONCLUSION 21/29:   REGIONAL TRAINING WORKSHOP ON THE PEER
REVIEW PROGRAMME MANUAL**

> **That, ANSPs participate in the regional training workshop on the African ANSP Peer Review Programme manual, including relevant ICAO requirements, to be hosted by ASECNA in coordination with ICAO, during the week commencing 11 December 2017.**

Outcome of the AFI RPAS symposium and the regional workshop on RPAS

5.2.6   The Secretariat presented to the meeting the outcome of the AFI Symposium and the Regional Workshop on Remotely Piloted Aircraft Systems (RPAS), held in Abuja, Nigeria from 17 to 21 July 2017 that was attended by 400 participants from States, international organizations and various stakeholders . The symposium also discussed issues related to the safe integration of RPAS in the AFI non-segregated airspaces.

5.2.7   The objective of the symposium was also to share experiences in RPAS operations across the AFI Region and to discuss challenges to be overcome and benefits to be obtained from RPAS operations including the civil aviation system evolvement to align with existing regulatory provisions. The meeting supported endorsed the main outcome of the symposium in particular:

> a) The fast growing RPAS technology, increase of RPAS utilization and need for a harmonized Regulatory framework and capacity building through training, of personnel to address the challenges of RPAS technology and associated systems that require high level of knowledge of their operations and maintenance;
> b) The challenges encountered in safe integration the AFI ATM environment of RPAS utilized by various economic and social sectors (mining, agriculture, environment, health, humanitarian relief operations etc.…) and the future international/commercial operations of RPAS requiring a cohesive strategy to ensure appropriate compliance with requirements and practices and oversight while maintaining effective integration of RPAS with ATM systems;
> c) The adequate technology need in support to RPAS Operation in the AFI Region including the need for a global harmonization of spectrum for Unmanned Aircraft Systems (**UAS**) and other services and applications in accordance with ITU Resolution 155-WRC 15.

5.2.8   The meeting was informed that the Regional Workshop on RPAS attended by Fifty-Five (**55**) participants gave an overview of ongoing development of Standards and Recommended Practices (SARPs) related to Remotely Piloted Aircraft Systems (**RPAS**) along with the associated guidance material.

5.2.9   The meeting noted that provisions of all Annexes to the Chicago Convention apply to UAS operation with a need for revision /update of SARPs except for those emanating from Annex 5 and that ICAO is currently working in this direction through the RPAS Panel, meanwhile, States should consider the guidance material contained in Doc 10019 in order to develop provisional Regulation that takes into account the safe operation of UAS in a non-segregated air space.

5.2.10   The meeting agreed that the conditions of integration and operations of Remotely Piloted Aircraft into ATM procedures in non-segregated, controlled and uncontrolled airspace and that operational (**Flight Safety**), equipment (**Airworthiness)** and Concept of Operations -CONOPs- (**ATM**) requirements of RPAS with the required CNS infrastructure, will be governed by the airspace classifications that are defined in Annex 11— *Air Traffic Services*. Moreover, RPAS operation in a non-segregated airspace will also fulfil certain conditions such as:

a) Compliance with right-of-way, Compliance with flight plan filing, and Management of loss of Command and control link (C2 link).
b) Appropriate technology to allow RPAS integration to safely operate at aerodromes opened to public use;
c) Ability to communicate and manoeuver in a manner that will not disrupt routine airport operations;
d) States establishment of aerodromes to serve RPAS operations only.

5.2.11   The meeting agreed on the multidisciplinary aspect of the integration of RPAS operation in non-segregated airspace and highlighted the need for a strong Civil-Military collaboration with the aim to ensure a safe integration of UAS in air traffic and States strongly encouraged to establish national multidisciplinary Team tasked to develop, implement and monitor a national plan and a set of regulations based on the ICAO regulatory framework for the progressive accommodation and integration of RPAS into non-segregated airspace after risk assessment.

