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AIR NAVIGATION PLAN – AFRICA-INDIAN OCEAN REGION

Disclaimer

The AFI eANP will be presented for review and endorsement by the APIRG/20 Meeting (Abidjan, Cote D'Ivoire, 30 November to 2 December 2015) before submission for approval by the ICAO Council.

AIR NAVIGATION PLAN – AFRICA-INDIAN OCEAN REGION

VOLUME I

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AFI ANP VOLUME I

PART 0 – INTRODUCTION

1. GENERAL

1.1 On 18 June 2014, the ICAO Council decided that the regional air navigation plans (ANPs) should be published in three volumes.

1.2 ANP Volume I contains stable plan elements whose amendment necessitates approval by the Council such as the assignment of responsibilities to States for the provision of aerodrome and air navigation facilities and services in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300); and the current to medium term mandatory general regional requirements related to aerodrome and air navigation facilities and services to be implemented by States in accordance with regional air navigation agreements and requirements specific to the region which are not covered in the ICAO Standards, Recommended Practices and Procedures (SARPs) and Procedures for Air Navigation Services (PANS). The material to be included in Volume I should minimise the requirement for frequent amendment. The following is a non-exhaustive list of such elements:

- Flight Information Regions (FIR) boundaries (Table and Charts);
- Search and Rescue Regions (SRR) boundaries (Table and Charts);
- Volcanic Ash Advisory Centres (VAAC);
- Tropical Cyclone Advisory Centres (TCAC); and
- Volcano Observatories (VO).

1.3 ANP Volume II contains dynamic plan elements material related to the assignment of responsibilities to States for the provision of aerodrome and air navigation facilities and services and the current to medium term mandatory (general and specific regional) requirements related to aerodrome and air navigation facilities and services to be implemented by States in accordance with regional air navigation agreements. The amendment of these elements does not require approval by the Council. The following is a non-exhaustive list of such elements:

- Major traffic flows;
- ATS route network;
- Meteorological Watch Offices (MWO);
- Secondary Surveillance Radar (SSR) codes;
- Five-letter name-codes; and
- VOLMET Broadcasts.

1.4 ANP Volume III contains dynamic/flexible plan elements providing implementation planning guidance for air navigation systems and their modernization taking into consideration emerging programmes such as the ICAO Aviation System Block Upgrades (ASBUs) and associated technology roadmaps described in the *Global Air Navigation Plan* (GANP) (Doc 9750). The ANP Volume III would also include appropriate additional guidance, particularly with regard to implementation, to complement the material contained in the ANP Volumes I and II. The elements in ANP Volume III are thus not subject to the issuance of ICAO Planning and Implementation Regional Groups (PIRGs) deficiencies. The amendment of these elements does not require approval by the Council.

Note 1: The ANP does not list all facilities in the region(s) but only those required for international civil aviation operations. Documents from the Integrated Aeronautical Information Package and other States publications should be consulted for information on additional facilities and for operational information in general.

Note 2: The general structure of the regional plans for the parts which concern an air navigation field in Volumes I and II consists of an "Introduction", "General Regional Requirements" and "Specific Regional Requirements". Only Tables shown under "General Regional Requirements" are harmonized for all Regions. Should a Region require a Table for a specific field, this should be reflected under "Specific Regional Requirements" of the subject concerned. The naming convention for such tables consists of the technical field concerned (AOP, CNS, ATM, MET, SAR and AIM), the ANP Volume number (I or II), the Region (APAC, AFI, CAR/SAM, EUR, MID, NAM and NAT) and the consecutive number of the table. Examples are as follows: Table ATM I-EUR-1, Table CNS II-MID-1 or Table MET I-AFI-2.

1.5 Guidance material on the detail of programmes or concepts should be contained in supplementary material referenced appropriately or adopted as (***NAME of document(s) yet to be confirmed***) Documents.

2. RELATIONSHIP BETWEEN THE GLOBAL AND REGIONAL AIR NAVIGATION PLANS

2.1 The ANPs represent the bridge between, on one side, the global provisions in the ICAO SARPs and the GANP, and on the other side, the States' air navigation plans and implementation status.

2.2 The GANP represents a rolling, 15-year strategic methodology which leverages existing technologies and anticipates future developments based on State/industry-agreed operational objectives. The GANP is an overarching framework that includes key aviation policy principles to assist ICAO Regions, sub-regions and States with the preparation of their regional and State air navigation plans and to support the establishment of air navigation priorities.

3. OBJECTIVE AND PURPOSE OF REGIONAL AIR NAVIGATION PLANS

3.1 The ANPs provide for the planning and implementation of air navigation systems within a specified area, in accordance with the agreed global and regional planning framework. They are developed to meet those needs of specific areas not covered in the worldwide provisions. The development and maintenance of the ANPs is undertaken by ICAO PIRGs with the assistance of the ICAO Secretariat.

3.2 The ANPs are used as a repository Document for the assignment of responsibilities to States for the provision of air navigation facilities and services within a specified area in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300).

3.3 The ANPs contain requirements related to the facilities and services to be implemented by States in accordance with regional air navigation agreements. The procedural parts of ANPs are published in the *ICAO Regional Supplementary Procedures* (SUPPs) (Doc 7030).

3.4 The ANPs contain provisions that States can follow in the planning of aerodrome and air navigation facilities and services activities, with the assurance that facilities and services furnished in accordance with the plan will form with those of other States an integrated system adequate for the foreseeable future.

3.5 The ANPs may serve as a legal basis for air navigation services charges which are levied for services provided or made available to users, in accordance with ICAO's *Policies on Charges for Airports and Air Navigation Services* (Doc 9082) and *ICAO Manual on Air Navigation Services Economics* (Doc 9161).

3.6 The ANPs support the performance-based approach to planning adopted by ICAO to measure the efforts made by States in implementing the agreed requirements.

4. MANAGEMENT AND AMENDMENT OF REGIONAL AIR NAVIGATION PLANS

4.1 The elements of the existing planning system and the planning principles, operational requirements and planning criteria as developed for the AFI Region are kept under constant review by the APIRG in accordance with its schedule of meetings, in consultation with provider and user States and with the assistance of the ICAO Regional Office(s) concerned.

4.2 The detailed amendment procedure of the three ANP Volumes is described in paragraph 5 below.

5. PROCEDURE FOR THE AMENDMENT OF REGIONAL AIR NAVIGATION PLANS

5.1 The procedure for the amendment of regional air navigation plans in three Volumes as approved by the Council is shown in **Appendix A**.

6. ABBREVIATIONS

6.1 The abbreviations used in this document are contained in the *Procedures for Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC)* (Doc 8400), with the exception of those used in the explanations of any tables appearing herein, which also give their meaning.

7. ESTABLISHMENT AND PROVISION OF A MULTINATIONAL ICAO AIR NAVIGATIONFACILITY/SERVICE

7.1 The operation of multinational air navigation services is well established within the AFI Region. The ICAO *Manual on Air Navigation Services Economics* (Doc 9161) details the ICAO policies on charges for air navigation services and provides additional information on the various models adopted globally. The introduction of multi-national air navigation services does not dilute the principle that a State has the responsibility of overseeing the provision of air navigation services and that it shall maintain that responsibility within its sovereign airspace as well as within the airspace over the high seas for which it has accepted the responsibility for the provision of services. Where there is no intention to change or modify the FIR boundaries nor the facilities and services currently listed in the ANP there is not a requirement to amend the ANP. However, should changes to the FIR boundaries or to the facilities and services provided be required, such changes are likely to be subject to the ANP amendment procedure and should therefore be examined on a case-by-case basis. Advice on this issue can be obtained from the ICAO Regional Office(s). Any multinational arrangements for the provision of air navigation services should be registered with ICAO (Article 83 of the Convention (Doc 7300) and ***Rules for Registration with ICAO of Aeronautical Agreements and Arrangements*** **(**Doc 6685)).

APPENDIX A - PROCEDURE FOR THE AMENDMENT OF REGIONAL AIR NAVIGATION PLANS

(Approved by Council on 18 June 2014)

1. Introduction

1.1. The procedure outlined below has been evolved to provide a means of maintaining the regional air navigation plans using an ANP web based platform.

2. General criteria

2.1. The Assembly has resolved that regional plans should be revised when it becomes apparent that they are no longer consistent with current and foreseen requirements of international civil aviation and that, when the nature of a required change permits, the associated amendment of the regional plan should be undertaken by correspondence between the Organization and the States and international organizations concerned.

2.2. When a State cannot immediately implement a particular part or a specific detail of a regional plan although it intends to do so, when practicable, this in itself should not lead to the State proposing an amendment to the plan.

2.3. The general structure of the regional plans for the parts which concern an air navigation field in Volumes I and II consists of an "Introduction", "General Regional Requirements" and "Specific Regional Requirements". As the section "General Regional Requirements" is harmonized for all regions, an amendment of the provisions (text) in "General Regional Requirements" will lead to amendment of Volumes I and II of the regional plans of all regions.

2.4. The amendment process of Volume III is under the responsibility of the relevant Planning and Implementation Regional Group (PIRG). The Parts 0 (Introduction) and I (General Planning Aspects) of Volume III are harmonized for all regions and the amendment of these parts should be made following inter-regional coordination.

3. User rights

3.1. Access to the ANP web based platform to develop and submit amendment proposals to the regional plan and to comment on an officially issued amendment proposal should be provided through controlled access by the State's or international organization's designated Focal Points. The State or international organization should officially inform their respective Regional Office of the registration of their designated Focal Points.

4. States and international organizations to be consulted

4.1. The Secretary General, through the relevant Regional Office, will determine the States and international organizations to be consulted on the amendment proposal. These will generally only include the provider and user States and international organizations that have a direct and obvious interest in the amendment in question.

PART A — AIR NAVIGATION PLANS, VOLUME I

5. Procedure for amendment of Volume I

5.1. If, in the light of the above general criteria, any State (or group of States) wishes to effect a change in the approved air navigation plan for that region, it should propose to the Secretary General, through the Regional Office accredited to that State, an appropriate amendment to the plan, adequately documented; the proposal should include the facts that lead the State (or group of States) to the conclusion that the amendment is necessary. Such amendments may include additions, modifications or deletions. (This procedure does not preclude a State having previous consultation with other States before submitting an amendment proposal to the Regional Office.) This proposed amendment should be submitted via the web based tool and/or by correspondence to the Regional Office.

5.2. Upon studying the proposal, if the Secretary General considers that the proposed amendment requires further coordination through the relevant Planning and Implementation Regional Group (PIRG), the proposal will be presented, adequately documented, to the PIRG. The views of the PIRG will be coordinated with the originating State and the proposed amendment will be updated via the ANP web based platform for processing proposals for amendment for approval by the Council.

5.3. If the proposal concerns an amendment of the provisions (text) in “General Regional Requirements”, the Secretary General will coordinate and circulate, through all Regional Offices, an amendment of all the regional plans.

5.4. If the Secretary General considers that the proposed amendment conflicts with established ICAO policy, or that it raises questions which the Secretary General considers should be brought to the attention of the Air Navigation Commission, the proposal will be presented, adequately documented, to the Commission. In such cases, the Commission will decide the action to be taken on the proposal.

5.5. The Secretary General, through the Regional Office, will circulate the proposal, adequately documented, with a request for comments to all provider and user States of the region considered affected as well as to user States outside the region and international organizations which may be invited to attend suitable ICAO meetings and which may be concerned with the proposal. The States and international organizations concerned should either send their comments/agreement/objection via the ANP web based platform and/or by correspondence to the Regional Office. Any comment or objection should be adequately supported by reasons for the comment or objection.

5.6. If, in reply to the Secretary General's inquiry, no objection is raised to the proposal by a specified date, the proposal should be submitted to the President of the Council, who is authorized to approve the amendment on behalf of the Council. The approved amendment should be incorporated into Volume I of the regional plan.

5.7. If, in reply to the Secretary General's inquiry, any objection is raised, and if objection remains after further consultation, the matter will be documented for discussion by the respective planning and implementation regional group (PIRG) and, ultimately for formal consideration by the Air Navigation Commission, if necessary. If the Commission concludes that the amendment is acceptable in its original or other form, it will present appropriate recommendations to the Council.

5.8. Proposals for the amendment of Volume I of the regional plan submitted by international organizations directly concerned with the operation of aircraft, which may be invited to attend suitable ICAO meetings and which attended the meeting(s) where the relevant regional plan is managed, will be dealt with in the same manner as those received from States, except that, before circulating a proposal to States and selected international organizations, the Secretary General will ascertain whether it has adequate support from the State or States whose facilities will be affected. If such support is not forthcoming, the proposal will be presented to the Commission, and the Commission will decide on the action to be taken on the proposal.

5.9. Proposals for the amendment of Volume I of the regional plan may also be initiated by the Secretary General, through the Regional Office accredited to that State, provided that the State or States whose facilities will be affected have expressed their concurrence with the proposal.

5.10. Amendments to Volume I of the regional plan which have been approved in accordance with the above procedure will be published in the ANP web based platform at convenient intervals.

PART B — AIR NAVIGATION PLANS, VOLUME II

6. Procedure for amendment of Volume II

6.1. Amendments of Volume II of the regional plan should be effected on the basis of an adequately documented proposal submitted by a State (or a group of States) or the relevant PIRG to the Secretary General, through the Regional Office accredited to that State. The proposal should include the facts that lead to the conclusion that the amendment is necessary. Such amendments may include additions, modifications or deletions to Volume II of the regional plan. (This procedure does not preclude a State having previous consultation with other States before submitting an amendment proposal to the Regional Office.) This proposed amendment should be submitted via the ANP web based platform and/or by correspondence to the Regional Office.

6.2. If the proposal concerns an amendment of the provisions (text) in “General Regional Requirements”, the Secretary General will coordinate and circulate, through all Regional Offices, an amendment of all the regional plans.

6.3. The ICAO Regional Office will circulate the proposal, adequately documented, with a request for comments to all providers and user States of the region considered affected as well as to user States outside the region and international organizations which may be invited to attend suitable ICAO meetings and which may be concerned with the proposal. The States and international organizations concerned should either send their comments/agreement/objection via the ANP web based platform and/or by correspondence to the Regional Office. Any comment or objection should be adequately supported by reasons for the comment or objection.

6.4. If, in reply to the ICAO Regional Office’s inquiry, no objection is raised to the proposal by a specified date, it will be deemed that a regional agreement on the subject has been reached and the proposed amendment should be incorporated into Volume II of the regional plan.

6.5. If, in reply to the ICAO Regional Office's inquiry, any objection is raised, and if objection remains after further consultation, the matter will be documented for discussion by the respective planning and implementation regional group (PIRG) and, ultimately for formal consideration by the Air Navigation Commission, if necessary. If the Commission concludes that the amendment is acceptable in its original or other form, it will present appropriate recommendations to the Council.

6.6. Proposals for the amendment of Volume II of the regional plan submitted by international organizations directly concerned with the operation of aircraft, which may be invited to attend suitable ICAO meetings, where the relevant regional plan is managed, will be dealt with in the same manner as those received from States, except that, before circulating a proposal to States and selected international organizations, the Secretary General will ascertain whether the proposal has adequate support from the State or States whose facilities or services will be affected. If such support is not forthcoming, the proposal will not be pursued.

6.7. Proposals for the amendment of Volume II of the regional plan may also be initiated by the Secretary General, through the Regional Office accredited to that State, provided that the State or States whose facilities or services will be affected have expressed their concurrence with the proposal.

6.8. Amendments to Volume II of the regional plan which have been approved in accordance with the above procedure will be published in the ANP web based platform at convenient intervals.

PART C — AIR NAVIGATION PLANS, VOLUME III

7. Procedure for amendment of Volume III

7.1. Amendments of Volume III of the regional plan are under the responsibility of the relevant Planning and Implementation Regional Group (PIRG) and not subject to a formal application of the procedure for amendment of the ANP described in Parts A and B above. However, the amendment of the provisions of Part 0 - "Introduction" and Part I - "General Planning Aspects" needs special coordination, as specified in 1.4 below. Since these two Parts are harmonized for all regions, an amendment of the provisions contained there-in will lead to amendment of Parts 0 and I of Volume III of the regional plans of all regions.

7.2. Amendments of Volume III of the regional plan should be effected on the basis of an adequately documented proposal submitted to the ICAO Regional Office concerned by:

- a State (or a group of States); or
- the relevant Planning and Implementation Regional Group (PIRG) of the region(s); or

the ICAO Secretariat; or

- international organizations directly concerned with the operation of aircraft, which may be invited to attend suitable ICAO meetings and/or which attended the meeting(s) where the relevant Volume III amendments were agreed.

7.3. This procedure does not preclude a State (or group of States) having previous consultation with other States before submitting an amendment proposal to the Regional Office. Such amendments may include additions, modifications or deletions to Volume III of the regional plan. In addition, the facts that led to the conclusion that the amendment should be included.

7.4. If the proposal concerns an amendment of the provisions in Part 0 - "Introduction" or Part I - "General Planning Aspects", the ICAO Regional Office concerned will submit the proposal to ICAO Headquarters (Air Navigation Bureau) for coordination with all ICAO Regional Offices. The views of the ICAO Regional Offices will be taken into consideration in the consolidation/approval of the amendment by the ANB. The approved amendment will be published in Volume III of all regional plans at convenient intervals.

7.5. The mechanism for the amendment of Part II of Volume III of the regional plan should be developed, agreed by the relevant PIRG and reflected in the relevant PIRG Handbook.

AFI ANP VOLUME I

PART I – GENERAL PLANNING ASPECTS (GEN)

1. GEOGRAPHICAL SCOPE

1.1 The AFI ANP is related to the ICAO AFI air navigation region. The ANP may call for the provision of basic facilities and services beyond the charted boundaries of a region where such facilities and services are necessary to meet the requirements of international air navigation within that region.

2. FLIGHT INFORMATION REGIONS

2.1 Table GEN I-1 shows the current Flight Information Regions (FIR)/Upper Information Regions (UIR) which are part of the ICAO AFI Region. More details of the FIRs and UIRs within the AFI air navigation region are contained in **Table ATM I-1** and **Charts ATM I-1** and **ATM I-2**.

3. STATES' RESPONSIBILITIES

3.1 Each Contracting State is responsible for the provision of facilities and services in its territory under Article 28 of the Convention as well as within the airspace over the high seas for which it has accepted the responsibility for the provision of services. The Council has recommended that these facilities and services include those specified in the ANPs.

3.2 The inclusion of the basic facilities and services provided by non-Contracting States and territories in regional ANPs is simply recognition that they are needed by or likely to affect international civil aircraft operations of Contracting States or the facilities and services of these States.

4. AFI REGIONAL PLANNING

4.1 The regional planning and implementation process is the principal engine of ICAO's planning framework. It is here that the top-down approach comprising global guidance and regional harmonization measures converges with the bottom-up approach constituted by national planning by States.

4.2 PERFORMANCE BASED APPROACH

4.2.1 Global Approach

4.2.1.1 In an effort to assist planners in weighing outcomes and making appropriate decisions, the *Manual on Global Performance of the Air Navigation System* (Doc 9883) has been developed. In this respect ICAO has defined 11 Key Performance Areas (KPA), one for each of the *Global ATM Operational Concept* (Doc 9854) expectations outlined below.

4.2.1.2 These general expectations are relative to the effective operation of the ATM system. The ICAO planning objective is to achieve a performance based global air traffic management (ATM) system through the implementation of air navigation systems and procedures in a safe, progressive, cost-effective and cooperative manner.

5. RELATIONSHIP BETWEEN GLOBAL, REGIONAL AND NATIONAL PLANNING

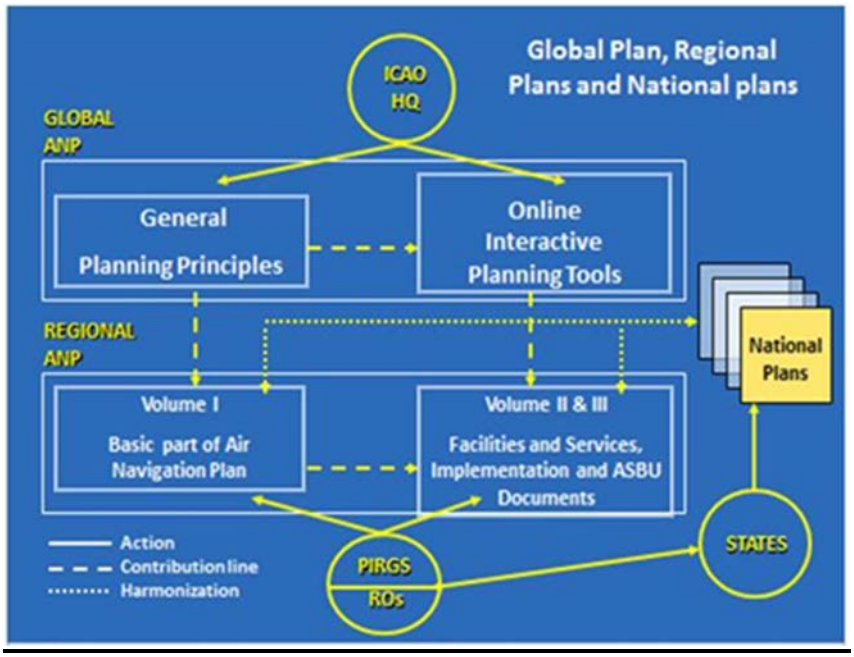

Figure 1. Relationship between global, regional and national plans.