5.2.12   ASECNA provided the meeting with its experience and their member States in the operation of remotely piloted aircraft System (RPAS) in its airspaces and identified proposals for their management under acceptable safety conditions, in the absence of a mature normative and regulatory framework. Also highlighted were challenges and risks such as civil military coordination, information sharing and lack of authorizations RPAS operations, lack of procedures for the establishment of bilateral (VHF and telephone) communication between the remotely pilot stations and the ATC, activation of the SSR transponders outside the segregated airspace, and monitoring of ATC frequencies even in the area of operation.

5.2.13   The meeting noted the constraints pointed out by ASECNA for the operation and management of air traffic involving RPAS including:

a) Amendment of regulation framework for RPAS operations based on revised ICAO Annexes to the ICAO Convention, with the exception of Annex 5.
b) lack of training of ATCOs on the RPAS concept and operations;
c) Maintenance of bilateral communications between pilot and ATC, with a Quality of Service (**QoS**);
d) Lack of procedures for the management of emergency situations, such as loss of communication;
e) RPAS operators being unfamiliar with the civil aviation environment;

5.2.14   The meeting recognised the need for ICAO Regional offices to support a mechanism of mutual assistance among States of the AFI region for a safe integration of RPAS in non-segregated airspace.

DECISION 21/30:   ASSISTANCE AND GUIDANCE ON THE SAFE INTEGRATION OF RPAS INTO NON-SEGREGATED AIRSPACE

That, in order to facilitate harmonized introduction of Remotely Piloted Aircraft Systems (RPAS) into the AFI airspaces, and to address airspace safety risks associated with RPAS operations:

    a) **ICAO should provide, as a matter of priority, assistance and guidance to States in their integration of RPAS in non-segregated portions of airspace in FIRs for which they are responsible for the provision of air traffic services (ATS).**
    b) **the work programmes of the APIRG auxiliary bodies be revised as appropriate to include matters related to the safe integration of RPAS operation in non-segregated airspace**

CONCLUSION 21/31:   ESTABLISHMENT OF NATIONAL COORDINATION MECHANISMS FOR THE INTRODUCTION OF UNMANNED AIRCRAFT SYSTEMS (UAS)

That, in order to support States' efforts on the safe integration and address the challenges of the rapidly growing volume of unmanned aircraft system operations in the AFI Region, in particular the harmonized introduction of UAS into the AFI airspaces and mitigation of: airspace safety risks:

    a) **As a matter of priority, States in collaboration with all concerned Stakeholders establish a national multidisciplinary Team tasked to develop, implement and monitor a national plan and a set of regulations based on the based on ICAO guidance and best practice for the progressive accommodation and integration of RPAS into non-segregated airspace;**
    b) **International organizations including AFCAC and Sub-regional economic bodies, be requested to provide support as necessary**
    c) **States strengthen civil-Military cooperation to ensure effective monitoring and avoid duplication of procedures for RPAS operations**

Implementation of ATS surveillance facilities and interconnection of ATM systems

5.2.15   The meeting noted the information on the deployment programmes undertaken by air navigation service providers (ANSPs) with the support of the ICAO WACAF Regional Office, in the implementation of surveillance systems, ongoing cooperative initiatives between ANSPs for data exchange in the Gulf of Guinea, with a view to improving air navigation services.

5.2.16   Considering the important air traffic flow on the western coast of Africa, from Senegal to Gabon, including Guinea, Sierra Leone, Liberia, Côte d'Ivoire, Ghana, Togo, Benin, Nigeria, Cameroon, Equatorial Guinea in one hand, the overlapping SSR and ADS-B coverage offering a tremendous opportunity to ensure continuity of the surveillance service in the other hand, the ANSPs in the Gulf of Guinea (ASECNA, GCAA, NAMA, Roberts FIR), committed to share their surveillance data to facilitate the implementation of reduced separation minima for the benefit of users and enhance air navigation safety, capacity and efficiency. It was noted that an agreement was concluded on the modalities of interconnection of the surveillance facilities and the implementation of AIDC.