5.1 Planning takes place at global, regional and national levels. Planning is accomplished with the help of planning tools and methodologies that are used primarily at the regional and national levels, conditioned by guidance from the global level. The basis for effective planning is the GANP (Doc 9750), which should support the development of regional and national implementation plans that will support system architectures.

6. HUMAN RESOURCE PLANNING

6.1 Human resource planning can be considered "*the systematic and continuing process of analysing an organisation's human resource needs under changing conditions and developing personnel policies appropriate to the longer-term effectiveness of the organisation. It is an integral part of corporate planning and budgeting procedures since human resource costs and forecasts both affect and are affected by longer-term corporate plans.*"

6.2 Estimating current and future requirements for civil aviation personnel and training capacity is essential for human resource planning, institutional capacity building, and related funding and policy measures. Such planning will need to take into account the interdependencies for supply and demand of qualified personnel at national, regional and global levels.

6.3 Human Performance

6.3.1 The high level of automation and interdependencies across aviation disciplines will only increase with evolving air navigation systems. To maximise potential safety and efficiency benefits that these offer, the development of human-driven, rather than engineering-driven interfaces is required, making it easier for the human operator to make sound decisions and take correct actions. Similarly, as part of a safety management systems approach, procedures need to be identified for the use of current and new technologies that take into account human capabilities and manage the risk associated with human limitations.

6.3.2 States should:

a) Identify a certification process that requires at the design stage:

i) recognition of the potential human performance issues that the proposed new technology attempts to address;

ii) consideration of the potential human performance issues, including changes in roles and the effects on individual and team behaviours, that may be introduced by the proposed new technology.

b) Identify processes for the implementation of new technologies, systems and procedures that describes the means by which human performance considerations can be addressed within operational contexts.

c) Consider the management of human performance-related risks as a necessary and essential aspect of the oversight of safety management systems.

d) Ensure that their technical personnel have exposure to training in human factors.

6.4 **Training**

6.4.1 A major goal of CNS/ATM systems is to create a seamless air navigation system. A seamless air navigation environment will require adequately qualified personnel prepared to perform their jobs in an evolving environment. At the same time, shortcomings in human resource planning and training are frequently mentioned as one of the reasons for the lack of implementation of regional ANPs. Human resource development challenges will be compounded during the transition period to CNS/ATM systems. As the existing and emerging air navigation technologies will co-exist in parallel for a period of time, civil aviation personnel will need to learn new skills, whilst retaining those needed to operate and maintain existing systems. To meet this challenge, a cooperative approach should be used in civil aviation training within the region. This approach should:

a) ensure that the training needs for the region are identified, documented and kept up to date;

b) facilitate the access to specialized types of training needed within the region or sub-regions that individual States cannot justify based on their national training needs alone;

c) ensure that a balanced market exists to support the development and on-going implementation of high-quality training in one or more training centres within the region or sub-regions;

d) endeavour to distribute equitably regional training activities among the training centres established within the region or sub-regions.

e) take advantage of readily available training materials including those available through the TRAINAIR Plus sharing system.

6.4.2 Appropriate bodies should be established to facilitate regional and sub-regional training planning. A quantitative approach should be used to determine the training capabilities needed within a region or sub-region. Decisions concerning required training capabilities should be based on an aggregate of training needs for existing air navigation technologies, as well as emerging technologies. A State consultation process should be used to formulate a plan for the establishment of specific regional training centres.

6.5 **Training of technical personnel**

6.5.1 States should develop and implement comprehensive training programmes and periodic training plans for all technical staff, including initial, on-the-job, recurrent and specialized training.

7. SAFETY CONSIDERATIONS

7.1 Safety fundamentally contributes to the sustainable growth of a sound and economically viable civil aviation system that continues to foster economic prosperity and social development. With air traffic projected to double in the next 15 years, safety risks must be addressed proactively to ensure that this significant capacity expansion is carefully managed and supported through strategic regulatory and infrastructure developments. It is imperative therefore that States and regions remain focused on their safety priorities as they continue to encourage expansion of their air transport sectors.

7.2 Acceptable safety levels are related to the establishment of State safety programmes (SSPs) that are able to anticipate and effectively respond to safety-related occurrences, resulting in continual improvements to an already low global accident rate. The *Global Aviation Safety Plan* (GASP) specifically establishes targeted safety objectives and initiatives that support SSP implementation while ensuring the efficient and effective coordination of complementary safety activities between all stakeholders.

7.3 PIRGs should harmonize activities undertaken to address aviation safety issues on a regional basis with the Regional Aviation Safety Groups (RASGs). In addition, PIRGs should coordinate relevant safety matters with RASGs to ensure consistency and avoid overlap.

7.4 PIRGs should ensure that air navigation services development programmes are consistent with the GASP safety objectives and initiatives. States are responsible for the prompt elimination of their air navigation deficiencies. Detailed information on the process of identifying and managing air navigation deficiencies is contained in the APIRG Handbook.

7.5 Adherence to ICAO Standards and Recommended Practices (SARPs) will significantly contribute to aviation safety. States should therefore ensure that they have the necessary regulatory framework in place to reinforce the adoption of ICAO SARPs within their national regulations. States should also ensure that any differences to ICAO SARPs have been assessed in respect of safety and are notified in accordance with ICAO requirements.

7.6 **Unsatisfactory Conditions Reporting**

7.6.1 States should act on any serious problems encountered due to the lack of implementation or prolonged unavailability of air navigation facilities or services required by the ANPs as reported by users of air navigation facilities and services.

8. ENVIRONMENT CONSIDERATIONS

8.1 It is an ICAO Strategic Objective to minimize the adverse effects of global civil aviation on the environment. PIRGs should ensure that environmental factors are taken into consideration when performance based systems implementation plans are developed and may wish to coordinate their plans with the State Action Plans on CO_2 Emissions Reduction. The results of environmental analysis can be useful in providing national decision-makers within the various sub-regions with information upon which to base airspace architecture decisions and in providing information on what the aviation industry is doing now to protect the environment in the future. Tools such as the ICAO Fuel Savings Estimation Tool (IFSET) are available from the ICAO public website to help quantify the environmental benefits from operational improvements. Environmental considerations should, however, not compromise acceptable levels of safety and be balanced against operational and economic considerations.

9. AIR TRAFFIC FORECASTS

9.1 Regional traffic forecasting supports the regional air navigation system planning. All States generally prepare individual forecasts, taking account of the regional information, for national planning purposes. A uniform strategy has been adopted by ICAO for the purpose of preparing traffic forecasts and other planning parameters in support of the regional planning process. This information should be shared through at least the sub-regional groupings to enable effective regional planning development.

10. CONTINGENCY PLANNING

10.1 Contingency plans may constitute a temporary deviation from the approved ANPs; such deviations are approved, as necessary, by the President of the ICAO Council on behalf of the Council.

10.2 The effects of disruption of services in particular portions of airspace are likely to affect significantly the services in adjacent airspace. States should co-ordinate with neighbouring States in the development and implementation of contingency plans, which in some cases may be developed on a sub-regional basis.

10.3 ICAO will initiate and coordinate appropriate contingency action in the event of disruption of air traffic services and related supporting services affecting international civil aviation operations provided by a State in the event that the authorities cannot adequately discharge their responsibility for the provision of such services to ensure the safety of international civil aviation operations. In such circumstances, ICAO will work in coordination with States responsible for airspace adjacent to that affected by the disruption and in close consultation with international organizations concerned.

10.4 Regional contingency plans will be developed, approved and maintained by APIRG with the support of ICAO and other organizations.

10.5 States should prepare their contingency plans in advance and ensure their availability or accessibility to the ICAO Regional Office. The plans should be reviewed at regular intervals and updated as required.

TABLE GEN I-1

FLIGHT INFORMATION REGIONS (FIR)/UPPER INFORMATION REGIONS (UIR) OF THE ICAO AFI REGION

Column		
1	**State**	**Name of State**
2	**FIR/UIR**	**Name of FIR/UIR**

STATE	**FIR/UIR**
1	2
Angola	Luanda
Benin	Accra, Niamey
Botswana	Gaborone
Burkina Faso	Dakar, Niamey
Burundi	Bujumbura
Cameroon	Brazzaville, N'djamena
Cape Verde	Sal
Central African Republic	Brazzaville, N'djamena
Chad	N'djamena
Comoros	Antananarivo
Congo	Brazzaville
Côte D'Ivoire	Dakar
Democratic Republic of Congo	Kinshasa
Djibouti	Addis Ababa
Ethiopia	Addis Ababa
Equatorial Guinea	Brazzaville
Eritrea	Asmara
Gabon	Brazzaville
Gambia	Dakar
Ghana	Accra
Guinea	Roberts
Guinea Bissau	Dakar
Kenya	Nairobi
Lesotho	Johannesburg
Liberia	Roberts
Madagascar	Antananarivo
Malawi	Lilongwe
Mali	Dakar, Niamey
Mauritania	Dakar
Mauritius	Mauritius
Mozambique	Beira
Namibia	Windhoek
Niger	Niamey, N'djamena
Nigeria	Kano
Rwanda	Kigali
Sao Tome and Principe	Brazzaville
Senegal	Dakar
Seychelles	Seychelles
Sierra Leone	Roberts
Somalia	Mogadishu
South Africa	Johannesburg, Cape Town, Johannesburg Oceanic
South Sudan	Khartoum
Swaziland	Johannesburg
Togo	Accra
Uganda	Entebbe
United Republic of Tanzania	Dar es Salaam
Zimbabwe	Harare

AFI ANP VOLUME I

PART II – AERODROMES / AERODROME OPERATIONS (AOP)

1. INTRODUCTION

1.1 This part of the AFI ANP constitutes the agreed regional requirements considered to be the minimum necessary for effective planning and implementation of aerodromes operations (AOP) facilities and services in the AFI Region(s) and complements the provisions of ICAO Standards, Recommended Practices and Procedures (SARPs) related to AOP. It contains stable plan elements related to the assignment of responsibilities to States for the provision of aerodrome facilities and services within the Region(s) in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300) and mandatory requirements related to the AOP facilities and services to be implemented by States in accordance with regional air navigation agreements.

1.2 The dynamic plan elements related to the assignment of responsibilities to States for the provision of the aerodrome facilities and services including the mandatory requirements based on regional air navigation agreements related to the AOP are contained in the AFI ANP Volume II Part II - AOP.

1.3 The AFI ANP Volume III contains dynamic/flexible plan elements related to the implementation of air navigation systems and their modernization in line with the ICAO Aviation System Block Upgrades (ASBUs) methodology and associated technology roadmaps described in the Global Air Navigation Plan. The Aviation System Block Upgrades (ASBU) modules are aimed at increasing capacity and improving efficiency of the aviation system whilst maintaining or enhancing safety level, and achieving the necessary harmonization and interoperability at regional and global level. This includes the regionally agreed ASBU modules applicable to the specified ICAO region/sub-region and associated elements/enablers necessary for the monitoring of the status of implementation of these ASBU modules.

Standards, Recommended Practices and Procedures

1.4 The Standards, Recommended Practices and Procedures (SARPs) and associated guidance material applicable to the provision of AOP are contained in:

a) Annex 14 — *Aerodromes*, Volumes I and II;

b) *Procedures for Air Navigation Services – Aerodromes* (PANS-Aerodromes) (Doc 9981) *(pending final approval)*;

c) *Airport Planning Manual* (Doc 9184);

d) *Aerodrome Design Manual* (Doc 9157);

e) *Airport Services Manual* (Doc 9137);

f) *Manual on Certification of Aerodromes* (Doc 9774);

g) *Assessment, Measurement and Reporting of Runway Surface Conditions* (Cir 329);

h) *Operation of New Larger Aeroplanes at existing aerodromes* (Cir 305);

i) *Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual* (Doc 9830);

j) *Manual of Surface Movement Guidance and Control Systems (SMGCS)* (Doc 9476);

k) *Heliport Manual* (Doc 9261);

l) *Manual on the prevention of runway incursions* (Doc 9870);

m) *Stolport Manual* (Doc 9150);

n) *ICAO Bird Strike Information System Manual* (Doc 9332); and

o) *Manual on Civil Aviation Jet Fuel Supply* (Doc 9977).

2. GENERAL REGIONAL REQUIREMENTS

2.1 Regular aerodromes and their alternates required for international commercial air transport operations should be determined through regional agreements, based on the list of international aerodromes designated by States and the needs of the international commercial flights. Consideration should also be given to the needs of international general aviation flights as identified by user requirements. The alternate aerodromes should be planned/selected, to the greatest practicable extent, from the list of existing regular aerodromes used for international aircraft operations. However, where in specific cases the designation of another aerodrome in close proximity to a regular aerodrome would result in appreciable fuel conservation or other operational advantages, this aerodrome may be designated for use as an alternate aerodrome only. Planning of alternate aerodromes should be made on the basis of the following objectives:

a) to ensure that at least one suitable alternate is available for each international aircraft operation; and

b) to ensure that the facilities at the designated alternate aerodrome(s) are appropriate for the alternate aircraft operations.

2.2 The list of regular and alternate aerodromes (including their designations) required in the Region(s) to serve international civil aviation operations (international scheduled air transport, non-scheduled air transport and general aviation operations) is given in **Table AOP I-1**. Each Contracting State should ensure the provision of aerodrome facilities and services at the international aerodromes under its jurisdiction.

3. SPECIFIC REGIONAL REQUIREMENTS

None

TABLE AOP I-1

TABLE AOP I-1 INTERNATIONAL AERODROMES REQUIRED IN THE AFI REGION

EXPLANATION OF THE TABLE

City/Aerodrome: Name of the city and aerodrome, preceded by the location indicator.

Designation: Designation of the aerodrome as:

RS — international scheduled air transport, regular use;

RNS — international non-scheduled air transport, regular use;

AS — international scheduled air transport, alternate use;

ANS — international non-scheduled air transport, alternate use.

Note 1 — when an aerodrome is needed for more than one type of use, normally only the use highest on the above list is shown.

[Example — an aerodrome required for both RS and AS use would only be shown as RS in the list.]

Note 2 — when the aerodrome is located on an island and no particular city or town is served by the aerodrome, the name of the island is included instead of the name of a city.

Location Indicator	Name of City/Aerodrome	Designation
Angola		
FNHU	HUAMBO/Albano Machado	RS
FNLU	LUANDA/4 de Fevereiro	RS
BENIN		
DBBB	COTONOU/Cadjehoun	RS
BOTSWANA		
FBFT	FRANCISTOWN/Francistown	RS
FBSK	GABORONE/Sir Seretse Khama Intl	RS
FBKE	KASANE/Kasane	RS
FBMN	MAUN/Maun	RS
FBSP	SELEBI-PHIKWE/Selebi-Phikwe	RS
BURUKINA-FASO		
DFOO	BOBO-DIOULASSO/Bobo-Dioulasso	RS
DFFD	OUAGADOUGOU/Ouagadougou	RS
BURUNDI		
HBBA	BUJUMBURA/Bujumbura	RS
CAMEROUN		
FKKD	DOULA/Douala	RS
FKKR	GAROUA/Garoua	RS
FKKL	MAROUA/Maroua	RS
FKKN	N’GAOUNDERE/N’gaoundere	AS
FKKS	YAOUNDE/Nsimalen	RS
CAPE VERDE		

GVFM	PRAIA/Francisco Mendes	RS
GVAC	SAL I./Amilcar Cabral	RS
CENTRAL AFRICAN REPUBLIC		
FEFF	BANGUI/M'Poko	RS
FEFT	BERBERATI/Berberati	RS
CHAD		
FTTJ	N'DJAMENA/N'Djamena	RS
COMOROS		
FMCV	ANJOUAN/Ouani	RS
FMCZ	DZAOUDZI/Pamanzi, Mayotte I.	RS
FMCH	MORONI/Prince Said Ibrahim	RS
CONGO		
FCBB	BRAZAVILLE/Maya-Maya	RS
FCPP	POINTE-NOIRE/Agostino Neto	RS
COTE D'IVOIRE		
DIAP	ABIDJAN/Felix Houphet Boigny Intl	RS
DIBK	BOUAKE/Bouake	RS
DEMOCRATIC REPUBLIC OF THE CONGO		
FZNA	GOMA/Goma	RS
FZAA	KINSHASA/N'Djili	RS
FZIC	KISANGANI/Bangoka	AS
FZQA	LUBUMBASHI/Luano	AS
FZWA	MBUJI MAYI/Mbuji Mayi	AS

DJIBOUTI		
HDAM	DJIBOUTI/Ambouli	RS
EQUATORIAL GUINEA		
FGSL	MALABO/Malabo	RS
ERITREA		
HHAS	ASMARA/Asmara Intl	RS
HHSB	ASSAB/Assab	RS
ETHIOPIA		
HAAB	ADDIS ABABA/Bole Intl	RS
HADR	DIRE DAWA/Dire Dawa Intl	RS
HABD	BAHIR DAR/Bahir Dar Intl	
HAMR	MEKELE ALULA ABA NEGA/ Mekele Alula Aba Nega Intl	
GABON		
FOON	FRANCEVILLE/M'Vengue	RS
FOOL	LIBREVILLE/Leon M'Ba	RS
FOOG	PORT GENTIL/Port Gentil	RS
GAMBIA		
GBYD	BANJUL/Banjul Intl	RS
GHANA		
DGAA	ACCRA/Kotoka Intl	RS
DGSI	KUMASI/Kumasi	RS
DGLE	TAMALE/Tamale	RS
GUINEA		

GUCY	CONAKRY/Gbessia	RS
GUXN	KANKAN/Diankana	RS
GULB	LABE/Tata	RS
GUNZ	N'ZEREKORE/Konia	RS
GUINEA-BISSAU		
GGOV	BISSAU/Osvaldo Vieira Intl	RS
KENYA		
HKEL	ELDORET/Eldoret Intl	RS
HKMO	MOMBASA/Moi Intl	RS
HKJK	NAIROBI/Jomo Kenyatta Intl	RS
LESOTHO		
FXMM	MASERU/Moshoeshoe I. Intl	RS
LIBERIA		
GLRB	MONROVIA/Roberts Intl	RS
MADAGASCAR		
FMMI	ANTANANARIVO/Ivato	RS
FMNA	ANTSIRANANA/Arrachart	RS
FMNM	MAHANJANGA/Amborovy	RS
FMNN	NOSY-BE/Fascene	RS
FMMS	SAINTE-MARIE/Sainte-Marie	RS
FMMT	TAOMASINA/Taomasina	RS
FMSD	TOLAGNARO/Tolagnaro	RS
MALAWI		
FWCL	BLANTYRE/Chileka	RS

FWLI	LILONGWE/Lilongwe Intl	RS
MALI		
GABS	BAMAKO/Senou	RS
GAGO	GAO/Gao	RS
GAKY	KAYES/Kayes	RS
GAMB	MOPTI-BARBE/Mopti-Barbe	RS
GASO	SIKASSO/Sikasso	RS
GATB	TOMBOUCTOU/Tombouctou	RS
MAURITANIA		
GQPA	ATAR/Atar	RS
GQNI	NEMA/Nema	RS
GQPP	NOUADHIBOU/Nouadhibou	RS
GQNN	NOUAKCHOTT/Nouakchott	RS
GQPZ	ZOUERATE/Zouerate	RS
MAURITIUS		
FIMP	MAURITIUS/Sir Seewoosagur Ramgoolan Intl	RS
Mozambique		
FQBR	BEIRA/Beira	RS
FQMA	MAPUTO/Maputo Intl	RS
NAMIBIA		
FYKT	KEETMANSHOP/Keetmanshop	RS

FYWB	WALVIS BAY/Walvis Bay	RS
FYWH	WENDKOEK/Hosea Kutako	RS
NIGER		
DRZA	AGADES/Sud	RS
DRRN	NIAMEY/Diori Hamani Intl	RS
DRZR	ZINDER/Zinder	AS
NIGERIA		
DNAA	ABUJA/Nnamdi Azikiwe	RS
DNBA	BAUCI/Bauci Intl	RNS
DNBK	BERNIN KEBBI/Sir Ahmadu Bello	RNS
DNCA	CALABAR/Margret Ekpo	RS
DNDS	DUTSE/Dutse Intl	RNS
DNEN	ENUGU/Akanu Ibiam	RS
DNGO	GOMBE/Gombe Intl	RNS
DNIL	ILORIN/Ilorin	AS
DNKA	KADUNA/Kaduna	AS
DNKN	KANO/Mallam Aminu Kano Intl	RS
DNKT	KTSINA/Katsina Intl	RNS
DNMM	LAGOS/Murtala Muhammed	RS
DNMA	MAIDUGURI/Maiduguri	RS
DNMN	MINNA.Minna Intl	
DNPO	PORT HARCOURT/Port Harcourt Intl	RS
DNAI	UYO/Uyo Intl	RNS
DNSO	SOKOTO/Abubakar Saddiq III Intl	RS
DNYO	YOLA/Yola intl	RNS
REUNION (France)		

FMEE	SAINT-DENIS/Gillot la Réunion	RS
RWANDA		
HRYR	KIGALI/Gregoire Kayibanda	RS
SAO TOME AND PRINCIPE		
FPST	SAO TOME/Sao Tome	RS
SENEGAL		
GOGS	CAP SKIRING/Cap Skiring	RS
GOOY	DAKAR/Leopold Sedar Senghor Intl	RS
GOSS	SAINT LOUIS/Saint Louis	RS
GOTT	TAMBACOUNDA/Tambacounda	RS
GOGG	ZIGUINCHOR/Ziguinchor	RS
SEYCHELLES		
FSIA	MAHE/Seychelles Intl	RS
SIERRA LEONE		
GFLL	FREETOWN/Lungi	RS
SOMALIA		
HCMI	BERBERA/Berbera	AS
HCMV	BURAO/Burao	RS
HCMH	HARGEISA/Hargeisa	RS
HCMK	KISMAYU/Kismayu	AS
HCMM	MOGADISHU/Mogadishu	RS
SOUTH AFRICA		
FABL	BLOEMFONTEIN/Bram Fisher	AS

FACT	CAP TOWN/Cap Town	RS
FADN	DURBAN/Kung Shaka	RS
FAJS	JOHANNESBURG/O.R. Tambo	RS
FALA	LANSERIA/Lanseria	RS
FAMM	MAFIKENG/Mafikeng	AS
FANS	NELSPRUIT/Kruger Mpumalanga	RS
FAPB	PIETERSBURG/Gateway	AS
FADE	PORT ELISABETH/Port Elisabeth	AS
FAUP	UPINGTON/Upington	RS
SWAZILAND		
FDMS	MANZINI/Matsapha	RS
TOGO		
DXXX	LOME/Gnassingbe Eyadema Intl	RS
DXNG	NIAMTOUGOU/Niamtougou	RS
UGANDA		
HUEN	ENTEBBE/Entebbe Intl	RS
UNITED REPUBLIC OF TANZANIA		
HTDA	DAR-ES-SALAM/Dar-Es-Salam	RS
HTKJ	KILIMANJARO/Kilimanjoro Intl	RS
HTZA	ZANZIBAR/Zanzibar	RS
ZAMBIA		

FLLI	LIVINGSTONE/Livingstone Intl	RS
FLLS	LUSAKA/Lusaka Intl	RS
FLMF	MFUWE/Mfuwe	RS
FLND	NDOLA/Ndola	RS
ZIMBABWE		
FVBU	BULAWAYO/Bulawayo	RS
FVHA	HARAER/Harare	RS
FVFA	VICTORIA FALLS/Victoria Falls	RS

AFI ANP VOLUME I

PART III – COMMUNICATIONS, NAVIGATION AND SURVEILLANCE (CNS)

1. INTRODUCTION

1.1 This part of the AFI ANP constitutes the agreed regional requirements considered to be the minimum necessary for effective planning and implementation of Communications, Navigation and Surveillance (CNS) facilities and services in the AFI Region and complements the provisions of ICAO Standards, Recommended Practices and Procedures (SARPs) related to CNS. It contains stable plan elements related to the assignment of responsibilities to States for the provision of CNS facilities and services within the ICAO AFI Region in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300) and mandatory requirements related to the CNS facilities and services to be implemented by States in accordance with regional air navigation agreements.

1.2 The dynamic plan elements related to the assignment of responsibilities to States for the provision of CNS facilities and services and the mandatory requirements based on regional air navigation agreements related to CNS are contained in the AFI ANP Volume II, Part III – CNS.

1.3 The AFI ANP Volume III contains dynamic/flexible plan elements related to the implementation of air navigation systems and their modernization in line with the ICAO Aviation System Block Upgrades (ASBUs) methodology and associated technology roadmaps described in the Global Air Navigation Plan. The Aviation System Block Upgrades (ASBU) modules are aimed at increasing capacity and improving efficiency of the aviation system whilst maintaining or enhancing safety level, and achieving the necessary harmonization and interoperability at regional and global level. This includes the regionally agreed ASBU modules applicable to the specified ICAO

region/sub-region and associated elements/enablers necessary for the monitoring of the status of implementation of these ASBU modules.

1.4 In planning for these elements, economy and efficiency should be taken into account in order to ensure that the requirements for the provision of CNS facilities and services can be kept to a minimum. CNS facilities and services should fulfil multiple functions whenever this is feasible.

Standards, Recommended Practices and Procedures

1.5 The Standards, Recommended Practices and Procedures (SARPs) and related guidance material applicable to the provision of CNS are contained in:

a) Annex 10 – *Aeronautical Telecommunications*, Volumes I, II, III, IV and V;
b) Annex 2 – *Rules of the Air*
c) Annex 3 – *Meteorological Service for international air navigation*;
d) Annex 6 – *Operation of Aircraft*, Parts I (Chapter 7), II (Chapter 7) and III (Chapter 5);
e) Annex 11 – *Air Traffic Services*;
f) Annex 12 – *Search and Rescue*;
g) Annex 15 – *Aeronautical Information Services*;
h) *Procedures for Air Navigation Services – Air Traffic Management* (PANS-ATM) (Doc 4444);
i) *Regional Supplementary Procedures* (Doc 7030);
j) *GNSS Manual* (Doc 9849);
k) *Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols* (Doc 9880);
l) *ICAO Aeronautical Telecommunication Network (ATN) Manual for the ATN using IPS Standards and Protocols* (Doc 9896);
m) *Manual of Testing of Radio Navigation Aids* (Doc 8071);
n) *Manual on the Planning and Engineering of the Aeronautical Fixed Telecommunications Network* (Doc 8259);
o) *Manual on Required Communication Performance (RCP)* (Doc 9869);
p) *Training Manual* (Doc 7192);
q) *Performance-based Navigation Manual* (Doc 9613);
r) *Handbook on Radio Frequency Spectrum Requirements for Civil Aviation* (Doc 9718) Volumes I & II;
s) *ICAO Manual on the Secondary Surveillance Radar (SSR) Systems* (Doc 9684);
t) *Manual on Airborne Surveillance Applications* (Doc 9994); and
u) *Manual of Air Traffic Services Data Link Applications* (Doc 9694).

2. GENERAL REGIONAL REQUIREMENTS

Communications

Aeronautical Fixed Service (AFS)

2.1 The aeronautical fixed service (AFS) should satisfy the communication requirements of ATS, AIS/AIM, MET and SAR, including specific requirements in terms of system reliability, message integrity and transit times, with respect to printed as well as digital data and speech communications. If need be, it should, following agreement between individual States and aircraft operators, satisfy the requirements for airline operational control.

The Aeronautical Telecommunication Network (ATN)

2.2 The ATN of the Region should have sufficient capacity to meet the minimum requirements for data communications for the services mentioned in paragraph 2.1 above.

Aeronautical Mobile Service (AMS)

2.3 Air-ground communications facilities should meet the agreed communication requirements of the air traffic services, as well as all other types of communications which are acceptable on the AMS to the extent that the latter types of communications can be accommodated.

Air-ground communications for ATS

2.4 Air-ground communications for ATS purposes should be so designed to require the least number of frequency and channel changes for aircraft in flight compatible with the provision of the required service. They should also provide for the minimum amount of coordination between ATS units and provide for optimum economy in the frequency spectrum used for this purpose.

Air-ground data link communications

2.5 Air-ground data link communications should be implemented in such a way that they are regionally and globally harmonised and make efficient use of available communication means and ensure optimum economy in frequency spectrum use and system automation.

Navigation

2.6 Planning of aeronautical radio navigation services should be done on a total system basis, taking full account of the navigation capabilities as well as cost effectiveness. The total system composed of station-referenced navigation aids, satellite-based navigation systems and airborne capabilities should meet the performance based navigation (PBN) requirements for all aircraft using the system and should form an adequate basis for the provision of positioning, guidance and air traffic services.

2.7 Account should be taken of the fact that certain aircraft may be able to meet their navigation needs by means of self-contained or satellite-based aids, thus eliminating the need for the provision of station-referenced aids along the ATS routes used by such aircraft, as well as the need to carry on board excessive redundancies.

Surveillance

2.8 Planning of aeronautical surveillance systems should be made based on a system approach concept, where collaboration and sharing of data sources should be considered in support of an efficient use of the airspace.

Frequency Management

2.9 Frequency assignment planning in the Region should be carried out in accordance with the provisions of Annex 10 and *ICAO Handbook on Radio Frequency spectrum for Civil Aviation* (Doc 9718) Volumes I & II, supplemented, as necessary, by regional recommendations and technical criteria developed for this purpose.

3. SPECIFIC REGIONAL REQUIREMENTS

None

AFI ANP VOLUME I

PART IV - AIR TRAFFIC MANAGEMENT (ATM)

1. INTRODUCTION

1.1 This part of the AFI ANP constitutes the agreed regional requirements considered to be the minimum necessary for effective planning and implementation of air traffic management (ATM) facilities and services in the AFI region and complements the provisions of ICAO Standards, Recommended Practices and Procedures (SARPs) related to ATM. It contains stable plan elements related to the assignment of responsibilities to States for the ATM

system requirements to be applied within the ICAO AFI region in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300) and mandatory requirements related to the ATM facilities and services to be implemented by States in accordance with regional air navigation agreements.

1.2 The dynamic plan elements related to the assignment of States' responsibilities for the implementation of the ATM system mandatory requirements based on regional air navigation agreements related to ATM are contained in AFI ANP Volume II, Part IV - ATM.

1.3 The AFI ANP Volume III contains dynamic/flexible plan elements related to the implementation of air navigation systems and their modernization in line with the ICAO Aviation System Block Upgrades (ASBUs) methodology and associated technology roadmaps described in the Global Air Navigation Plan. The Aviation System Block Upgrades (ASBU) modules are aimed at increasing capacity and improving efficiency of the aviation system whilst maintaining or enhancing safety level, and achieving the necessary harmonization and interoperability at regional and global level. This includes the regionally agreed ASBU modules applicable to the specified ICAO region/sub-region and associated elements/enablers necessary for the monitoring of the status of implementation of these ASBU modules.

Standards, Recommended Practices and Procedures

1.4 The Standards, Recommended Practices and Procedures (SARPs) and related guidance material applicable to the provision of ATM are contained in:

a) Annex 2 — *Rules of the Air*;

b) Annex 6 — *Operation of Aircraft*;

c) Annex 11 — *Air Traffic Services*;

d) *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM) (Doc 4444);

e) *Procedures for Air Navigation Services — Aircraft Operations* (PANS-OPS) (Doc 8168); and

f) *Regional Supplementary Procedures* (Doc 7030).

2. GENERAL REGIONAL REQUIREMENTS

2.1 The description of the current Flight Information Regions (FIR)/Upper Information Regions (UIR), as approved by the ICAO Council, are contained in **Table ATM I-1** and depicted in the **Charts ATM I-1** respectively.

2.2 States should ensure that the provision of air traffic services (ATS) covers its own territory and those areas over the high seas for which it is responsible for the provision of those services, in accordance with **Charts ATM I-1** and **ATM I- 2**.

Regional ATS Routes and organized track structures

2.3 PIRGs are responsible for the optimization of the traffic flows through the continuous improvement of the regional ATS route network and organized track systems and implementation of random routing areas and free route airspace in the Region(s). Where applicable, details of the ATS routes within the Region(s) are contained in Volume II.

ICARD Global Database

2.4 The five-letter name-codes assigned to significant points should be coordinated through the ICAO Regional Office(s) and obtained from the ICAO International Codes and Routes Designators (ICARD) Global Database.

Aircraft Identification - SSR Code Assignments

2.5 The management of Secondary Surveillance Radar (SSR) codes is a key element of ATM in order to ensure continuous and unambiguous aircraft identification. The requirements related to the SSR code assignment system used in the Region(s) is contained in Volume II.

Performance-based Navigation (PBN)

2.6 PIRGs are responsible for the development of the Regional PBN Plan. States' PBN Plans should be consistent with the Regional PBN Plan.

Flexible Use of Airspace

2.7 States should implement civil/military cooperation and coordination mechanisms to enhance the application of the Flexible Use of Airspace concept, which will contribute to more direct routing with a commensurate saving in fuel and associated emissions. States should arrange for close liaison and coordination between civil ATS units and relevant military operational control and/or air defence units in order to ensure integration of civil and military air traffic or its segregation, if required. Such arrangements would also contribute to increasing airspace capacity and to improving the efficiency and flexibility of aircraft operations.

Reduced Vertical Separation Minimum (RVSM)/Regional Monitoring Agencies

2.8 The AFI Regional Monitoring Agency (ARMA) is the designated Regional Monitoring Agency (RMA) responsible for monitoring the height-keeping performance and approval status of aircraft operating at these levels, in order to ensure that the continued application of RVSM meets the agreed regional safety objectives as set out by the APIRG.

3. SPECIFIC REGIONAL REQUIREMENTS

None

TABLE ATM I-1

FLIGHT INFORMATION REGIONS (FIR)/UPPER INFORMATION REGIONS (UIR) IN THE AFI REGION

EXPLANATION OF THE TABLE

Column:

1 Name of the FIR/UIR / Location Indicator according to Doc 7910

2 Description of FIR/UIR lateral limits;

a. Describe separately in the table the limits of the UIRs if they are not similar to the FIRs limits.

3 Remarks - additional information, if necessary.

a. Describe vertical limits if necessary.

FIR/UIR Location Indicator	Lateral limits coordinates	Remarks
1	**2**	**3**
ACCRA	**FIR/UIR ACCRA** 11°00'N 03°00'W - 11°00'N 03°45'E 05°44'N 02°45'E - 02°60'N 06°35'E 04°10'S 06°35'E - 05°52'S 06°35'E 09°32'S 03°00'W - 01°52'S 03°00'W 01°51'S 03°00'W - 04°41'N 03°00'W 11°00'N 03°00'W	*Accra FIR/UIR covers the airspace over the following States: Benin, Ghana and Togo*
ADDIS ABABA	**FIR/UIR ADDIS ABABA** 14°14'N 36°26'E - 12°31'N 42°27'E Then along the national borders between Ethiopia and Eritrea 14°00'N 42°25'E - 11°45'N 44°11'E 12°10'N 44°03'E - 11°40'N 43°20'E 11°39'N 43°20'E Then along the national borders between Ethiopia and Somalia Then along the national borders between Ethiopia and Kenya 04°00'N 36°00'E - 08°00'N 33°00'E 13°00'N 36°00'E - 14°14'N 36°26'E	*Addis Ababa FIR/UIR covers the airspace over the following States: Ethiopia and Djibouti*
ANTANANARIVO	**FIR/UIR ANTANANARIVO** 10°25'S 40°30'E - 10°20'S 44°00'E 10°00'S 45°00'E - 10°00'S 55°30'E 19°00'S 55°30'E - 22°20'S 57°00'E	*Antananarivo FIR/UIR covers the airspace over the following States: Madagascar and*

	30°00'S 57°00'E - 30°00'S 40°00'E 20°00'S 40°00'E - 15°00'S 43°00'E 11°00'S 41°30'E - 10°25'S 40°30'E	*Comoros*
ASMARA	**FIR/UIR ASMARA** 20°00'N 38°30'E Then along the red sea 16°00'N 41°00'E - 14°54'N 42°01'E 14°00'N 42°25'E - 12°31'N 42°27'E Then along the national borders between Eritrea and Ethiopia 14°14'N 36°26'E - 20°00'N 38°30'E	*Asmara FIR covers the airspace over Eritrea*
BEIRA	**FIR/UIR BEIRA** 11°34'S 34°58'E Then along the national borders between Mozambique and Tanzania 10°25'S 40°30'E - 11°00'S 41°30'E 15°00'S 43°00'E - 20°00'S 40°00'E 30°00'S 40°00'E - 27°50'S 35°00'E 26°50'S 32°52'E - 27°00'S 32°00'E Then along the national borders between Mozambique and South Africa to 22°25'S 31°18'E Then along the national borders between Mozambique and Zimbabwe 16°25'S 31°57'E - 15°37'S 30°25'E Then along the national borders between Mozambique and Zambia 14°15'S 32°30'E - 14°40'S 33°40'E 16°00'S 34°10'E - 15°40'S 35°50'E Then along the national borders between Mozambique and Malawi to 11°34'S 34°58'E	*Beira FIR/UIR covers the airspace over Mozambique*
BRAZZAVILLE	**FIR/UIR BRAZZAVILLE** 08°00'N 12°13'E - 08°00'N 24°58'E Then along the national borders between Central African Republic and South Sudan Then along the national borders between Central African Republic and Democratic Republic of Congo Then along the national borders between Congo and Democratic Republic of Congo 05°05'S 11°05'E - 04°10'S 06°35'E 02°60'N 06°35'E - 04°40'N 08°30'E Then along the national borders between Cameroon and Nigeria to 08°00'N 12°13'E	*Brazzaville FIR/UIR covers the airspace over the following States: Cameroon, Central African Republic, Congo, Equatorial Guinea, Gabon and Sao Tome and Principe*
BUJUMBURA	**FIR BUJUMBURA** 02°53'S 29°05'E Then along the national borders between Burundi and Rwanda	*Bujumbura FIR covers the airspace over Burundi.* *Note: Bujumbura FIR extends up*

	02°20'S 30°51'E - 04°28'S 29°25'E 04°27'S 29°26'E Then along the national borders between Burundi and Democratic Republic of Congo to 02°53'S 29°05'E	*to FL245. The airspace above FL245 is under the responsibility of Dar es Salaam FIR/ACC*
CAPE TOWN	**FIR/UIR CAPE TOWN** 30°30'S 15°00'E - 30°30'S 21°16'E 31°19'S 23°45'E - 30°57'S 26°19'E 30°46'S 28°01'E - 33°00'S 32°00'E 37°00'S 28°00'E - 37°00'S 22°00'E 37°00'S 15°00'E - 30°30'S 15°00'E	*Cape Town FIR/UIR is one of three FIRs/UIRs in South Africa.*
DAKAR	**FIR/UIR DAKAR** 27°40'N 11°14'W - 27°40'N 08°40'W 27°20'N 08°40'W - 24°10'N 03°35'W 22°00'N 03°35'W - 16°21'N 03°36'W 14°30'N 04°05'W - 11°10'N 04°19'W 11°00'N 03°00'W Then along the national borders between Burkina Faso and Ghana Then along the national borders between Côte D'Ivoire and Ghana 04°41'N 03°00'W - 01°51'S 03°00'W 00°00'N 07°20'W - 06°15'N 07°27'W 07°30'N 08°25'W - 10°10'N 08°00'W 11°13'N 08°00'W - 12°30'N 09°20'W Then along the national borders between Mali and Guinea Then along the national borders between Guinea-Bissau and Guinea 10°53'N 15°05'W - 09°00'N 16°55'W 12°58'N 21°22'W - 15°00'N 20°00'W 20°00'N 20°00'W - 19°00'N 19°00'W 20°47'N 17°04'W - 21°20'N 14°00'W 27°40'N 11°14'W	*Dakar FIR/UIR covers the airspace over the following States: Burkina Faso, Côte D'Ivoire, Gambia, Guinea Bissau, Mali, Mauritania and Senegal*
DAR ES SALAAM	**FIR/UIR DAR ES SALAAM** 00°00' 29°45'E Then along the national borders between Tanzania and Uganda Then along the national borders between Tanzania and Kenya 04°42'S 39°14'E - 04°42'S 40°00'E 04°42'S 44°00'E - 08°30'S 44°00'E 10°20'S 44°00'E - 11°00'S 41°30'E 10°25'S 40°30'E Then along the national borders between Tanzania and Mozambique to 11°34'S 34°58'E Then along the national borders between Tanzania and Malawi to	*Dar es Salaam FIR/UIR covers the airspace over Tanzania. The airspace above FL245 over Burundi and Rwanda falls under the responsibility of Dar es Salaam FIR/ACC.* *The airspace above FL245 between coordinates 04°42'S 40°00'E, 04°42'S 44°00'E and 08°30'S 44°00'E in Dar es Salaam FIR falls under the responsibility of Nairobi*