5.2.17   It was also brought to the attention of the meeting that a Memorandum of Cooperation (MoC) has been drawn up to guide the implementation of this project, including the possibility to jointly purchase equipment, the implementation mechanisms by a joint technical team for better synergy of action of the ANSPs involved, the technical characteristics and the performance framework of the systems. However, that MoC remains to be signed by the ANSPs concerned.

5.2.18   This initiative supported by ICAO was brought to the attention of ECAWAS to be considered as a component of the regional project in the transport area. The meeting applauded this sub regional initiative and encouraged ANSPs to continue their initiative for the integration of ATM system in the view to ensure systems interoperability and ATM seamlessness over the Gulf of Guinea.

CONCLUSION 21/32:   REGIONAL COORDINATION FOR SURVEILLANCE DATA SHARING

That:

a) **States/ANSPs ASECNA, GCAA, NAMA, ROBERTS FIR pursue the interconnection of ATS surveillance facilities in the Gulf of Guinea with the support of their RECs and donors in order to provide a tangible example of achievement towards a seamless airspace in the AFI Region;**

b) **ICAO Regional Offices continue to facilitate surveillance data sharing initiatives in the Region.**

Implementation of ADS-B

5.2.19   The meeting noted that many AFI States had implemented or are in the process of implementing ADS-B, Secondary Surveillance Radar (SSR) and Multilateration (MLAT) technologies including establishment of mandates on individual levels. However, concern was raised that in many cases, user were not involved in the planning for implementation of such technologies. Furthermore, ICAO guidance in Circular 326, concerning implementation of ground-based ADS-B or MLAT technologies, and principles of cost-relatedness in Document 9082 as well as Document 9161 were not effectively applied.

5.2.20   In view of the above, the meeting noted the need for AFI States to apply the principles of collaborative decision making (CDM) by involving airspace users at early stage, before major commitment are adopted and implemented, in order to take into consider the user concerns on the implication of such investments, including aircraft certification, avionic performance requirements, safety requirements, the Concept of Operation and associated operational and economic benefits.

CONCLUSION 21/33:   IMPLEMENTATION OF SURVEILLANCE INFRASTRUCTURE IN THE AFI REGION

That, in order to facilitate harmonized implementation of infrastructure that support seamlessness in the provision of air traffic management and realization of associated benefits by all stakeholders, while avoiding unnecessary duplication of investments on the ground and in the air, AFI States are urged to:

a) **Apply the principles of collaborative decision making that include users at early stages when planning investments into surveillance infrastructure (SSR, ground-based ADS-B, space-based ADS-B, multilateration)**

b) **Follow the guidelines in the ICAO Circular 326 when implementing surveillance technology while ensuring economic transparency in accordance with ICAO principles of cost-relatedness as per ICAO Doc 9082 and Doc 9161;**

c) **Avoid the imposition of mandates on a State by State or FIR by FIR basis.**

Cyber safety and resilience of the air navigation system

5.2.28   The Group noted information on issues relating to threats and challenges encountered in the area of Safety and Resilience of air navigation systems in the AFI Region. It was noted that the Global Air Navigation Plan (GANP Doc. 9750) developed under the concept of ICAO Aviation System Block Upgrades (ASBUs) framework increased interoperability, efficiency and capacity through ground- ground integration.

5.2.29   The meeting noted that this worldwide information exchange, while enhancing efficiency, capacity and flexibility of the operations and raising productivity, increases vulnerabilities to cyber-attacks since the trend is to use open available and emerging technologies. It was recognized that the threat were real, critical and may emanate from various internal and /or external sources; involves air navigation systems infrastructure, signals and data, people, procedures, information, resources, facilities (air traffic services units and airports), equipment (communications, navigation and surveillance (CNS)).

5.2.30   The meeting acknowledged that to achieve air navigation safety and resilience in a multidisciplinary stakeholders' environment would require strong collaboration between concerned national entities and well as between States in the Annex 17 to the Chicago Convention and development of national policies.Accordingly, AFI States were encouraged to include in their national regulatory framework (Regulation, policy strategy and plan) provisions to address air navigation safety and resilience.