	09°22'S 32°50'E Then along the national borders between Tanzania and Zambia 08°07'S 29°53'E - 06°52'S 30°06'E Then along the national borders between Tanzania and the Democratic Republic of Congo 04°28'S 29°25'E - 04°27'S 29°26'E Then along the national borders between Tanzania and Burundi to 02°53'S 29°05'E Then along the national borders between Tanzania and Rwanda 01°57'S 29°08'E - 00°00' 29°45'E	*FIR/ACC*
ENTEBBE	**FIR/UIR ENTEBBE** 04°00'N 30°45'E - 04°00'N 34°05'E Then along the national borders between Uganda and Kenya Then along the national borders between Uganda and Tanzania to 01°04'N 30°29'E Then along the national borders between Uganda and Rwanda Then along the national borders between Uganda and Democratic Republic of Congo 00°00' 29°45'E - 01°45'N 31°00'E 04°00'N 30°45'E	*Dar es Salaam FIR/UIR covers the airspace over Uganda*
GABORONE	**FIR/UIR GABORONE** 17°57'N 21°00'E Then along the national border between Botswana and Angola Then along the national border between Botswana and Zambia to 17°47'S 25°15'E Then along the national border between Botswana and Zimbabwe Then along the national border between Botswana and South Africa Then along the national border between Botswana and Namibia 24°45'S 20°00'E - 22°00'S 20°00'E 22°00'S 22°00'E - 17°57'N 21°00'E	*Gaborone FIR/UIR covers the airspace over Botswana*
HARARE	**FIR/UIR HARARE** 15°37'S 30°25'E Then along the national border between Zimbabwe and Mozambique to 16°25'S 31°57'E Then along the national border between Zimbabwe and Mozambique to 22°25'S 31°18'E Then along the national border between Zimbabwe and South Africa Then along the national border between	*Harare FIR/UIR covers the airspace over Zimbabwe*

	Zimbabwe and Botswana to 17°47'S 25°15'E	
JOHANNESBURG	**FIR/UIR JOHANNESBURG** 27°30'S 15°00'E - 27°30'S 19°54'E 27°30'S 21°00'E - 26°49'S 21°01'E Then along the national borders between South Africa, Botswana, Zimbabwe, Mozambique and Swaziland to 27°30'S 15°00'E Then along the national borders between South Africa and Mozambique to 26°50'S 32°53'E 27°50'S 35°00'E - 33°00'S 32°00'E 30°46'S 28°01'E - 30°57'S 26°19'E 31°19'S 23°45'E - 30°30'S 21°16'E 30°30'S 15°00'E - 27°30'S 15°00'E	*Johannesburg FIR/UIR is one of three FIRs/UIRs in South Africa. It also covers the airspace over Lesotho and Swaziland*
JOHANNESBURG OCEANIC	**FIR/UIR JOHANNESBURG OCEANIC** 27°50'S 35°00'E - 30°00'S 40°00'E 30°00'S 57°00'E - 45°00'S 57°00'E 45°00'S 75°00'E to the South Pole 20°00'S 10°00'W - 18°00'S 05°00'W 18°00'S 10°00'E - 27°30'S 10°00'E 27°30'S 15°00'E - 30°30'S 15°00'E 37°00'S 15°00'E - 37°00'S 22°00'E 37°00'S 28°00'E - 33°00'S 32°00'E 27°50'S 35°00'E	*Johannesburg Oceanic FIR/UIR is one of three FIRs/UIRs in South Africa*
KANO	**FIR/UIR KANO** 11°00'N 03°45'E Then along the national borders between Nigeria, Benin and Niger to 13°21'N 11°30'E Then along the national borders between Nigeria, Niger, Chad and Cameroon to 08°00'N 12°13'E Then along the national borders between Nigeria and Cameroon to 04°40'N 08°30'E 02°60'N 06°35'E - 05°44'N 02°45'E Then along the national borders between Nigeria and Benin to 11°00'N 03°45'E	*Kano FIR/UIR covers the airspace over Nigeria*
KHARTOUM	**FIR/UIR KHARTOUM** 22°00'N 25°00'E - 22°00'N 38°00'E 20°00'N 38°30'E - 14°14'N 36°26'E 13°00'N 36°00'E - 08°00'N 33°00'E 04°00'N 36°00'E - 04°00'N 34°05'E 04°00'N 30°45'E Then along the national borders between South Sudan, Democratic Republic of Congo and Central African Republic to 08°00'N 24°58'E Then along the national borders between South Sudan, Central African Republic and Chad to	*Khartoum FIR/UIR covers the airspace over Sudan, as well as South Sudan*

	15°40'N 24°00'E 19°30'N 24°00'E - 20°00'N 24°00'E 20°00'N 25°00'E - 22°00'N 25°00'E	
KIGALI	**FIR KIGALI** 00°00' 29°45'E - 01°41'S 30°51'E Then along the national borders between Rwanda and Tanzania to 02°20'S 30°51'E Then along the national borders between Rwanda and Burundi to 02°53'S 29°05'E 01°57'S 29°08'E Then along the national borders between Rwanda, Democratic Republic of Congo and Uganda to 00°00' 29°45'E	*Kigali FIR covers the airspace over Rwanda, up to FL245. The airspace above FL245over Rwanda falls under the responsibility of Dar es Salaam FIR/ACC.*
KINSHASA	**FIR/UIR KINSHASA** 12°00'S 28°00'E - 12°00'S 25°30'E 11°00'S 24°20'E - 09°00'S 22°00'E 05°50'S 16°00'E Then along the national borders between Democratic Republic of Congo and Angola, Central African Republic and South Sudan to 04°00'N 30°45'E - 01°45'N 31°00'E Then along the national borders between the Democratic Republic of Congo, Uganda, Rwanda, Bujumbura and Tanzania to 06°52'S 30°06'E - 08°07'S 29°53'E 12°00'S 28°00'E	*Kinshasa FIR/UIR covers the airspace over the Democratic Republic of Congo*
LILONGWE	**FIR/UIR LILONGWE** 11°34'S 34°58'E Then along the national borders between Malawi and Mozambique to 15°40'S 35°50'E - 16°00'S 4°10'E 14°40'S 33°40'E Then along the national borders between Malawi, Mozambique and Zambia to 11°06'S 33°21'E - 10°51'S 33°24'E 10°13'S 33°33'E - 09°22'S 2°50'E Then along the national borders between Malawi and Tanzania to 09°36'S 33°38'E 11°34'S 34°58'E	*Lilongwe FIR/UIR covers the airspace over Malawi*
LUANDA	**FIR/UIR LUANDA** 04°10'S 06°35'E - 05°30'S 08°50'E Then along the national borders between Angola, Congo and Democratic Republic of Congo to 05°05'S 11°05'E 05°50'S 16°00'E - 07°20'S 22°00'E 07°20'S 22°00'E - 11°00'S 24°20'E 13°00'S 23°00'E - 13°00'S 23°00'E Then along the national borders between Angola, Zambia and Botswana to 17°15'S 11°45'E - 18°00'S 10°00'E 18°00'S 05°00'W - 20°00'S 10°00'W 12°00'S 10°00'W - 09°32'S 03°00'W	*Luanda FIR/UIR covers the airspace over Angola*

	05°52'S 06°35'E - 04°10'S 06°35'E	
LUSAKA	**FIR/UIR LUSAKA** The area bounded by lines drawn clockwise joining points from: 130000S - 0220000E 130000S - 0230000E 110000S - 0242000E 120000S - 0253000E 120000S - 0280000E 080700S - 0295300E Then along the intersection of boundaries of Democratic Republic of Congo, Tanzania, Zambia and along the Tanzania/Zambia border to 092200S - 0330000E Then along the Malawi/Zambia border to 140000S - 0331500E, then along the Mozambique/Zambia, Zimbabwe/Zambia, Namibia/Zambia borders to 173900S – 0232600E Then along the Angola/Zambia border to 130000S - 0220000E	
MAURITIUS	**FIR/UIR MAURITIUS** 06°00'S 60°00'E - 06°00'S 75°00'E 45°00'S 75°00'E - 45°00'S 57°00'E 30°00'S 57°00'E - 30°00'S 57°00'E 19°00'S 55°30'E - 10°00'S 55°30'E 10°00'S 60°00'E - 06°00'S 60°00'E	*Mauritius FIR/UIR covers the airspace over Mauritius*
MOGADISHU	**FIR/UIR MOGADISHU** 12°00'N 60°00'E - 10°42'N 60°00'E 02°00'S 44°00'E - 02°00'S 42°00'E Then along the national borders between Somalia, Kenya, Ethiopia and Djibouti to 12°10'N 44°03'E - 12°11'N 50°46'E 12°00'N 51°35'E - 12°00'N 60°00'E	*Mogadishu FIR/UIR covers the airspace over Somalia*
NAIROBI	**FIR/UIR NAIROBI** 02°00'S 44°00'E - 04°42'S 44°00'E 08°30'S 44°00'E - 04°42'S 40°00'E 04°42'S 39°14'E Then along the national borders between Kenya, Tanzania and Uganda to 04°00'N 34°05'E - 04°00'N 36°00'E Then along the national borders between Kenya, Ethiopia and Somalia to 02°00'S 42°00'E - 02°00'S 44°00'E	*Nairobi FIR/UIR covers the airspace over Kenya.* *The airspace above FL245 between coordinates 04°42'S 40°00'E, 04°42'S 44°00'E and 08°30'S 44°00'E in Dar es Salaam FIR falls under the responsibility of Nairobi FIR/ACC*
N'DJAMENA	**FIR/UIR N'DJAMENA** 22°00'N 11°30'E - 22°00'N 19°00'E 19°30'N 24°00'E - 15°40'N 24°00'E Then along the national borders between Chad and Sudan and between Chad and the Central African Republic and South Sudan to 08°00'N 24°58'E - 08°00'N 12°13'E Then along the national borders between Cameroon and Nigeria Then along the national borders between Chad and Kano to 13°21'N 11°30'E	*N'djamena FIR/UIR covers the airspace over Chad, Central African Republic, Cameroon and Niger*

	22°00'N 11°30'E	
NIAMEY	**FIR/UIR NIAMEY** 24°10'N 03°35'W Then along the national borders between Mali and Algeria to 19°09'N 04°16'E 19°27'N 05°44'E - 20°51'N 07°28'E 23°13'N 11°30'E - 22°00'N 11°30'E 13°21'N 11°30'E Then along the national borders between Niger and Nigeria, and between Benin and Nigeria to 11°00'N 03°45'E 11°00'N 03°00W - 11°10'N 04°19'W 14°30'N 04°05'W - 16°21'N 03°36'W 22°00'N 03°35'W - 24°10'N 03°35'W	*Niamey FIR/UIR covers the airspace over Mali, Niger, Benin and Burkina Faso*
ROBERTS	**FIR/UIR ROBERTS** 09°00'N 16°55'W - 10°53'N 15°05'W Then along the national borders between Guinea and Guinea Bissau, between Guinea and Gambia, and between Guinea and Mali to 12°30'N 09°20'W 11°13'N 08°00'W - 10°10'N 08°00'W 07°30'N 08°25'W - 06°15'N 07°27'W 00°00'N 07°20'W - 09°00'N 16°55'W	*Roberts FIR/UIR covers the airspace over Guinea, Liberia and Sierra Leone*
SAL	**FIR/UIR SAL** 17°00'N 37°30'W - 24°00'N 25°00'W 20°00'N 20°00'W - 15°00'N 20°00'W 12°58'N 21°22'W - 13°40'N 24°21'W 17°00'N 37°30'W	*SAL FIR/UIR covers the airspace over Cape Verde*
SEYCHELLES	**FIR/UIR SEYCHELLES** 02°00'S 44°00'E - 10°42'N 60°00'E 10°00'S 60°00'E - 10°00'S 45°00'E 10°20'S 44°00'E - 02°00'S 44°00'E	*Seychelles FIR/UIR covers the airspace over Seychelles*
WINDHOEK	**FIR/UIR WINDHOEK** 18°00'S 10°00'E - 17°15'S 11°45'E Then along the national borders between Namibia, Angola, Zambia, Zimbabwe and Botswana to 18°09'S 21°01'E Then along the national borders between Namibia and Botswana to 21°59'S 21°00'E 21°59'S 20°00'E Then along the national borders between Namibia and Botswana to 24°46'S 20°00'E Then along the national borders between Botswana and South Africa to 26°49'S 21°01'E - 27°30'S 21°00'E 27°30'S 10°00'E - 18°00'S 10°00'E	*Windhoek FIR/UIR covers the airspace over Namibia*

CHART ATM I-1

FLIGHT INFORMATION REGIONS (FIR)/UPPER INFORMATION REGIONS (UIR) IN THE AFI REGION

Note: Chart to be inserted

AFI ANP VOLUME I

PART V – METEOROLOGY (MET)

1. INTRODUCTION

1.1 This part of the AFI ANP constitutes the agreed regional requirements considered to be the minimum necessary for effective planning and implementation of aeronautical meteorology (MET) facilities and services in the AFI Region and complements the provisions of ICAO Standards, Recommended Practices and Procedures (SARPs) related to MET. It contains stable plan elements related to the assignment of responsibilities to States for the provision of MET facilities and services within the ICAO **AFI** region in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300) and mandatory requirements related to the MET facilities and services to be implemented by States in accordance with regional air navigation agreements.

1.2 The dynamic plan element related to the assignment of responsibilities to States for the provision of MET facilities and services and the mandatory requirements based on regional air navigation agreements related to MET are contained in the AFI ANP Volume II, Part V - MET.

1.3 The AFI ANP Volume III contains dynamic/flexible plan elements related to the implementation of air navigation systems and their modernization in line with the ICAO Aviation System Block Upgrades (ASBUs) methodology and associated technology roadmaps described in the Global Air Navigation Plan. The Aviation System Block Upgrades (ASBUs) modules are aimed at increasing capacity and improving efficiency of the aviation system whilst maintaining or enhancing safety level, and achieving the necessary harmonization and interoperability at regional and global level. This includes the regionally agreed ASBU modules applicable to the specified ICAO region/sub-region and associated elements/enablers necessary for the monitoring of the status of implementation of these ASBU modules.

Standards, Recommended Practices and Procedures

1.4 The Standards, Recommended Practices and Procedures (SARPs) and related guidance material applicable to the provision of MET are contained in:

a) *Annex 3 - Meteorological Service for International Air Navigation; and*

b) *Regional Supplementary Procedures (Doc 7030);*

c) *Handbook on the IAVW (Doc 9766);*

d) *Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds (Doc 9691); and*

e) *Manual of Aeronautical Meteorological Practice (Doc 8896).*

2. GENERAL REGIONAL REQUIREMENTS

World area forecast system (WAFS) and meteorological offices

2.1 In the AFI Region, WAFC, London has been designated as the centre for the operation of the aeronautical fixed service satellite distribution system / WAFS Internet File Service (SADIS and/or WIFS) and the Internet-based Secure SADIS FTP service. The status of implementation of SADIS/WIFS by States in the AFI Region is detailed in Volume III.

2.2 In the AFI Region, WAFS products in digital form should be disseminated by WAFC, London using the SADIS 2G satellite broadcast and the Secure SADIS FTP service and/or WIFS.

Volcanic Ash

2.3 Volcanic ash advisory centre (VAAC), Toulouse has been designated to prepare volcanic ash advisory information for the AFI Region, as indicated below. The status of implementation of volcanic ash advisory information is detailed in Volume III.

AFI VACC: Toulouse VACC

2.4 Selected State volcano observatories have been designated for notification of significant pre-eruption volcanic activity, a volcanic eruption and/or volcanic ash in the atmosphere for the AFI Region to their corresponding ACC/FIC, MWO and VAAC, as indicated at **Table MET I-1**. The status of implementation of volcano observatory notice for aviation (VONA) is detailed in Volume III.

Tropical Cyclone

2.5 Tropical cyclone advisory centre (TCAC)**,** La Reunion has been designated to prepare tropical cyclone advisory information for the AFI Region, as indicated below. The status of implementation of tropical cyclone advisory information is detailed in Volume III.

3. SPECIFIC REGIONAL REQUIREMENTS

None

TABLE MET I-1

STATE VOLCANO OBSERVATORIES

EXPLANATION OF THE TABLE

Column
1 Name of the State responsible for the provision of a volcano observatory
2 Name of the volcano observatory

State	Volcano observatory
1	**2**
Cameroon/Cameroun	Institut de recherches géologiques et minières de Yaoundé
Cape Verde/Cape Vert	Serviço Nacional de Meteorología e Geofísica, P.O. Box 76, Ilha do Sal
Comoros	Obseratoire Volcanologique du Karthathala,Moroni
Democratic Republic of Congo/RDC	Centre de Recherches en Sciences Naturelles (CRSN) Lwiro, Bukavu
Eritrea	University of Asmara, Geophysics Section
Ethiopia	Geophysics Observatory, Addis Ababa University
France(Ile de La Réunion)	Observatoire volcanologique du Piton de la Fournaise
Kenya	Geology Department, University of Nairobi

State	Volcano observatory
1	2

AFI ANP VOLUME I

PART VI - SEARCH AND RESCUE (SAR)

1. INTRODUCTION

1.1 This part of the AFI ANP constitutes the agreed regional requirements considered to be the minimum necessary for effective planning and implementation of search and rescue (SAR) facilities and services in the AFI region and complements the provisions of ICAO SARP's and PANS related to SAR. It contains stable plan elements related to the assignment of responsibilities to States for the provision of SAR facilities and services within the ICAO AFI region in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300) and mandatory requirements related to the SAR facilities and services to be implemented by States in accordance with regional air navigation agreements.

1.2 The dynamic plan elements related to the assignment of States' responsibilities for the provision of SAR facilities and services and the mandatory requirements based on regional air navigation agreements related to SAR are contained in the AFI ANP Volume II, Part VI – SAR.

Standards, Recommended Practices and Procedures

1.3 The Standards, Recommended Practices and Procedures (SARPs) and related guidance material applicable to the provision of SAR are contained in:

a) Annex 12 – *Search and Rescue*;

b) Annex 6 — *Operation of Aircraft*;

c) *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM) (Doc 4444);

d) *Regional Supplementary Procedures* (Doc 7030); and

e) *International Aeronautical and Maritime Search and Rescue Manual* (Doc 9731-AN/958).

2. GENERAL REGIONAL REQUIREMENTS

2.1 Each Contracting State should ensure that the provision of search and rescue services covers its own territory and those areas over the high seas for which it is responsible for the provision of those services. The description of the current Search and Rescue Regions (SRRs), as approved by the ICAO Council, are contained in **Table SAR I-1** and depicted in the **Chart SAR I-1**. The list of Rescue Coordination Centres (RCCs) and Rescue Sub-centres (RSCs) in the Region(s) are detailed in Volume II.

2.2 The three volumes of the ***IAMSAR Manual*** (Doc 9731) provide guidance for a common aviation and maritime approach to organizing and providing SAR services. States are invited to use the *IAMSAR Manual* to ensure the availability of effective aeronautical SAR services and to cooperate with neighbouring States.

2.3 States which rely on military authorities and/or other sources for the provision of SAR facilities should ensure that adequate arrangements are in place for coordination of SAR activities between all entities involved.

2.4 Arrangements should be made to permit a call on any national services likely to be able to render assistance on an ad-hoc basis, in those cases when the scope of SAR operations requires such assistance.

3. SPECIFIC REGIONAL REQUIREMENTS

None.