5.2.31   The meeting also recognized the need for development and implementation of coordination procedures concerning the exchange of information between adjacent States, in particular ATS units which already have Letters of Agreement (**LOAs**) detailing communications and coordination procedures. The meeting encouraged States that have not already done so, to ensure that procedures related to cyber safety and resilience are included in the LoAs.

CONCLUSION 21/34:   CYBER SAFETY AND RESILIENCE OF THE AIR NAVIGATION SYSTEM

> **That, in order to address the emerging issues related to cyber security, safety and resilience of the air navigation systems in AFI Region:**
>
> a) **States should develop national frameworks including regulations, policy strategy and Plan linked to the National Civil Aviation Security Programme in collaboration with all concerned stakeholders;**
> b) **States should as a matter of urgency establish and maintain coordination procedures with their neighbouring States in order to share information on cyber events and ensure that safety and resilience policies and provisions will apply counter the increasing threats in particular those related to cyber-attacks; and**
> c) **ICAO in collaboration with industry stakeholders should endeavour to support to States through the provision of guidance material, training, Workshop/Seminars on ATM Security in particular on cyber safety and resilience of the air navigation service.**

Conduct of volcanic ash exercises in AFI region

5.2.32   The meeting noted the risk to aviation concerning space weather and that initial provisions to meet requirements for the concern in support of international air navigation, were under development. In this regard ICAO had issued a State Letter, inviting comments from Member States on proposed amendments to Annex 3 expected by end of 2018.

5.2.33 The Group was briefed on the outcome of the Regional Awareness Seminar on the AFI Air Traffic Management (ATM) Volcanic Ash Contingency Plan (VACP), held from 4 to 7 September 2017, aimed at providing assistance in relation to volcanic ash pursuant to APIRG Conclusion 18/53. The meeting agreed that it was important to conduct regular volcanic ash exercises in the Region in order to practice and develop inter-agency response to volcanic activity, in order to maintain safety, regularity and efficiency of aviation in the event of a volcanic eruption.

CONCLUSION 21/35:   **CONDUCT OF VOLCANIC ASH EXERCISES IN AFI REGION**

> **That, in order to practice and develop inter-agency response to volcanic activity   in the AFI Region, States are urged to develop and conduct Volcanic Ash exercises using guidance contained in Appendix F of ICAO Doc 9766 (Handbook on the International Airways Volcano Watch (IAVW)).**

AGENDA ITEM 6:   APIRG/RASG-AFI COORDINATION

6.1   The meeting recalled the following milestones with respect to APIRG/RASG-AFI Coordination:

       a)   APIRG/18 and RASG-AFI/1 meeting in March 2012 recognized the necessity for close coordination of activities between RASG- AFI and APIRG in order to ensure harmonization and avoid duplication of efforts, in accordance with the terms of reference of these two groups, and agreed to an initial allocation of tasks between the two groups.

       b)   In November 2013, the RASG-AFI/2 meeting recommended that APIRG and RASG-AFI share information on the outcomes of their most recent meetings and activities in order to facilitate coordination between the two Groups and among their subsidiary bodies (*Conclusion 2/10*) to deal with real or potential overlapping responsibilities in a timely manner

       c)   The RASG-AFI/2 meeting also recognized that the ASBU Block 0 modules related to safety actually support the implementation of Abuja safety targets and recommended that RASG-AFI should address the implementation of the relevant safety related ASBU Block 0 modules, in coordination with the APIRG and the relevant bodies in line with regional aviation safety mechanisms *(Conclusion 2/11).*

       d)   In December 2015, the RASG-AFI/3 meeting established the APIRG/RASG-AFI Coordination Task Force (ARC-TF) and requested endorsement and implementation of the above recommendation by APIRG. In this regard, the APCC/2 held in August 2017 endorsed the establishment of the (ARC-TF), and formulated proposals to ensure an effective representation of States and key stakeholders of the industry in its membership, including air navigation service providers, airports, air operators, etc.

6.2   The meeting noted that a number of issues such as RPAS operations, missing flight plans, RSOO integration and consolidation, ASBU framework, have emerged and required close coordination between APIRG and RASG-AFI.

6.3   **AFI Tactical Action Group (TAG) activities.** The meeting recalled that the AFI Region Tactical Action Group (TAG) was established through Recommendation 6/7 of the Special AFI RAN Meeting (SP AFI/08 RAN), held in South Africa in November 2008, with the mandate to carry out safety assessment of aircraft and ATC operations in the AFI Region in support of continuing safety in RVSM operations and follow-up with States on investigation of unsatisfactory condition reports ((UCRs) air traffic services related incidents and other safety-related situations/conditions that were impacting on safety of air navigation.

6.4   The meeting noted that, at its Ninth Meeting in Johannesburg, South Africa, 3 March 2017, the AFI TAG recalled that TAG activities' outputs and recommends should be translated into strategic and other non-tactical processes through bodies within the framework of APIRG and, through APIRG, to RASG-AFI.

6.5   The meeting noted the emphasis for enhanced relationship between the RVSM support processes and RASGs and recognized the potential improvement in the effectiveness of processes emanating from the TAG, by extending its reporting to the RASG-AFI.

CONCLUSION 21/36:   APIRG/RASG-AFI COORDINATION

   That;
   a) **APIRG/RASG-AFI Coordination Task Force (ARC-TF) membership be reviewed to ensure effective participation/representation of all key stakeholders; and**
   b) **ARC-TF reviews allocation of activities to include all additional and applicable emerging issues:**

DECISION 21/37:   APIRG/RASG-AFI COORDINATION

That, in a continuing effort to enhance effectiveness in the processing the outputs and recommendations of the AFI Tactical Action Group:

   a) **The TAG is to provide feedback directly to RASG-AFI, with the Secretariat ensuring that necessary information is also provided to APIRG; and**
   b) **Jointly with the APIRG and RASG Secretariat, formulate project/s to be considered for funding under mechanisms such as the AFI Plan, to address issues under its mandate which also subscribe to the APIRG and RASG ANS KPAs, Targets and Monitoring.**

AGENDA ITEM 7:   IMPLEMENTATION MONITORING AND ANNUAL REPORTING

Review and Evaluation of Air Navigation Planning

7.1   The meeting recalled the requirement of the Global Air Navigation Plan (GANP, Doc 9750), for ICAO Regions, sub-regions and individual States to establish through the PIRGs their own Air Navigation priorities to meet their individual needs and circumstances in line with the Global Air Navigation Priorities.

7.2   In this regard, the APIRG/19 Meeting, (2013) established categories and priorities for the Aviation System Block Upgrades (ASBU) modules and endorsed the GANP Air Navigation reporting form (ANRF) recommended as the basis for performance monitoring relating to ASBU implementation at the regional and national levels. Accordingly, ANRFs were developed for all applicable modules and related elements, and they are reviewed and updated by APIRG Sub-groups as necessary.

7.3   Furthermore, the APIRG/20 meeting (2015) adopted a set of Air Navigation key performance targets to measure implementation progress in priority areas related to ASBUs and other regional performance objectives not mapped to ASBU modules. These targets – as may be amended from time to time by the APIRG – should be given due consideration in the monitoring and reporting process.

Establishment of an APIRG Annual Reporting Team

7.4   Considering the difficulties being encountered in obtaining accurate and timely information on the status of implementation of ANP requirements from States, the APIRG Projects Coordination Committee (APCC) has established an APIRG Annual Air Navigation Reporting Team (AANRT), which is tasked with developing the APIRG Annual Air Navigation Report based on available information, including air navigation deficiency list, global/regional reports, survey results, studies, gap analyses, etc.

7.5   The meeting noted the initial membership of the AANRT included ASECNA, ATNS, AIRBUS, IATA, and CANSO, supported by the Chairperson, Vice-Chairpersons and the Secretariat of the APIRG, and agreed that the full membership should normally include representatives from States and relevant stakeholders, including air navigation service providers, airspace users, aircraft manufacturers, professional organizations, monitoring agencies, international/regional organizations, etc.