TABLE SAR I-1

SEARCH AND RESCUE REGIONS (SRR) OF THE AFI REGION

EXPLANATION OF THE TABLE

Column:

1 Name of the SRR
2 Description of SRR lateral limits;
3 Remarks — additional information, if necessary

SRR	Lateral limits coordinates	Remarks
1	2	3
ACCRA	**ACCRA SRR** 11°00'N 03°00'W - 11°00'N 03°45'E 05°44'N 02°45'E - 02°60'N 06°35'E 04°10'S 06°35'E - 05°52'S 06°35'E 09°32'S 03°00'W - 01°52'S 03°00'W 01°51'S 03°00'W - 04°41'N 03°00'W 11°00'N 03°00'W	*Accra SRR covers the airspace over the following States: Benin, Ghana and Togo*
ADDIS ABABA	**ADDIS ABABA SRR** 14°14'N 36°26'E - 12°31'N 42°27'E Then along the national borders between Ethiopia and Eritrea 14°00'N 42°25'E - 11°45'N 44°11'E 12°10'N 44°03'E - 11°40'N 43°20'E 11°39'N 43°20'E Then along the national borders between Ethiopia and Somalia Then along the national borders between Ethiopia and Kenya 04°00'N 36°00'E - 08°00'N 33°00'E 13°00'N 36°00'E - 14°14'N 36°26'E	*Addis Ababa SRR covers the airspace over the following States: Ethiopia and Djibouti*
ANTANANARIVO	**ANTANANARIVO SRR** 10°25'S 40°30'E - 10°20'S 44°00'E 10°00'S 45°00'E - 10°00'S 55°30'E 19°00'S 55°30'E - 22°20'S 57°00'E 30°00'S 57°00'E - 30°00'S 40°00'E 20°00'S 40°00'E - 15°00'S 43°00'E 11°00'S 41°30'E - 10°25'S 40°30'E	*Antananarivo SRR covers the airspace over the following States: Madagascar and Comoros*
ASMARA	**ASMARA SRR** 20°00'N 38°30'E Then along the red sea 16°00'N 41°00'E - 14°54'N 42°01'E 14°00'N 42°25'E - 12°31'N 42°27'E Then along the national borders between Eritrea and Ethiopia 14°14'N 36°26'E - 20°00'N 38°30'E	*Asmara SRR covers the airspace over Eritrea*
BEIRA	**BEIRA SRR** 11°34'S 34°58'E Then along the national borders between Mozambique and Tanzania 10°25'S 40°30'E - 11°00'S 41°30'E 15°00'S 43°00'E - 20°00'S 40°00'E 30°00'S 40°00'E - 27°50'S 35°00'E 26°50'S 32°52'E - 27°00'S 32°00'E Then along the national borders between Mozambique and South Africa to 22°25'S 31°18'E Then along the national borders between Mozambique and Zimbabwe	*Beira SRR covers the airspace over Mozambique*

	16°25'S 31°57'E - 15°37'S 30°25'E Then along the national borders between Mozambique and Zambia 14°15'S 32°30'E - 14°40'S 33°40'E 16°00'S 34°10'E - 15°40'S 35°50'E Then along the national borders between Mozambique and Malawi to 11°34'S 34°58'E	
BRAZZAVILLE	**BRAZZAVILLE SRR** 08°00'N 12°13'E - 08°00'N 24°58'E Then along the national borders between Central African Republic and South Sudan Then along the national borders between Central African Republic and Democratic Republic of Congo Then along the national borders between Congo and Democratic Republic of Congo 05°05'S 11°05'E - 04°10'S 06°35'E 02°60'N 06°35'E - 04°40'N 08°30'E Then along the national borders between Cameroon and Nigeria to 08°00'N 12°13'E	*Brazzaville SRR covers the airspace over the following States: Cameroon, Central African Republic, Congo, Equatorial Guinea, Gabon and Sao Tome and Principe*
BUJUMBURA	**BUJUMBURA SRR** 02°53'S 29°05'E Then along the national borders between Burundi and Rwanda 02°20'S 30°51'E - 04°28'S 29°25'E 04°27'S 29°26'E Then along the national borders between Burundi and Democratic Republic of Congo to 02°53'S 29°05'E	*Bujumbura SRR covers the airspace over Burundi.* *Note: Bujumbura FIR extends up to FL245. The airspace above FL245 is under the responsibility of Dar es Salaam FIR/ACC*
DAKAR	**DAKAR SRR** 27°40'N 11°14'W - 27°40'N 08°40'W 27°20'N 08°40'W - 24°10'N 03°35'W 22°00'N 03°35'W - 16°21'N 03°36'W 14°30'N 04°05'W - 11°10'N 04°19'W 11°00'N 03°00'W Then along the national borders between Burkina Faso and Ghana Then along the national borders between Côte D'Ivoire and Ghana 04°41'N 03°00'W - 01°51'S 03°00'W 00°00'N 07°20'W - 06°15'N 07°27'W 07°30'N 08°25'W - 10°10'N 08°00'W 11°13'N 08°00'W - 12°30'N 09°20'W Then along the national borders between Mali and Guinea Then along the national borders between Guinea-Bissau and Guinea 10°53'N 15°05'W - 09°00'N 16°55'W 12°58'N 21°22'W - 15°00'N 20°00'W 20°00'N 20°00'W - 19°00'N 19°00'W 20°47'N 17°04'W - 21°20'N 14°00'W 27°40'N 11°14'W	*Dakar SRR covers the airspace over the following States: Burkina Faso, Côte D'Ivoire, Gambia, Guinea Bissau, Mali, Mauritania and Senegal*

DAR ES SALAAM	**DAR ES SALAAM SRR** 00°00' 29°45'E Then along the national borders between Tanzania and Uganda Then along the national borders between Tanzania and Kenya 04°42'S 39°14'E - 04°42'S 40°00'E 04°42'S 44°00'E - 08°30'S 44°00'E 10°20'S 44°00'E - 11°00'S 41°30'E 10°25'S 40°30'E Then along the national borders between Tanzania and Mozambique to 11°34'S 34°58'E Then along the national borders between Tanzania and Malawi to 09°22'S 32°50'E Then along the national borders between Tanzania and Zambia 08°07'S 29°53'E - 06°52'S 30°06'E Then along the national borders between Tanzania and the Democratic Republic of Congo 04°28'S 29°25'E - 04°27'S 29°26'E Then along the national borders between Tanzania and Burundi to 02°53'S 29°05'E Then along the national borders between Tanzania and Rwanda 01°57'S 29°08'E - 00°00' 29°45'E	*Dar es Salaam SRR covers the airspace over Tanzania. The airspace above FL245 over Burundi and Rwanda falls under the responsibility of Dar es Salaam FIR/ACC.* *The airspace above FL245 between coordinates 04°42'S 40°00'E, 04°42'S 44°00'E and 08°30'S 44°00'E in Dar es Salaam FIR falls under the responsibility of Nairobi FIR/ACC*
ENTEBBE	**ENTEBBE SRR** 04°00'N 30°45'E - 04°00'N 34°05'E Then along the national borders between Uganda and Kenya Then along the national borders between Uganda and Tanzania to 01°04'N 30°29'E Then along the national borders between Uganda and Rwanda Then along the national borders between Uganda and Democratic Republic of Congo 00°00' 29°45'E - 01°45'N 31°00'E 04°00'N 30°45'E	*Dar es Salaam SRR covers the airspace over Uganda*
GABORONE	**GABORONE SRR** 17°57'N 21°00'E Then along the national border between Botswana and Angola Then along the national border between Botswana and Zambia to 17°47'S 25°15'E Then along the national border between Botswana and Zimbabwe Then along the national border between Botswana and South Africa Then along the national border between Botswana	*Gaborone SRR covers the airspace over Botswana*

	and Namibia 24°45'S 20°00'E - 22°00'S 20°00'E 22°00'S 22°00'E - 17°57'N 21°00'E	
HARARE	**HARARE SRR** 15°37'S 30°25'E Then along the national border between Zimbabwe and Mozambique to 16°25'S 31°57'E Then along the national border between Zimbabwe and Mozambique to 22°25'S 31°18'E Then along the national border between Zimbabwe and South Africa Then along the national border between Zimbabwe and Botswana to 17°47'S 25°15'E	*Harare SRR covers the airspace over Zimbabwe*
KANO	**KANO SRR** 11°00'N 03°45'E Then along the national borders between Nigeria, Benin and Niger to 13°21'N 11°30'E Then along the national borders between Nigeria, Niger, Chad and Cameroon to 08°00'N 12°13'E Then along the national borders between Nigeria and Cameroon to 04°40'N 08°30'E 02°60'N 06°35'E - 05°44'N 02°45'E Then along the national borders between Nigeria and Benin to 11°00'N 03°45'E	*Kano SRR covers the airspace over Nigeria*
KHARTOUM	**KHARTOUM SRR** 22°00'N 25°00'E - 22°00'N 38°00'E 20°00'N 38°30'E - 14°14'N 36°26'E 13°00'N 36°00'E - 08°00'N 33°00'E 04°00'N 36°00'E - 04°00'N 34°05'E 04°00'N 30°45'E Then along the national borders between South Sudan, Democratic Republic of Congo and Central African Republic to 08°00'N 24°58'E Then along the national borders between South Sudan, Central African Republic and Chad to 15°40'N 24°00'E 19°30'N 24°00'E - 20°00'N 24°00'E 20°00'N 25°00'E - 22°00'N 25°00'E	*Khartoum SRR covers the airspace over Sudan, as well as South Sudan*
KIGALI	**KIGALI SRR** 00°00' 29°45'E - 01°41'S 30°51'E Then along the national borders between Rwanda and Tanzania to 02°20'S 30°51'E	*Kigali SRR covers the airspace over Rwanda, up to FL245. The airspace above FL245over Rwanda falls under the responsibility of Dar es Salaam.*

	Then along the national borders between Rwanda and Burundi to 02°53'S 29°05'E 01°57'S 29°08'E Then along the national borders between Rwanda, Democratic Republic of Congo and Uganda to 00°00' 29°45'E	
KINSHASA	**KINSHASA SRR** 12°00'S 28°00'E - 12°00'S 25°30'E 11°00'S 24°20'E - 09°00'S 22°00'E 05°50'S 16°00'E Then along the national borders between Democratic Republic of Congo and Angola, Central African Republic and South Sudan to 04°00'N 30°45'E - 01°45'N 31°00'E Then along the national borders between the Democratic Republic of Congo, Uganda, Rwanda, Bujumbura and Tanzania to 06°52'S 30°06'E - 08°07'S 29°53'E 12°00'S 28°00'E	*Kinshasa SRR covers the airspace over the Democratic Republic of Congo*
LILONGWE	**LILONGWE SRR** 11°34'S 34°58'E Then along the national borders between Malawi and Mozambique to 15°40'S 35°50'E - 16°00'S 4°10'E 14°40'S 33°40'E Then along the national borders between Malawi, Mozambique and Zambia to 11°06'S 33°21'E - 10°51'S 33°24'E 10°13'S 33°33'E - 09°22'S 2°50'E Then along the national borders between Malawi and Tanzania to 09°36'S 33°38'E 11°34'S 34°58'E	*Lilongwe SRR covers the airspace over Malawi*
LUANDA	**LUANDA SRR** 04°10'S 06°35'E - 05°30'S 08°50'E Then along the national borders between Angola, Congo and Democratic Republic of Congo to 05°05'S 11°05'E 05°50'S 16°00'E - 07°20'S 22°00'E 07°20'S 22°00'E - 11°00'S 24°20'E 13°00'S 23°00'E - 13°00'S 23°00'E Then along the national borders between Angola, Zambia and Botswana to 17°15'S 11°45'E - 18°00'S 10°00'E 18°00'S 05°00'W - 20°00'S 10°00'W 12°00'S 10°00'W - 09°32'S 03°00'W 05°52'S 06°35'E - 04°10'S 06°35'E	*Luanda SRR covers the airspace over Angola*
LUSAKA	**LUSAKA SRR** The area bounded by lines drawn clockwise joining points from: 130000S - 0220000E 130000S - 0230000E 110000S - 0242000E 120000S - 0253000E 120000S - 0280000E 080700S - 0295300E	

	Then along the intersection of boundaries of Democratic Republic of Congo, Tanzania, Zambia and along the Tanzania/Zambia border to 092200S - 0330000E Then along the Malawi/Zambia border to 140000S - 0331500E, then along the Mozambique/Zambia, Zimbabwe/Zambia, Namibia/Zambia borders to 173900S – 0232600E Then along the Angola/Zambia border to 130000S - 0220000E	
MAURITIUS	**MAURITIUS SRR** 06°00'S 60°00'E - 06°00'S 75°00'E 45°00'S 75°00'E - 45°00'S 57°00'E 30°00'S 57°00'E - 30°00'S 57°00'E 19°00'S 55°30'E - 10°00'S 55°30'E 10°00'S 60°00'E - 06°00'S 60°00'E	*Mauritius SRR covers the airspace over Mauritius*
MOGADISHU	**MOGADISHU SRR** 12°00'N 60°00'E - 10°42'N 60°00'E 02°00'S 44°00'E - 02°00'S 42°00'E Then along the national borders between Somalia, Kenya, Ethiopia and Djibouti to 12°10'N 44°03'E - 12°11'N 50°46'E 12°00'N 51°35'E - 12°00'N 60°00'E	*Mogadishu SRR covers the airspace over Somalia*
NAIROBI	**NAIROBI SRR** 02°00'S 44°00'E - 04°42'S 44°00'E 08°30'S 44°00'E - 04°42'S 40°00'E 04°42'S 39°14'E Then along the national borders between Kenya, Tanzania and Uganda to 04°00'N 34°05'E - 04°00'N 36°00'E Then along the national borders between Kenya, Ethiopia and Somalia to 02°00'S 42°00'E - 02°00'S 44°00'E	*Nairobi SRR covers the airspace over Kenya.* *The airspace above FL245 between coordinates 04°42'S 40°00'E, 04°42'S 44°00'E and 08°30'S 44°00'E in Dar es Salaam FIR falls under the responsibility of Nairobi.*
N'DJAMENA	**N'DJAMENA SRR** 22°00'N 11°30'E - 22°00'N 19°00'E 19°30'N 24°00'E - 15°40'N 24°00'E Then along the national borders between Chad and Sudan and between Chad and the Central African Republic and South Sudan to 08°00'N 24°58'E - 08°00'N 12°13'E Then along the national borders between Cameroon and Nigeria Then along the national borders between Chad and Kano to 13°21'N 11°30'E 22°00'N 11°30'E	*N'djamena SRR covers the airspace over Chad, Central African Republic, Cameroon and Niger*
NIAMEY	**NIAMEY SRR** 24°10'N 03°35'W Then along the national borders between Mali and Algeria to 19°09'N 04°16'E 19°27'N 05°44'E - 20°51'N 07°28'E 23°13'N 11°30'E - 22°00'N 11°30'E	*Niamey SRR covers the airspace over Mali, Niger, Benin and Burkina Faso*

	13°21'N 11°30'E Then along the national borders between Niger and Nigeria, and between Benin and Nigeria to 11°00'N 03°45'E 11°00'N 03°00W - 11°10'N 04°19'W 14°30'N 04°05'W - 16°21'N 03°36'W 22°00'N 03°35'W - 24°10'N 03°35'W	
ROBERTS	**ROBERTS SRR** 09°00'N 16°55'W - 10°53'N 15°05'W Then along the national borders between Guinea and Guinea Bissau, between Guinea and Gambia, and between Guinea and Mali to 12°30'N 09°20'W 11°13'N 08°00'W - 10°10'N 08°00'W 07°30'N 08°25'W - 06°15'N 07°27'W 00°00'N 07°20'W - 09°00'N 16°55'W	*Roberts SRR covers the airspace over Guinea, Liberia and Sierra Leone*
SAL	**SAL SRR** 17°00'N 37°30'W - 24°00'N 25°00'W 20°00'N 20°00'W - 15°00'N 20°00'W 12°58'N 21°22'W - 13°40'N 24°21'W 17°00'N 37°30'W	*SAL SRR covers the airspace over Cape Verde*
SEYCHELLES	**SEYCHELLES SRR** 02°00'S 44°00'E - 10°42'N 60°00'E 10°00'S 60°00'E - 10°00'S 45°00'E 10°20'S 44°00'E - 02°00'S 44°00'E	*Seychelles SRR covers the airspace over Seychelles*
SOUTH AFRICA	From a point at S18.0 W010.0 to the point where the international boundary between Namibia and Angola meet at the coast. Thence proceeding along the international boundaries between Namibia and Angola, Namibia and Botswana, the RSA and Botswana, the RSA and Zimbabwe, the RSA and Mozambique, Mozambique and Swaziland, and the RSA and Mozambique to the point where the international boundary between the RSA and Mozambique meet at the coast. Thence to S26.5 E040.0 to S30.0 E040.0 to S30.0 E057.0 to S35.0 E057.0 to S35.0 E075.0 to the South Pole to S18.0 W010.0	*The South African SRR covers the airspace over South Africa*
WINDHOEK	**WINDHOEK SRR** 18°00'S 10°00'E - 17°15'S 11°45'E Then along the national borders between Namibia, Angola, Zambia, Zimbabwe and Botswana to 18°09'S 21°01'E Then along the national borders between Namibia and Botswana to 21°59'S 21°00'E 21°59'S 20°00'E Then along the national borders between Namibia	*Windhoek SRR covers the airspace over Namibia*

	and Botswana to 24°46'S 20°00'E Then along the national borders between Botswana and South Africa to 26°49'S 21°01'E - 27°30'S 21°00'E 27°30'S 10°00'E - 18°00'S 10°00'E	

AFI ANP VOLUME I

PART VII - AERONAUTICAL INFORMATION MANAGEMENT (AIM)

1. INTRODUCTION

1.1 This part of the AFI ANP constitutes the agreed regional requirements considered to be the minimum necessary for effective planning and implementation of aeronautical information services (AIS) and aeronautical information management (AIM) facilities and services in the AFI region and complements the provisions of ICAO SARPs and PANS related to AIS/AIM. It contains stable plan elements related to the assignment of responsibilities to States for the provision of AIS/AIM facilities and services within the ICAO AFI Region in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300); and mandatory requirements related to the AIS/AIM facilities and services to be implemented by States in accordance with regional air navigation agreements.

1.2 The dynamic plan elements related to the assignment of responsibilities to States for the provision of AIS/AIM facilities and services and the mandatory requirements based on regional air navigation agreements related to the AIS/AIM facilities and services are contained in the AFI ANP Volume II, Part VII – AIM.

1.3 The AFI ANP Volume III contains dynamic/flexible plan elements related to the implementation of air navigation systems and their modernization in line with the ICAO Aviation System Block Upgrades (ASBUs) methodology and associated technology roadmaps described in the Global Air Navigation Plan. The ASBU modules are aimed at increasing capacity and improving efficiency of the aviation system whilst maintaining or enhancing safety level, and achieving the necessary harmonization and interoperability at regional and global level. This includes the regionally agreed ASBU modules applicable to the specified ICAO region/sub-region and associated elements/enablers necessary for the monitoring of the status of implementation of these ASBU modules, which include service improvement through digital aeronautical information management and interoperability and data through globally interoperable system wide information management (SWIM).

Standards, Recommended Practices and Procedures for Air Navigation Services

1.4 The SARPs and PANS and related guidance material applicable to the provision of AIS, and ultimately AIM, are contained in :

Annex 4 – *Aeronautical Charts*;

Annex 15 – *Aeronautical Information Services*;

Regional Supplementary Procedures (Doc 7030);

Aeronautical Information Services Provided by States (Doc 7383);

Location Indicators (Doc 7910);

Aeronautical Information Services Manual (Doc 8126);

Procedures for Air Navigation Services – Aircraft Operations – Construction of Visual and Instrument Flight Procedures (PANS-OPS, Volume I and Volume II) (Doc 8168);

ICAO Abbreviations and Codes (PANS-ABC) (Doc 8168);

Aeronautical Charts Manual (Doc 8697);

Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services (Doc 9377);

World Geodetic System (1984) Manual (Doc 9674);

l) *Guidelines on the Use of the Public Internet for Aeronautical Applications* (Doc 9855);

m) *Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information* (Doc 9881);

n) *Flight Procedure Design Quality Assurance System*, Volume I (Doc 9906);

o) "*AIM QMS Manual*" (Doc 9839) (Draft); and

p) "*Training Manual for AIM*" (Doc 9991) (Draft).

2. GENERAL REGIONAL REQUIREMENTS

2.1 States should ensure that the provision of aeronautical data and aeronautical information covers its own territory and those areas over the high seas for which it is responsible for the provision of air traffic services, in accordance with **Charts ATM I-1 and ATM I-2**.

2.2 States are responsible for the aeronautical information/data published by its aeronautical information service or by another State or a non-governmental agency on its behalf.

2.3 Aeronautical information published for and on behalf of a State should clearly indicate that it is published under the authority of that State.

2.4 The responsibility for the provision of AIS/AIM facilities and services in the AFI Region is reflected in the Volume II.

3. SPECIFIC REGIONAL REQUIREMENTS

None

AIR NAVIGATION PLAN – AFRICA-INDIAN OCEAN REGION

VOLUME II

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General Regional Requirements

Table AIM II-1 - Responsibility for the provision of AIS/AIM Facilities and Services in the AFI Region

Table AIM II-2 - Production responsibility for sheets of the World Aeronautical Chart — ICAO 1: 1 000 000 or Aeronautical Chart — ICAO 1: 500 000

Specific Regional Requirements

AFI ANP, VOLUME II

PART 0 – INTRODUCTION

1. GENERAL

1.1 The background to the publication of ANPs in three volumes is explained in the Introduction in Volume I. The procedure for amendment of Volume II is also described in Volume I.

1.2 Volume II contains dynamic plan elements related to:

the assignment of responsibilities to States for the provision of aerodrome and air navigation facilities and services; and

b) the mandatory requirements related to aerodrome and air navigation facilities and services to be implemented by States in accordance with regional air navigation agreements.