7.6   The meeting also agreed that the First Edition of the APIRG Annual Air Navigation Report should be released before the end of December 2017, and accordingly requested the AANRT to immediately start its assigned work. A copy of the contents of the Annual Report which is provided at **Appendix 7.6A** to this report was shared with participants for review and comments as necessary.

DECISION 21/38:   ANNUAL APIRG AIR NAVIGATION REPORT

     That;

- a) **Annual APIRG Air Navigation Reporting Team (AANRT) undertake its activities to produce the first report by the end of 2017; and**
- b) **States provide comments on the contents of the first Annual APIRG Air Navigation Report within 14 days effective from 11 October 2017**

AGENDA ITEM 8:   PROPOSED 2017-2019 APIRG WORK PROGRAMME

8.1   The meeting recalled that APIRG/20 Meeting reviewed and updated the work programme of the Group, in order to continuously meet its primary responsibility for the development and maintenance of regional air navigation plans, as well as the identification and resolution of air navigation deficiencies.

8.2   The Group noted the challenges encountered in operationalization of the new APIRG Structure and working methodology, notably the commencement of the APIRG Projects and effectively implementation at Project Team level. Accordingly, the meeting urged the secretariat and the States/organizations to expedite the nomination of required expertise to the different APIRG Sub-Groups and their subsidiary bodies and project implementation.

8.3   Taking into consideration the above, the scope of the Group's activities, its mandate and on-going regional and global developments relating to the implementation of safe air navigation services in the AFI region, the meeting endorsed the work programme as per **Appendix 8.3A** to this APIRG report.

AGENDA ITEM 9:   ANY OTHER BUSINESS

Project Loon

9.1   The meeting was briefed on Project Loon, a high-altitude, heavy, free unmanned balloon network that aims to bring the internet to underserved parts of the world, and noted its concept of operation which entailed crossings of multiples of FIRs globally by the project balloons on a continuing basis.

9.2   The meeting noted that while the service provision of the project was associated with telecommunication organs of States, operation of its "free balloons" pertained to use of the airspaces. In this regard, the Group noted that the Secretary General of ICAO had circulated State Letter AN13/22.1-16/42 dated 17 June 2016 to States, drawing their attention to Annex 2 – *Rules of the Air, Appendix 5, Unmanned Free Balloons,* with respect to this "first-of-its-kind" project which is increasingly impacting on the global airspace. The Secretary General further referred to the necessity for States to assess mechanisms to support safety of flight operations in their respective airspaces in light of the potential for this heretofore unanticipated increase in high altitude balloon traffic.

9.3   The meeting also noted that the Thirty-ninth Session of the ICAO Assembly acknowledged the project's support to the UN SDGs 9 and 17, and noted that ICAO had initiated work on enhancing current Standards regarding unmanned free balloons, which would facilitate such operations. In this context, the Assembly called on States and ANSPs to review the information contained in the ICAO State Letter on the subject (AN13/22.1-16/42), and, in light of that information, review procedures and establish Letters of Agreements (LoAs) to ensure safe overflight provision.
9.4   The Group noted the information provided in regard to the concept of operation of the 1200 project's balloons over thousands of flight hours, and millions of flight kilometres, including some their current flights in the AFI Region.

9.5   In view of the above, the Group reminded AFI States of State Letter from the ICAO Secretary General and outcome of the 39th Assembly Session, with regard to, inter alia, support to the project's expansion, review of procedures, and establishment of Letters of Agreements (LoA) to ensure safe overflight provision and contingencies.

AGENDA ITEM 10:   VENUE AND DATE OF THE NEXT MEETING OF THE APIRG

10.1   The Group agreed that Secretariat will coordinate and communicate in due course the venue and date of the next Meeting of the APIRG, mindful of the relevant provisions of the APIRG Procedural Handbook and the Regional Offices work programmes.