1.3 Volume II does not list all facilities in the region(s) but only those required for international civil aviation operations in accordance with regional air navigation agreements. A regional air navigation agreement indicates a commitment on the part of the State(s) concerned to implement the requirement(s) specified. Documents from the Integrated Aeronautical Information Package and other publications should be consulted for information on additional facilities and for operational information in general. Detailed guidance material or concepts, complementary to the material in Volumes I, II and III are contained in documents that are referenced as AFI Documents.

2. MANAGEMENT OF REGIONAL AIR NAVIGATION PLANS

2.1 The elements in Volume II are reviewed by the APIRG in accordance with its schedule of meetings, in consultation with provider and user States, and with the assistance of the ICAO ESAF and WACAF Regional Offices.

2.2 The information on States' facilities and services included in Volume II, should be updated following the process of regional air navigation agreements.

2.3 The development and maintenance of region-specific documents that provide detailed guidance material or concepts that are complementary to the material in Volumes I II and III is the responsibility of the APIRG.

AFI ANP, VOLUME II

PART I – GENERAL PLANNING ASPECTS (GEN)

1. INTRODUCTION

1.1 The material in this part of Volume II of the AFI ANP is applicable to one or more parts of the ANP. It should be taken into consideration in the overall planning process for the AFI Region.

2. GENERAL REGIONAL REQUIREMENTS

2.1 To facilitate air navigation systems planning and implementation, homogenous ATM areas and/or major traffic flows/routing areas have been defined for the Region(s). While these areas of routing do not encompass all movements in the Region, they include the major routes. This includes the domestic flights in that particular area of routing.

Homogeneous ATM area

2.2 A homogeneous ATM area is an airspace with a common ATM interest, based on similar characteristics of traffic density, complexity, air navigation system infrastructure requirements or other specified considerations. In such an ATM area a common detailed plan will foster the implementation of interoperable ATM systems. Homogeneous ATM areas may extend over States, specific portions of States, or groupings of States. They may also extend over large oceanic and continental areas. They are considered areas of shared interest and requirements.

2.3 The method of identifying homogeneous ATM areas involves consideration of the varying degrees of complexity and diversity of the worldwide air navigation infrastructure. Based on these considerations, planning could best be achieved at the global level if it was organized based on ATM areas of common requirements and interest, taking into account traffic density and the level of sophistication required.

Major traffic flows/routing areas

2.4 A major traffic flow refers to a concentration of significant volumes of air traffic on the same or proximate flight trajectories. Major traffic flows may cross several homogeneous ATM areas with different characteristics.

2.5 A routing area encompasses one or more major traffic flows, defined for the purpose of developing a detailed plan for the implementation of ATM systems and procedures. A routing area may cross several homogeneous ATM areas with different characteristics. A routing area specifies common interests and requirements of underlying homogeneous areas, for which a detailed plan for the implementation of ATM systems and procedures either for airspace or aircraft will be specified.

2.6 The homogeneous ATM areas and major traffic flows/routing areas identified are given in **Table GEN II-1**.

TABLE GEN II-1

TABLE GEN II-1 - HOMOGENEOUS ATM AREAS AND/OR MAJOR TRAFFIC FLOWS IDENTIFIED IN THE AFI REGION

Column		
1	Area of routing (AR)	Sequential number of area of routing
2	Homogeneous Areas and/or Traffic flows	Brief description and/or name
3	FIRs involved	List of FIRs concerned
4	Type of area covered	Brief description of type of area, examples: Oceanic or Continental High or low density Oceanic en-route or Continental en-route
5	Remarks	Homogeneous ATM Area and/or Major Traffic Flow and Region(s) concerned

Area of routing (AR)	Homogeneous Areas and/or Traffic flows	FIRs involved	Type of area covered	Remarks
1	**2**	**3**	**4**	**5**
AR1	Europe – South America	Dakar Oceanic,	Oceanic en-route low	Major traffic flow

	(EUR/SAM) (oceanic)	Sal Oceanic	density in southern part and oceanic high density in northern part	EUR//SAM
AR2	Atlantic Ocean interface between the AFI, NAT and SAM Regions	Accra, Dakar, Johannesburg Oceanic Luanda, Sal	Oceanic en-route low density	Homogeneous ATM area AFI/NAT/SAM
AR3	Europe – Eastern Africa routes Including the area of the Indian Ocean	Addis Ababa Antananarivo, Asmara, Dar-es-Salaam, Entebbe, Khartoum, Mauritius, Mogadishu, Nairobi, Seychelles	Continental en-route/ oceanic low density	Major traffic flow AFI/EUR
AR4	Europe to Southern Africa	Beira, Brazzaville, Cape Town, Gaborone, Harare, Johannesburg, Kano, Kinshasa, Lilongwe, Luanda, Lusaka, N'Djamena, Niamey, Windhoek	Continental en-route low density	Major traffic flow AFI/EUR
AR5	Continental Western Africa including coastal areas	Accra, Dakar, Kano, N'Djamena, Niamey, Roberts	Continental/oceanic low density	Homogeneous area AFI
AR6	Trans-Indian	Antananarivo, Bombay, Johannesburg Oceanic, Male, Mauritius, Melbourne, Seychelles	Continental high density	Homogeneous ATM area AFI/ASIA

AFI ANP, VOLUME II

PART II – AERODROMES / AERODROME OPERATIONS (AOP)

1. INTRODUCTION

1.1 This part of the AFI ANP, Volume II, complements the provisions in ICAO Standards, Recommended Practices and Procedures (SARPs) related to aerodrome design and operations (AOP). It contains dynamic plan elements related to the assignment of responsibilities to States for the provision of AOP facilities and services within a specified area in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300); and mandatory requirements related to AOP facilities and services to be implemented by States in accordance with regional air navigation agreements. Such agreement indicates a commitment on the part of the State(s) concerned to implement the requirement(s) specified.

2. GENERAL REGIONAL REQUIREMENTS

2.1 Table AOP II-1 contains the list of facilities and services to be provided by the State concerned at each aerodrome that is listed in Table AOP I-1 in Volume I. Table AOP II-1 shows the operational requirements at each aerodrome to be considered in planning the facilities and services for safe and efficient aircraft operations.

Visual aids for low visibility aerodrome operations

2.2 At aerodromes where there is a requirement to conduct low visibility operations, the appropriate visual and non-visual aids should be provided.

Non-precision approach aids

2.3 Where required by the topographic and/or environmental situation of an aerodrome, improved track guidance during departure and/or approach by specific non-visual and/or visual aids should be provided even if such aids would not normally be required in accordance with the SARPs.

Reduced runway declared distances for take-off

Note. — In the following operational requirements the term "intersection" is used to cover both intersection and junction concepts.

2.4 The reduced runway declared distances for take-off, as for those used for full runway declared distances, should consist of take-off run available (TORA), take-off distance available (TODA) and accelerate-stop distance available (ASDA).

2.5 The datum-line from which the reduced runway declared distances for take-off should be determined is defined by the intersection of the downwind edge of the specific taxiway with the runway edge. The loss, if any, of runway length due to alignment of the aircraft prior to take-off should be taken into account by the operators for the calculation of the aircraft's take-off weight.

2.6 Intersections used as intermediate take-off positions should be identified by the "taxiway designator" to which the datum-line of the associated reduced runway declared distance for take-off refers.

2.7 At each international aerodrome, specific minima visibility for take-off should be established, regulating the use of intersection take-off positions. These minima should permit the appropriate ATC unit to maintain a permanent surveillance of the ground movement operations, and the flight crews to constantly secure their position on the manoeuvring area, so as to exclude any potential risk of confusion as to the identification of the aircraft and intersections used for take-off. The minima should be consistent with the surface movement guidance and control system (SMGCS) provided at the aerodrome concerned.

2.8 The provision of marking and lighting aids together with signs should ensure the safe control and guidance of aircraft towards and at take-off intersections appropriate to the minima visibility criteria retained. At the runway holding position of the associated intersection take-off position, such signs should indicate the runway heading and the remaining TORA in metres.

2.9 At aerodromes regularly used by international commercial air transport, take-offs from runway/taxiway intersections may be justified for the following reasons:

a) runway capacity improvement;
b) taxi routes distances reduction;
c) noise alleviation; and
d) air pollution reduction.

2.10 The appropriate authorities should, upon prior consultation with aircraft operators, agree on the selection of suitable intermediate intersection take-off positions along the runway(s). Accordingly, authorities should determine the reduced runway declared distances for take-off associated with each selected intersection take-

off position and establish the specific ATC rules and operational procedures/limitations. Such provisions should be published in the State aeronautical information publications (AIP).

Aerodrome capacity management

2.11 As an integral part of the air navigation system, the aerodrome should provide the needed ground infrastructure including, *inter alia*, lighting; taxiways; runway, including exits; aprons and precise surface guidance to improve safety and to maximize aerodrome capacity in all weather conditions. An efficient aerodrome capacity planning and management should include:

a) reduction of runway occupancy time;
b) the capability to safely manoeuvre in all weather conditions whilst maintaining capacity;
c) precise surface guidance to and from a runway required in all conditions; and
d) availability of information on the position (to an appropriate level of accuracy) and intent of all vehicles and aircraft operating on the movement area for the appropriate ATM community members.

2.12 States should ensure that adequate consultation and, where appropriate, cooperation between airport authorities and users/other involved parties are implemented at all international aerodromes to satisfy the provisions of aerodrome capacity assessment and requirement.

2.13 When international aerodromes are reaching designed operational capacity, a better and more efficient utilization of existing runways, taxiways and aprons is required. Runway selection procedures and standard taxi routes at aerodromes should ensure an optimum flow of air traffic with a minimum of delay and a maximum use of available capacity. They should also, if possible, take account of the need to keep taxiing times for arriving and departing aircraft as well as apron occupancy time to a minimum. The airport collaborative decision making (A-CDM) concept should be implemented to improve airport capacity as early as possible.

Aerodrome capacity assessment and requirement

2.14 The declared capacity/demand condition at aerodromes should be periodically reviewed in terms of a qualitative analysis for each system component and, when applicable, the result of the qualitative assessment upon mutual agreement be used for information.

2.15 The future capacity/demand, based on a forecast for the next five years, should be agreed upon after close cooperation between aerodrome authorities and affected users.

2.16 Operators should consult with aerodrome authorities when future plans indicate a significant increased requirement for capacity resulting in one of the elements reaching a limiting condition.

2.17 Aerodrome capacity should be assessed by aerodrome authorities in consultation with the parties involved for each component (terminal/apron/aircraft operations) using agreed methods and criteria for level of delays.

2.18 Where restrictions in aerodrome capacity are identified, a full range of options for their reduction or removal should be evaluated by the aerodrome authority, in close cooperation with the operators and other involved parties. Such options should include technical/operational/procedural and environmental improvements and facility expansion.

2.19 At many aerodromes, airspace capacity has influence on the aerodrome capacity. If the declared capacity of a specified airspace has influence on aerodrome operations, this should be indicated and action undertaken to reach a capacity in this airspace corresponding to the aerodrome capacity.

2.20 The possibility of overcoming capacity limitations should also take the use of other aerodromes in the vicinity into consideration.

Closure of regular aerodromes

2.21 When a regular aerodrome is to be closed, States should ensure that sufficient alternate aerodromes remain open to provide for the safety and efficiency of aircraft approaching the regular aerodrome that may be required to divert to an alternate.

Scheduling aerodrome maintenance

2.22 States, when planning major aerodrome maintenance work that would affect the regularity of international aircraft operations, should consider the need to notify aircraft operators sufficiently in advance prior to undertaking the scheduled work.

3. SPECIFIC REGIONAL REQUIREMENTS

None

TABLE AOP II-1

REQUIREMENTS AND CAPACITY ASSESSMENT

Column

1 Name of the city and aerodrome, preceded by the location indicator.
Note 1— When the aerodrome is located on an island and no particular city or town is served by the aerodrome, the name of the island is included instead of a city.

Designation of the aerodrome as:
RS — international scheduled air transport, regular use;
RNS — international non-scheduled air transport, regular use;
AS — international scheduled air transport, alternate use; and
ANS — international non-scheduled air transport, alternate use.

2 Required rescue and firefighting service (RFF). The required level of protection expressed by means of an aerodrome RFF category number, in accordance with Annex 14, Volume I, 9.2.

3 Aerodrome reference code (RC). The aerodrome reference code for aerodrome characteristics expressed in accordance with Annex 14, Volume I, chapter 1. The code letter or number within an element selected for design purposes is related to the critical aeroplane characteristics for which the facilities are provided.

4 Runway Designation numbers

5 Type of each of the runways to be provided. The types of runways, as defined in Annex 14, VolumeI, Chapter 1, are:

NINST — non-instrument runway;
NPA — non-precision approach runway;
PA1 — precision approach runway, Category I;
PA2 — precision approach runway, Category II;
PA3 — precision approach runway, Category III.

6 Remarks. Additional information including critical design aircraft selected for determining RC, critical aircraft selected for determining the RFF category and critical aircraft for pavement strength. Only one critical aircraft type is shown if it is used to determine all the above three elements: otherwise different critical aircraft types need to be shown for different elements.

City/Aerodrome/Designation	RFF Category	PhysicalCharacteristics	Remarks

			RC	Rwy No	Rwy Type	
1		2	3	4	5	6
ANGOLA						
FNHU	HUAMBO/Albano Machado RS	7	4E	11 29	NPA NPA	
FNLU	LUANDA/4 de Fevereiro RS	9	4E	05 23 07 25	NPA PA1	
BENIN						
DBBB	COTONOU/Cadjehoun RS	9	4E	06 24	NPA PA1	
BOTSWANA						
FBFT	FRANCISTOWN/Francistown RS	4	3C	11 29	NINST NINST	
FBSK	GABORONE/Sir SeretseKhama Intl RS	9	4E	08 26	PA1 NPA	
FBKE	KASANE/Kasane RS	6	3C	08 26	NPA NINST	
FBMN	MAUN/Maun RS	6	3C	08 26	NINST NINST	
FBSP	SELEBI-PHIKWE/Selebi-Phikwe RS	4	3C	12 30	NINST NINST	
BURUKINA-FASO						
DFOO	BOBO-DIOULASSO/Bobo-Dioulasso RS	8	4D	06 24	PA1 NPA	

DFFD	OUAGADOUGOU/Ouagadougou RS	9	4E	04L 22R	PA1 NPA	
BURUNDI						
HBBA	BUJUMBURA/Bujumbura RS	7	4D	18 36	PA1 NPA	
CAMEROUN						
FKKD	DOULA/Douala RS	9	4E	12 30	NPA PA2	
FKKR	GAROUA/Garoua RS	8	4E	09 27	PA1 NPA	
FKKL	MAROUA/Salak RS	6	4D	13 31	NPA NINST	
FKKN	N'GAOUNDERE/N'gaoundere AS	6	4D	03 21	NPA NINST	
FKKS	YAOUNDE/Nsimalen RS	9	4E	01 19	NINST PA2	
CAPE VERDE						
GVFM	PRAIA/Francisco Mendes RS	4	3C	04 22	NPA NINST	
GVAC	SAL I./Amilcar Cabral RS	8	4E	01 19 07 25	PA1 NPA	
CENTRAL AFRICAN REPUBLIC						
FEFF	BANGUI/M'Poko RS	8	4D	17 35	NPA PA1	

FEFT	BERBERATI/Berberati RS		3C	17 35	NPA NINST	
CHAD						
FTTJ	N'DJAMENA/N'Djamena RS	9	4E	05 23	PA1 NPA	
COMOROS						
FMCV	ANJOUAN/Ouani RS		3B	10 28	NPA NPA	
FMCZ	DZAOUDZI/Pamanzi, Mayotte I. RS	6	3C	16 34	NINST NPA	
FMCH	MORONI/Prince Said Ibrahim RS	7	4D	02 20	PA1 NPA	
CONGO						
FCBB	BRAZAVILLE/Maya-Maya RS	9	4E	05 23	PA1 NPA	
FCPP	POINTE-NOIRE/Agostino Neto RS	6	4C	17 35	NPA NPA	
COTE D'IVOIRE						
DIAP Intl	ABIDJAN/Felix Houphet Boigny RS	9	4E	03 21	NPA PA1	
DIBK	BOUAKE/Bouake RS	5	4C	03 21	NPA NPA	
DEMOCRATIC REPUBLIC OF THE CONGO						
FZNA	GOMA/Goma RS	6	4C	18 36	NINST NPA	

FZAA	KINSHASA/N'Djili RS	9	4D	17 35	NPA NPA	
FZIC	KISANGANI/Bangoka AS	6	4E	06 24	NPA PA1	
FZQA	LUBUMBASHI/Luano AS	8	4D	07 25	PA1 NPA	
FZWA	MBUJI MAYI/Mbuji Mayi AS	6	4C	17 35	NPA NINST	
DJIBOUTI						
HDAM	DJIBOUTI/Ambouli RS	8	4E	09 27	NPA PA1	
EQUATORIAL GUINEA						
FGSL	MALABO/Malabo RS	7	4D	05 23	PA1 NPA	
ERITREA						
HHAS	ASMARA/Asmara Intl RS	7	4D	07 25	PA1 NPA	
HHSB	ASSAB/Assab RS	8	4E	12 30	NPA NINST	
ETHIOPIA						
HAAB	ADDIS ABABA/Bole Intl RS	9	4E	07R 25L	NPA PA1	
HADR	DIRE DAWA/Dire Dawa Intl RS	7	4D	15 33	NPA NINST	

HABD	Bahir Dar International RS	6	4D	04 22	NPA NPA	
HAMR	Mekele Alula Aba Nega International RS	7	4D	11 29	NPA PA1	
GABON						
FOON	FRANCEVILLE/M'Vengue RS	9	4E	15 33	PA1 NPA	
FOOL	LIBREVILLE/Leon M'Ba RS	9	4E	16 34	PA1 NPA	
FOOG	PORT GENTIL/Port Gentil RS	6	4C	03 21	NPA PA1	
GAMBIA						
GBYD	BANJUL/Banjul Intl RS	9	4D	14 32	NPA PA1	
GHANA						
DGAA	ACCRA/Kotoka Intl RS	9	4D	03 21	NPA PA1	
DGSI	KUMASI/Kumasi RS	5	4C	02 20	NPA NPA	
DGLE	TAMALE/Tamale RS	5	4C	05 23	NPA NPA	
GUINEA						
GUCY	CONAKRY/Gbessia RS	8	4E	06 24	PA1 NPA 2	
GUXN	KANKAN/Diankana RS	6	4D	10 28	NPA NINST	

GULB	LABE/Tata RS	6	4C	06 24	NINST NINST	
GUNZ	N'ZEREKORE/Konia RS	4	1C	18 36	NPA NINST	
GUINEA-BISSAU						
GGOV	BISSAU/Osvaldo Vieira Intl RS	8	4D	03 21	NPA PA1	
KENYA						
HKEL	ELDORET/Eldoret Intl RS	8	4D	08 26	PA2 NPA	
HKMO	MOMBASA/Moi Intl RS	9	4E	03 21 15 33	NPA PA1	
HKJK	NAIROBI/Jomo Kenyatta Intl RS	9	4E	06 24	PA2 NPA	
LESOTHO						
FXMM	MASERU/Moshoeshoe I. Intl RS	7	4D	04 22 11 29	NINST PA1	
LIBERIA						
GLRB	MONROVIA/Roberts Intl RS	8	4E	04 22	PA1 NPA	
MADAGASCAR						

FMMI	ANTANANARIVO/Ivato RS	9	4E	11 29	PA1 NPA	
FMNA	ANTSIRANANA/Arrachart RS	6	3C	13 31	NPA NINST	
FMNM	MAHANJANGA/Amborovy RS	7	4C	14 32	NPA NINST	
FMNN	NOSY-BE/Fascene RS	6	4C	05 23	NPA PA1	
FMMS	SAINTE-MARIE/Sainte-Marie RS	5	3C	01 19	NPA NPA	
FMMT	TAOMASINA/Taomasina RS	6	4C	01 19	NPA PA1	
FMSD	TOLAGNARO/Tolagnaro RS	6	4C	07 25	NPA NPA	
MALAWI						
FWCL	BLANTYRE/Chileka RS	8	4D	10 28	PA1 NPA	
FWLI	LILONGWE/Lilongwe Intl RS	9	4E	14 32	PA1 NPA	
MALI						
GABS	BAMAKO/Senou RS	8	4E	06 24	PA1 NPA	
GAGO	GAO/Gao RS	5	4C	07 25	NPA NINST	

GAKY	KAYES/Kayes RS	4	4C	08 26	NPA NINST	
GASK	SIKASSO/Sikasso	4	4C	08 26	NPA NINST	
GAMB	MOPTI-BARBE/Mopti-Barbe RS	6	4C	05 23	NPA NINST	
GATB	TOMBOUCTOU/Tombouctou RS	4	4C	07 25	PA1 NPA	
MAURITANIA						
GQPA	ATAR/Atar RS	6	4C	04 22	NPA NINST	
GQNI	NEMA/Nema RS	6	4D	10 28	NINST NPA	
GQPP	NOUADHIBOU/Nouadhibou RS	8	4D	03 21	PA1 NPA	
GQNN	NOUAKCHOTT/Nouakchott RS	8	4D	05 23	PA1 NPA	
GQPZ	ZOUERATE/Zouerate RS	6	4C	10 28	NPA NPA	
MAURITIUS						
FIMP	MAURITIUS/Sir SeewoosagurRamgoolan Intl RS	9	4E	14 32	PA1 NPA	
MOZAMBIQUE						

FQBR	BEIRA/Beira RS	7	4D	12 30 06 24	PA1 NPA	
FQMA	MAPUTO/Maputo Intl RS	7	4E	05 23	NPA PA1	
NAMIBIA						
FYKT	KEETMANSHOP/Keetmanshop RS	7	4D	04 22 18 36	NPA NPA	
FYWB	WALVIS BAY/Walvis Bay RS	6	4D	09 27 12 30	NPA NPA	
FYWH	WENDKOEK/Hosea Kutako RS	9	4E	08 26 16 34	PA1 NPA	
NIGER						
DRZA	AGADES/Sud RS	6	4C	07 25	NPA NINST	
DRRN	NIAMEY/DioriHamani Intl RS	9	4E	09R 27L 09L 27R	PA1 NPA	
DRZR	ZINDER/Zinder AS	6	4C	06 24	NPA NINST	
NIGERIA						

DNAA	ABUJA/Nnamdi Azikiwe RS	9	4E	04 22	PA1 PA1	
DNBA	BAUCI/Bauci Intl RNS	5	4E	17 35	NPA NPA	
DNBK	BIRNIN/Sir Ahmadou Bello Intl RNS	9	4E	06 24	PA2 PA1	
DNCA	CALABAR/Margret Ekpo Intl AS	6	4D	03 21	NPA PA1	
DNDS	DUTSE/Dutse Intl RNS	9	4E	06 24	PA1 NPA	
DNEN	ENUGU/Akanu Ibiam Intl RS	8	4D	08 26	NPA PA1	
DNGO	Gombe/Gombe Intl RNS	4	4E	06 24	PA1 NPA	
DNIL	ILORIN/Ilorin Intl AS	9	4E	05 23	PA1 NPA	
DNKA	KADUNA/Kaduna AS	9	4E	05 23	PA1 NPA	
DNKN	KANO/Mallam Aminu Kano Intl RS	9	4E 4D	06 24 05 23	PA2 PA2	
DNKT	KATSINA/KATSINA Intl RNS	8	4D	05 23	Pa1 npa	

DNMM	LAGOS/Murtala Muhammed RS	9	4E 4D	01L 19R 01R 19L	PA2 PA2 NPA PA2	
DNMA	MAIDUGURI/Maiduguri RS	9	4E	05 23	PA2 NPA	
DNMN	MINNA/Minna Intl AS	6	4D	05 23	PA1 NPA	
DNPO	PORT HARCOURT/Port Harcourt Intl RS	9	4E	03 21	NPA PA1	
DNAI	UYO/Uyo Intl RNS	9	4E	03 21	NPA PA1	
DNSO	SOKOTO/Abubakar Saddiq III Intl AS	9	4E	08 26	PA1 NPA	
DNYO	YOLA/Yola RNS	6	4E	17 35	PA1 NPA	
REUNION (France)						
FMEE	SAINT-DENIS/Gillot la Réunion RS	9	4E 4E	12 30 14 32	NINST NPA PA1 NINST	
RWANDA						
HRYR	KIGALI/GregoireKayibanda RS	9	4E	10 28	NPA PA1	
SAO TOME AND PRINCIPE						
FPST	SAO TOME/Sao Tome RS	8	4D	11 29	PA1 NPA	

SENEGAL						
GOGS	CAP SKIRING/Cap Skiring RS	6	4D	11 29	NINST NPA	
GOOY	DAKAR/Leopold Sedar Senghor Intl RS	9	4D	18 36 03 21	PA2 NPA	
GOSS	SAINT LOUIS/Saint Louis RS	6	4D	18 36	NPA NINST	
GOTT	TAMBACOUNDA/Tambacounda RS	6	4D	06 24	NPA NPA	
GOGG	ZIGUINCHOR/Ziguinchor RS	6	4D	10 28	NINST NPA	
SEYCHELLES						
FSIA	MAHE/Seychelles Intl RS	9	4E	13 31	NPA PA1	
SIERRA LEONE						
GFLL	FREETOWN/Lungi RS	8	4D	12 30	NPA PA1	
SOMALIA						
HCMI	BERBERA/Berbera AS	4	3B	05 23	NINST NINST	
HCMV	BURAO/Burao RS	4	4B	13 31	NINST NINST	
HCMH	HARGEISA/Hargeisa RS	5	4C	06 24	NPA NPA	

HCMK	KISMAYU/Kismayu AS	7	4D	05 23	NPA PA1	
HCMM	MOGADISHU/Mogadishu RS	8	4D	05 23	NPA PA1	
SOUTH AFRICA						
FABL	BLOEMFONTEIN/Bram Fisher AS	7	3D 3D	02 20 12 30	NPA NPA NINST NINST	
FACT	CAP TOWN/Cap Town RS	9	4E 3C	01 19 16 34	PA3 PA2 NINST NINST	
FALE	DURBAN/King Shaka RS	9	4E	06 24	PA2 PA2	
FAOR	JOHANNESBURG/O.R. Tambo RS	9	4E 4E	03L 21R 03R 21L	PA2 PA2 PA2 PA2	
FALA	LANSERIA/Lanseria RS	7	4E	07 25	NPA NINST	
FAMM	MAFIKENG/Mafikeng AS	2	4E	04 22	NPA NINST	
FAKN	NELSPRUIT/Kruger Mpumalanga RS	8	4D	05 23	PA1 NPA	

FAPP	PIETERSBURG/Gateway AS	7	3D	01 19 05 23	NINST NINST NINST NINST	
FAPE	PORT ELISABETH/Port Elisabeth AS	7	3D	08 26 17 35	PA1 PA1 NINST NINST	
FAUP	UPINGTON/Upington RS	7	4D	17 35 01 19 08 26	NPA NPA NPA NPA NINST NINST	
SWAZILAND						
FDMS	MANZINI/Matsapha RS	6	4C	07 25	NPA NINST	
TOGO						
DXXX	LOME/Gnassingbe Eyadema Intl RS	9	4D	09 27	PA2 PA2	
DXNG	NIAMTOUGOU/Niamtougou RS	5	4E	05 23	NPA PA1	
UGANDA						
HUEN	ENTEBBE/Entebbe Intl RS	9	4E	17 35	PA1 NPA	
UNITED REPUBLIC OF TANZANIA						

HTDA	DAR-ES-SALAM/Dar-Es-Salam RS	9	4E	05 23	PA1 NPA	
HTKJ	KILIMANJARO/Kilimanjoro Intl RS	9	4E	09 27	PA1 NPA	
HTZA	ZANZIBAR/Zanzibar RS	5	4D	18 36	NINST NPA	
ZAMBIA						
FLLI	LIVINGSTONE/Livingstone Intl RS	4	3C	10 28 15 33	PA2 PA2	
FLLS	LUSAKA/Lusaka Intl RS	8	4D	10 28	NPA NPA	
FLMF	MFUWE/Mfuwe RSFMND	6	4C	08 26	NPA NPA	
FLND	NDOLA/Ndola RSFMND	6	4D	10L 28R 10R 28L	NPA NPA	
ZIMBABWE						
FVBU	BULAWAYO/Bulawayo RS	8	4E	13 31	NPA NPA	
FVHA	HARAER/Harare RS	9	4E	06 24	PA1 PA1	
FVFA	VICTORIA FALLS/Victoria Falls RS	7	4E	12 30	PA1 NINST	

AFI ANP, VOLUME II

PART III – COMMUNICATIONS, NAVIGATION AND SURVEILLANCE (CNS)

1. INTRODUCTION

1.1 This part of the AFI ANP, Volume II, complements the provisions in Standards, Recommended Practices and Procedures (SARPs) related to communication, navigation and surveillance (CNS). It contains dynamic plan elements related to the assignment of responsibilities to States for the provision of CNS facilities and services within a specified area in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300); and mandatory requirements related to CNS facilities and services to be implemented by States in accordance with regional air navigation agreements. Such agreement indicates a commitment on the part of the State concerned to implement the requirement specified.

2. GENERAL REGIONAL REQUIREMENTS

Communications

Aeronautical Fixed Service (AFS)

2.1 The aeronautical fixed service should comprise the following systems and applications that are used for ground-ground (i.e. point-to-point and/or point-to-multipoint) communications in the international aeronautical telecommunication service:

ATS direct speech circuits and networks;

meteorological operational circuits, networks and broadcast systems, including World Area Forecast System – Internet File Service (WIFS) and/or Satellite Distribution System for Information Relating to Air Navigation (SADIS);

the aeronautical fixed telecommunications network (AFTN);

the common ICAO data interchange network (CIDIN);

the air traffic services (ATS) message handling services (AMHS); and

the inter-centre communications (ICC).

2.2 To meet the data communication requirements, a uniform high-grade aeronautical network should be provided, based on the aeronautical telecommunication network (ATN), taking into account the existence and continuation of current networks.

2.3 Contingency procedures should be in place to ensure that, in case of a communication centre breakdown, all the parties concerned are promptly informed of the prevailing situation. All possible arrangements should be made to ensure that, in case of breakdown of a communications centre or circuit, at least high-priority traffic continues to be handled by appropriate means.

2.4 AFS planning should permit flexibility in detailed development and implementation. The required AFTN Stations and Centres are listed in the AFTN Plan in **Table CNS II-1**.

The Aeronautical Telecommunication Network (ATN)

2.5 The ATN should be able to:

a) support applications carried by the existing networks;

b) support gateways enabling inter-operation with existing networks; and

c) support ground-ground communications traffic associated with air-ground data link applications.

2.6 The ATN should make optimum use of dedicated bilateral/multilateral aeronautical links and other communication means commensurate with the operational Quality of Service (QoS) requirements.

2.7 The implementation of the ATN should take into account the need for cost-effective evolution in terms of network capacity, requirements and time-frame and allow for a progressive transition from existing communication networks and services to a uniform, harmonised and integrated communications infrastructure, capable of supporting the implementation of future aeronautical services such as Flight and Flow Information in a Collaborative Environment (F-FICE), System-Wide Information Management (SWIM) applications, etc.

2.8 In case means other than dedicated bilateral links are used by the ATN, States should ensure that service level agreements (SLA) are met in terms of implementation priority, high availability, priority in restoration of service and appropriate levels of security.

2.9 The ATN should provide for interregional connections to support data exchange and mobile routing within the global ATN.

2.10 In planning the ATN, provisions should be made, where required, for interfacing with other international networks. The Required ATN Infrastructure Routing Plan is described under **Table CNS II-2**.

Network services

2.11 The Internet Society (ISOC) communications standards for the Internet Protocol Suite (IPS) should be used for the implementation of AMHS.

2.12 The migration from legacy bit-oriented protocols such as X.25 Protocol suite to IPS should be planned.

2.13 The migration of international or sub-regional ground networks to the ATN based on Internet Protocol (IP) to support AFS communication requirements, while reducing costs, should be planned.

2.14 States should ensure that the solutions provided for the implementation of the ATN meet the air traffic management and aeronautical fixed service requirements. Such requirements should consist of:

a) Performance requirements: availability, continuity, integrity, monitoring and alerting criteria per data flow. In the case where a required communication performance (RCP) is globally prescribed, requirements derived from RCP should be stated;

b) Interoperability requirements;

c) Safety and security requirements, duly derived after the identification of operational hazards and threats, and allocation of objectives; and

d) Implementation process requirements (creation, test, migration, upgrades, priority in restoration of service, termination).

Network management

2.15 An ICAO centralised off-line network management service is provided to participating AFTN/ AMHS centres in the AFI Region under the ATS Messaging Centre (AMC).

2.16 In the case of integrated communications services procured and shared by several States, organizational provisions should allow for the planning and performing of the management of technical performance, network configuration, fault, security, cost division/allocation, contract, orders and payment.

Specific air traffic management (ATM) requirements

2.17 Where ATS speech and data communication links between any two points are provided, the engineering arrangements should be such as to avoid the simultaneous loss of both circuits. The required ATS direct speech circuits plan is detailed under **Table CNS II-3**.

2.18 Special provisions should be made to ensure a rapid restoration of ATS speech circuits in case of outage, as derived from the performance and safety requirements.

2.19 Data circuits between ATS systems should provide for both high capacity and message integrity.

2.20 The Inter-Centre Communication (ICC), consisting of ATS Inter-facility Data Communication (AIDC) application and the Online Data Interchange (OLDI) application, should be used for automated exchange of flight data between ATS units to enhance the overall safety of the ATM operation and increase airspace capacity.

2.21 Where Voice over IP is planned or implemented between ATS units for voice communications, it should meet the ATS requirements. When data and voice are multiplexed, particular attention should be paid to the achievement of the ATM performance and safety requirements.

Specific meteorological (MET) requirements

2.22 The increasing use of the GRIB (Gridded Binary or General Regularly-distributed Information in Binary form) and BUFR (Binary Universal Form for the Representation of meteorological data) code forms for the dissemination of the upper wind and temperature and significant weather forecasts and the planned transition to digital form using extensible markup language (XML)/geography markup language (GML) for the dissemination of OPMET data should be taken into account in the planning process of the ATN.

2.23 In planning the ATN, account should be taken of changes in the current pattern of distribution of meteorological information resulting from the increasing number of long-range direct flights and the trend towards centralized flight planning.

Specific aeronautical information management (AIM) requirements

2.24 The aeronautical fixed service should meet the requirements to support efficient provision of aeronautical information services through appropriate connections to area control centres (ACCs), flight information centres (FICs), aerodromes and heliports at which an information service is established.

Aeronautical Mobile Service (AMS)

2.25 To meet the air-ground data communication requirements, a high-grade aeronautical network should be provided based on the ATN, recognising that other technologies may be used as part of the transition. The network needs to integrate the various data links in a seamless fashion and provide for end-to-end communications between airborne and ground-based facilities.

2.26 Whenever required, use of suitable techniques on VHF or higher frequencies should be made. The required HF network designators applicable for the AFI Region are listed in **Table CNS II-4**.

2.27 Aerodromes having a significant volume of International General Aviation (IGA) traffic should also be provided with appropriate air-ground communication channels.

Air-Ground Data Link Communications

2.28 A Strategy for the harmonised implementation of the data link communications in the AFI Region should be developed based on the Global Operational Data Link Document (GOLD) adopted by ICAO Regions and the Aviation System Block Upgrade (ASBU) methodology.

2.29 Where applicable, controller-pilot data link communications (CPDLC), based on ATN VDL data link Mode 2 (VDL2) and/or FANS-1/A, should be implemented for air-ground data link communications.

2.30 Partial or divergent aircraft data link evolutions that result in excluding messages from aircraft systems should not be pursued. Interim steps or phases toward full implementation of the common technical definition in ground systems should only be pursued on a regional basis, after coordination between all States concerned.

2.31 Harmonization of operational procedures for implementation of the above packages is essential. States, Planning and Implementation Regional Groups (PIRGs) and air navigation services providers should adopt common procedures to support seamless ATS provision across FIR boundaries, rather than each State or Region developing and promulgating unique procedures for common functions.

Required Communication Performance (RCP)

2.32 The Required Communication Performance (RCP) concept characterizing the performance required for communication capabilities that support ATM functions without reference to any specific technology should be applied wherever possible.

2.33 States should determine, prescribe and monitor the implementation of the RCP in line with the provisions laid down in the *ICAO Manual on Required Communication Performance* (Doc 9869).

Navigation

Navigation Infrastructure

2.34 The navigation infrastructure should meet the requirements for all phases of flight from take-off to final approach and landing.

Note: Annex 10 to the Convention on International Civil Aviation—Aeronautical Telecommunications, Volume I — Radio Navigation Aids, Attachment B, provides the strategy for introduction and application of non-visual aids to approach and landing.

2.35 The AFI PBN Regional Roadmap/Plan provides guidance to air navigation service providers, airspace operators and users, regulators, and international organizations, on the expected evolution of the regional air navigation system in order to allow planning of airspace changes, enabling ATM systems and aircraft equipage. It takes due account of the operational environment of the AFI Region(s).

PBN Transition Strategy

2.36 During transition to performance-based navigation (PBN), sufficient ground infrastructure for conventional navigation systems should remain available. Before existing ground infrastructure is considered for

removal, users should be given reasonable transition time to allow them to equip appropriately to attain a performance level equivalent to PBN. States should approach removal of existing ground infrastructure with caution to ensure that safety is not compromised. This should be guaranteed by conducting safety assessments and consultations with the users.

Use of specific navigation aids

2.37 Where, within a given airspace, specific groups of users have been authorized by the competent authorities to use special aids for navigation. The respective ground facilities should be located and aligned so as to provide for full compatibility of navigational guidance with that derived from the SARPs.

2.38 States should ensure and oversee that service providers take appropriate corrective measures promptly whenever required by a significant degradation in the accuracy of navigation aids (either space based or ground based or both) is detected.

Surveillance

2.40 An important element of modern air navigation infrastructure required to manage safely increasing levels and complexity of air traffic is aeronautical surveillance systems.

2.41 When operating Mode S radars, States should coordinate with their corresponding Regional ICAO Office the assignment of their corresponding interrogator identifier (II) codes and surveillance identifier (SI) codes, particularly where areas of overlapping coverage will occur.

Frequency Management

Aeronautical Mobile Service (AMS)

2.42 Frequencies should be assigned to all VHF aeronautical mobile service (AMS) facilities in accordance with the principles laid out in Annex 10, Volume V and *ICAO Handbook on Radio Frequency Spectrum Requirements for Civil Aviation* (Doc 9718) Volumes I and II, and take into account:

agreed geographical separation criteria based on 25 kHz interleaving between channels;

agreed geographical separation criteria for the implementation of VDL services;

the need for maximum economy in frequency demands and in radio spectrum utilization; and

a deployment of frequencies which ensures that international services are planned to be free of interference from other services using the same band.

2.43 The priority order to be followed in the assignment of frequencies to service is:

a) ATS channels serving international services (ACC, APP, TWR, FIS);

b) ATS channels serving national purposes;

c) channels serving international VOLMET services;

d) channels serving ATIS and PAR; and

e) channels used for other than ATS purposes.

2.44 The criteria used for frequency assignment planning for VHF AMS facilities serving international requirements should, to the extent practicable, also be used to satisfy the need for national VHF AMS facilities.

2.45 Special provisions should be made, by agreement between the States concerned, for the sharing and the application of reduced protection of non-ATS frequencies in the national sub-bands, so as to obtain a more economical use of the available frequency spectrum consistent with operational requirements.

2.46 States should ensure that no air/ground frequency is utilized outside its designated operational coverage and that the stated operational requirements for coverage of a given frequency can be met for the transmission sites concerned, taking into account terrain configuration.

Radio navigation aids for Aeronautical Radio Navigation Services (ARNS)

2.47 Frequencies should be assigned to all radio navigation facilities taking into account agreed geographical separation criteria to ILS localizer, VOR and GBAS, X and Y channels to DME, in accordance with the principles laid out in Annex 10, Volume V and *ICAO Handbook on Radio Frequency Spectrum Requirements for Civil Aviation* (Doc 9718) Volumes I and II. Also, the need for maximum economy in frequency demands and in radio spectrum utilization and a deployment of frequencies which ensures that international services are planned to be free of interference from other services using the same band, need to be considered.

2.48 The principles used for frequency assignment planning for radio navigation aids serving international requirements should, to the extent possible, also be used to satisfy the needs for national radio aids to navigation.

Support to ICAO Positions for ITU World Radiocommunication Conferences (WRCs)

2.49 Considering the importance and continuous demand of the radio frequency spectrum and for the protection of the current aeronautical spectrum and the allocation of new spectrum for the new services and system to be implemented in civil air navigation, States and international organizations are to support ICAO's position at ITU World Radiocommunication Conferences (WRCs) and in regional and other international activities conducted in preparation for ITU WRCs.

Note: The Handbook on Radio Frequency Spectrum Requirements for Civil Aviation *(Doc 9718) Volume I, contains ICAO policy statements relevant to the aviation requirements for radio frequency spectrum. The handbook is intended to assist States and ICAO in preparing for ITU WRCs.*

3. SPECIFIC REGIONAL REQUIREMENTS

EXAMPLES

3.1 The surveillance systems to be used in the AFI Region are:

Secondary Surveillance Radars (SSR) Mode A, C and S in terminal and en-route continental airspace;

Automatic Dependent Surveillance – Broadcast (ADS-B) and Multilateration (MLAT) in terminal areas;

ADS-B and Wide Area Multilateration (WAM) in most of the airspace;

Automatic Dependent Surveillance – Contract (ADS-C) in some parts of the oceanic and remote continental airspace.

3.2 List of assigned frequencies

3.3 Where implemented, the criteria for MLS frequency planning in the AFI Region should be applied, aimed at allowing the maximum number of MLS-associated DME frequencies on X and Y channels so as to minimize the possible use of W and Z channels.

TABLE CNS II-1

AERONAUTICAL FIXED TELECOMMUNICATIONS NETWORK (AFTN) PLAN

EXPLANATION OF THE TABLE

Column

1 The AFTN Centres/Stations of each State are listed alphabetically. Each circuit appears twice in the table. The categories of these facilities are as follows:

M - Main AFTN COM Centre
T - Tributary AFTN COM Centre
S - AFTN Station

2 Category of circuit:

M - Main trunk circuit connecting Main AFTN communication centres.
T - Tributary circuit connecting Main AFTN communication centre and Tributary AFTN Communications Centre.
S - AFTN circuit connecting an AFTN Station to an AFTN Communication Centre.

3 Type of circuit provided:

LTT/a - Landline teletypewriter, analogue (e.g. cable, microwave)
LTT/d - Landline teletypewriter, digital (e.g. cable, microwave)
LDD/a - Landline data circuit, analogue (e.g. cable, microwave)
LDD/d - Landline data circuit, digital (e.g. cable, microwave)
SAT/a/d - Satellite link, with /a for analogue or /d for digital

4 Circuit signalling speed in bits/s.

5 Circuit protocols

6 Data transfer code (syntax):

ITA-2 - International Telegraph Alphabet No. 2 (5-unit Baudot code).
IA-5 - International Alphabet No. 5 (ICAO 7-unit code).
CBI - Code and Byte Independency (ATN compliant).

7 Remarks

TABLE CNS II-1 - AERONAUTICAL FIXED TELECOMMUNICATIONS NETWORK (AFTN) PLAN

State/Station	Category	Requirement				Remarks
		Type	Signaling Speed	Protocol	Code	
1	2	3	4	5	6	
CONGO						
BRAZZAVILLE	M					
BANGUI	T	SAT/d	1.2	Frame Relay	IA-5	
DAKAR	M	SAT/d	9.6	Frame Relay	IA-5	
DOUALA	T	SAT/d	64/9.6	Frame Relay	IA-5	
KINSHASA	T	SAT/d	9.600	Frame Relay	IA-5	
JOHANNESBURG	M	SAT/d	128/9.6	Frame Relay	IA-5	
LIBREVILLE	T	SAT/d	9.600	Frame Relay	IA-5	
LUANDA	T	SAT/d	9.600	Frame Relay	IA-5	
MALABO	S	SAT/d	64/9.6	Frame Relay	IA-5	
NAIROBI	M	SAT/d	64/19.2	Frame Relay	IA-5	
N'DJAMENA	T	SAT/d	9600	Frame Relay	IA-5	
NIAMEY	M	SAT/d	64/9.6	Frame Relay	IA-5	
SAO TOME & PRINCIPE	T	SAT/d		Frame Relay		
ETHIOPIA						
ADDIS ABABA	M					
ASMARA	T	SAT/d	64 – 9.6 Kbps	None	IA-5	
DJIBOUTI	T	SAT/d	9.6 Kbps	None	IA-5	
KHARTOUM	T	SAT/d	64 – 9.6 Kbps	None	IA-5	
NAIROBI	M	SAT/d	64 – 9.6 Kbps	None	IA-5	
NIAMEY	M	SAT/d	--	Frame Relay	IA-5	
(MID)	M	SAT/d	64 – 9.6 Kbps 300 baud 9.6 Kbps 64 – 9.6 Kbps		IA-5	
KENYA						
NAIROBI	M	SAT/d				
DAR-ES-SALAAM	T	SAT/d	-	-	IA-5	
DZAOUDZI	S	SAT/d	-	-	IA-5	
ENTEBBE	T	SAT/d	1.2Kbit/s	None	IA-5	
MAURITIUS	T	SAT/d	64/9.6	None	IA-5	
MOGADISHU	T	SAT/d	64/9.2	None	IA-5	
MORONI	S	SAT/d	64/19.2	None	IA-5	
SEYCHELLES	T	SAT/d			IA-5	
ST. DENIS	S	SAT/d			IA-5	
(ASIA)H	M	SAT/d			IA-5	

State/Station	Category	Requirement				Remarks
		Type	Signaling Speed	Protocol	Code	
1	2	3	4	5	6	
NIGER						
NIAMEY	M					
ACCRA	T	SAT/d	64/9.6 bps	Frame Relay	I A-5	
COTONOU	S	SAT/d	50 BD	Frame Relay	IA-5	
KANO	T	SAT/d	100 baud	Frame Relay	IA-5	
LAGOS	S	SAT/d	64/9.6 bps	Frame Relay	IA-5	
LOME	S	SAT/d	2.4 K	Frame Relay	IA-5	
N'DJAMENA	T	SAT/d	64/9.6 baud	Frame Relay	IA-5	
OUAGADOUGOU	T	SAT/d	9.6 bps	Frame Relay	IA-5	
SENEGAL						
DAKAR	M					
ABIDJAN	T	SAT/d	64 Kbps	Frame Relay	IA-5	
BAMAKO	T	SAT/d	-	Frame Relay	IA-5	
BANJUL	T	SAT/d	64 Kbps	Frame Relay	IA-5	
BISSAU	T	SAT/d		Frame Relay	IA-5	
CONAKRY	S	SAT/d		Frame Relay	IA-5	Via Roberts
FREETOWN	S	SAT/d		Frame Relay	IA-5	Via Roberts
NIAMEY	M	SAT/d		Frame Relay	IA-5	
NOUAKCHOTT	T	SAT/d		Frame Relay	IA-5	
ROBERTS	T	SAT/d		Frame Relay	IA-5	
SAL	T	SAT/d		Frame Relay	IA-5	
(SAM)	M	SAT/d		Frame Relay	IA-5	Recife

State/Station	Category	Requirement				Remarks
		Type	Signaling Speed	Protocol	Code	
1	2	3	4	5	6	
SOUTH AFRICA						
JOHANNESBURG	M					
ANTANANARIVO	T	SAT/d	-	Frame Relay	IA-5	
BEIRA	T	SAT/d	-	Frame Relay	IA-5	
BRAZZAVILLE	M	SAT/d		Frame Relay	IA-5	
BUJUMBURA	T	SAT/d			IA-5	
GABORONE	T	SAT/d			IA-5	
HARARE	T	SAT/d			IA-5	
KIGALI	T	SAT/d			IA-5	
LILONGWE	T	SAT/d			IA-5	
LUSAKA	T	SAT/d			IA-5	
MAPUTO	M	SAT/d			IA-5	
MASERU	M	SAT/d			IA-5	
MANZINI	T	SAT/d			IA-5	
NAIROBI	M	SAT/d			IA-5	
WINDHOEK	T	SAT/d			IA-5	
(ASIA/PAC)	T	SAT/d			IA-5	Brisbane
(SAM)	T	SAT/d			IA-5	Buenos Aires

TABLE CNS II-2

REQUIRED ATN INFRASTRUCTURE ROUTING PLAN

EXPLANATION OF THE TABLE

Column

1 Name of the Administration and Location of the ATN Router

2 Type of Router (in end systems (ES) of the Administration shown in column 1)

3 Type of Interconnection:

Inter-Regional: Connection between different Regions/ domains
Intra-Regional: Connection within a Region/ domain.

4 Connected Router: List of the Administration and location of the ATN routers to be connected with the router shown in column 1.

5 Bandwidth: Link Speed expressed in bits per second (bps)

6 Network Protocol: If Internet Protocol Suite is used, indicate version of IP (IPv4 or IPv6)

7 Via: The media used to implement the interconnection of the routers. (in case of IP service bought from a service provider, indicate VPN)

8 Remarks

TABLE CNS II-2 - REQUIRED ATN INFRASTRUCTURE ROUTING PLAN

Administration and Location	Type of Router	Type of Interconnection	Connected Router	Bandwidth	Network Protocol	Via	Remarks
1	2	3	4	5	6	7	8
Angola		AFTN/AMHS	Brazzaville	32Kbits/s	IPV6		
Benin		AFTN/AMHS	Niamey	32Kbits/s	IPV6		
Botswana		AFTN/AMHS	Johannesburg	32Kbits/s	IPV6		
Burkina Faso		AFTN/AMHS	Niamey	32Kbits/s	IPV6		
Burundi		AFTN/AMHS	Johannesburg	32Kbits/s	IPV6		
Cameroon		AFTN/AMHS	Brazzaville	32Kbits/s	IPV6		
Cabo Verde		AFTN/AMHS	Dakar	32Kbits/s	IPV6		
Central African Republic		AFTN/AMHS	Brazzaville	32Kbits/s	IPV6		
Chad		AFTN/AMHS	Niamey	32Kbits/s	IPV6		
Comoros		AFTN/AMHS	Nairobi	32Kbits/s	IPV6		
Congo	BBIS	AFTN/AMHS	Dakar, Johannesburg Niamey	64KBits/s	IPV6		
Cote d'Ivoire		AFTN/AMHS	Dakar	32Kbits/s	IPV6		
Democratic Rep. Congo		AFTN/AMHS	Brazzaville	32Kbits/s	IPV6		
Djibouti		AFTN/AMHS	Addis Ababa	32Kbits/s	IPV6		
Equatorial Guinea		AFTN/AMHS	Brazzaville	32Kbits/s	IPV6		
Eritrea		AFTN/AMHS	Addis Ababa	32Kbits/s	IPV6		
Ethiopia	BBIS	AFTN/AMHS	Nairobi, Niamey	64KBits/s	IPV6		
Gabon		AFTN/AMHS	Brazzaville	32Kbits/s	IPV6		
Gambia		AFTN/AMHS	Dakar	32Kbits/s	IPV6		
Ghana		AFTN/AMHS	Niamey	32Kbits/s	IPV6		
Guinea		AFTN/AMHS	Dakar	32Kbits/s	IPV6		
Guinea-Bissau		AFTN/AMHS	Dakar	32Kbits/s	IPV6		
Kenya	BBIS	AFTN/AMHS	Addis Ababa, Johannesburg, Niamey	64KBits/s	IPV6		
Lesotho		AFTN/AMHS	Johannesburg	32Kbits/s	IPV6		
Liberia		AFTN/AMHS	Dakar	32Kbits/s	IPV6		
Madagascar		AFTN/AMHS	Johannesburg	32Kbits/s	IPV6		
Malawi		AFTN/AMHS	Johannesburg	32Kbits/s	IPV6		
Mali		AFTN/AMHS	Dakar	32Kbits/s	IPV6		
Mauritania		AFTN/AMHS	Dakar	32Kbits/s	IPV6		
Mauritius		AFTN/AMHS	Nairobi, Johannesburg	32Kbits/s	IPV6		
Mozambique		AFTN/AMHS	Johannesburg	32Kbits/s	IPV6		
Namibia		AFTN/AMHS	Johannesburg	32Kbits/s	IPV6		
Niger	BBIS	AFTN/AMHS	Dakar, Brazzaville, Addis Ababa	64KBits/s	IPV6		
Nigeria		AFTN/AMHS	Niamey	32Kbits/s	IPV6		
Reunion		AFTN/AMHS	Mauritius	32Kbits/s	IPV6		
Rwanda		AFTN/AMHS	Johannesburg	32Kbits/s	IPV6		
Sao Tome & Principe		AFTN/AMHS	Brazzaville	32Kbits/s	IPV6		
Senegal	BBIS	AFTN/AMHS	Niamey, Brazzaville,Alger, Johannesburg, SAM	64KBits/s	IPV6		
Seychelles		AFTN/AMHS	Nairobi	32Kbits/s	IPV6		
Sierra Leone		AFTN/AMHS	Dakar	32Kbits/s	IPV6		
Somalia		AFTN/AMHS	Nairobi	32Kbits/s	IPV6		
South Africa	BBIS	AFTN/AMHS	Brazzaville,Cairo, Dakar, Nairobi, SAM	64KBits/s	IPV6		
South Sudan		AFTN/AMHS	Nairobi	32Kbits/s	IPV6		
Swaziland		AFTN/AMHS	Johannesburg	32Kbits/s	IPV6		
Togo		AFTN/AMHS	Niamey	32Kbits/s	IPV6		

Uganda		**AFTN/AMHS**	**Nairobi**	32Kbits/s	**IPV6**		
United Republic of Tanzania		**AFTN/AMHS**	**Johannesburg, Nairobi**	32Kbits/s	**IPV6**		
Western Sahara		**AFTN/AMHS**		32Kbits/s	**IPV6**		
Zambia		**AFTN/AMHS**	**Johannesburg**	32Kbits/s	**IPV6**		
Zinbabwe		**AFTN/AMHS**	**Johannesburg**	32Kbits/s	**IPV6**		

TABLE CNS II-3

ATS DIRECT SPEECH CIRCUITS PLAN

EXPLANATION OF THE TABLE

Column

1 and 2 Circuit terminal stations are listed alphabetically by the Terminal I.

3 A — indicates ATS requirement for the establishment of voice communication within 15 seconds.

D — indicates requirements for instantaneous communications.

4 Type of service specified:

LTF — landline telephone (landline, cable, UHF, VHF, satellite).

RTF — radiotelephone.

5 Type of circuits; Direct (DIR) or Switched (SW).

D — indicates a direct circuit connecting Terminals I and II.

S — indicates that a direct circuit does not exist and that the connection is established via switching at the switching centre(s) indicated in column 6.

IDD — International direct dialling by public switch telephone network

Note 1.— Number of D and/or S circuits between Terminals I and II are indicated by numerical prefix, i.e. 2 D/S means 2 direct circuits and one switched circuit.

Note 2.— Pending the implementation of proper ATS voice circuits, and provided that aeronautical operational requirements are met, IDD services may be used for the ATS voice communications in low traffic areas.

6 Location of switching centre(s). Alternate routing location, if available, is indicated in brackets.

7 Remarks

TABLE CNS II-3 - ATS DIRECT SPEECH CIRCUITS PLAN

ATS REQUIREMENTS FOR SPEECH COMMUNICATIONS			CIRCUIT			REMARKS
TERMINAL I	TERMINAL II	TYPE	SERVICE	DIR/SW	TO BE SWITCHED VIA	
1	2	3	4	5	6	7
ANGOLA						
LUANDA	ACCRA	A	LTF	DIR		
APP-FIC	BRASILIA	A	LTF	DIR		or PSTN
	BRAZZAVILLE	A	LTF	1 SW	Kinshasa	
	GABORONE	A	LTF	2 SW	Lusaka/Kinshasa	
	JOHANNESBURG	A	LTF	DIR		
	KINSHASA	A	LTF	1 SW	Kinshasa	
	LUSAKA	A	LTF	2 SW	Kinshasa/Lusaka	
	WINDHOEK	A	LTF	DIR		
BENIN			LTF			
COTONOU	ACCRA	A	LTF	DIR		
	LAGOS	A	LTF	DIR		
	LOME	A		DIR		
BOTSWANA						
GABORONE	FRANCISTOWN	A	LTF	DIR		
ACC	HARARE	A	LTF	DIR		
	JOHANNESBURG	A	LTF	DIR		or PSTN
	LUANDA	A	LTF	1 SW	Lusaka/Kinshasa	
	LUSAKA	A	LTF	1 SW	Lusaka	
	WINDHOEK	A	LTF	DIR		
FRANCISTOWN	BULAWAYO	A	LTF	DIR		
TWR	GABORONE	A	LTF	DIR		
BURKINA FASO						
BOBO DIOULASSO	ABIDJAN	A	LTF	1 SW	Abidjan	
	ACCRA	A	LTF	1 SW	Abidjan	
	BAMAKO	A	LTF	1 SW	Abidjan	
	OUAGADOUGOU	A	LTF	1 SW	Abidjan	
OUAGADOUGOU	ABIDJAN	A	LTF	1 SW	Abidjan	
	ACCRA	A	LTF	1 SW	Abidjan	
	BAMAKO	A	LTF	1 SW	Abidjan	
	BOBO DIOULASSO	A	LTF	1 SW	Abidjan	
	NIAMEY	A	LTF	1 SW	Niamey	
BURUNDI						
BUJUMBURA	DAR-ES-SALAAM	A	LTF	2 SW	Kigali/Dar-es-Salaam	
APP	GOMA	A	LTF	1 SW	Kigali	
	KIGALI	A	LTF	1 SW	Kigali	
	KINSHASA	A	LTF	2 SW	Kigali/Kinshasa	
CAMEROON						
DOUALA	BATA	A	LTF	1 SW	Douala	
APP	BRAZZAVILLE	A	LTF	1 SW	Douala	
	GAROUA	A	LTF	1 SW	Douala	
	KANO	A	LTF	2 SW	Douala/Lagos	
	LAGOS	A	LTF	2 SW	Douala/Lagos	
	LIBREVILLE	A	LTF	2 SW	Douala/Libreville	
	MALABO	A	LTF	1 SW	Douala	
	N'DJAMENA	A	LTF	1 SW	Douala	
GAROUA	DOUALA	A	LTF	1 SW	Douala	

ATS REQUIREMENTS FOR SPEECH COMMUNICATIONS			CIRCUIT			REMARKS
TERMINAL I	TERMINAL II	TYPE	SERVICE	DIR/SW	TO BE SWITCHED VIA	
1	2	3	4	5	6	7
APP	N'DJAMENA	A	LTF	2 SW	Douala/N'Djamena	
CABO VERDE						
SAL	DAKAR	A	LTF	DIR		
ACC	LAS PALMAS	A	LTF	DIR		
	SANTA MARIA	A	LTF	DIR		
CENTRAL AFRICAN REPUBLIC						
BANGUI	BRAZZAVILLE	A	LTF	DIR		
APP	GBADOLITE	A	LTF	DIR		
	N'DJAMENA	A	LTF	1 SW	N'Djamena	
CHAD						
N'DJAMENA	BANGUI	A	LTF	1 SW	N'Djamena	
APP/FIC	BRAZZAVILLE	A	LTF	2 SW	Douala/N'Djamena	
	DOUALA	A	LTF	1 SW	Douala/N'Djamena	
	GAROUA	A	LTF	2 SW	Douala/N'Djamena	
	KANO	A	LTF	2 SW	N'Djamena/Niamey	
	KHARTOUM	A	LTF	1 SW	N'Djamena	
	MAIDUGURI	A	LTF	1 SW	N'Djamena	
	NIAMEY	A	LTF	2 SW	N'Djamena/Niamey	
	TRIPOLI	A	LTF	2 SW	N'Djamena/Niamey	
COMOROS						
DZAOUDZI	ANTANANARIVO	A	RTF	DIR		
APP						
MORONI	ANTANANARIVO	A	RTF	DIR		
APP						
CONGO						
BRAZZAVILLE	ACCRA	A	LTF	1 SW	Libreville	
APP-FIC	BANGUI	A	LTF	DIR		
	DOUALA	A	LTF	1 SW	Douala	
	KANO	A	LTF	2 SW	Douala/Lagos	
	KHARTOUM	A	LTF	1 SW	Kinshasa	
	KINSHASA	d	LTF	1 SW	Kinshasa	
	LIBREVILLE	A	LTF	1 SW	Libreville	
	LUANDA	A	LTF	1 SW	Kinshasa	
	N'DJAMENA	A	LTF	2 SW	Douala/N'Djamena	
	SAO TOME	A	LTF	1 SW	Libreville	
COTE D'IVOIRE						
ABIDJAN	ACCRA	A	LTF	1 SW	Abidjan	
APP	BAMAKO	A	LTF	1 SW	Abidjan	
	BOBO DIOULASSO	A	LTF	1 SW	Abidjan	
	DAKAR	A	LTF	1 SW	Abidjan	
	NIAMEY	A	LTF	1 SW	Abidjan/Niamey	
	OUAGADOUGOU	A	LTF	1 SW	Abidjan	
	ROBERTSFIELD	A	LTF	1 SW	Abidjan	
DEMOCRATIC REPUBLIC OF THE CONGO						
BUKAVU	KIGALI	A	LTF	1 SW	Kigali	
GBADOLITE	BANGUI	A	LTF	DIR		
GOMA	BUJUMBURA	A	LTF	1 SW	Kigali	
	KIGALI	A	LTF	1 SW	Kigali	
KINSHASA	BRAZZAVILLE	d	LTF	1 SW	Kinshasa	
	BUJUMBURA	A	LTF	2 SW	Kinshasa/Kigali	
	DAR-ES-SALAAM	A	LTF	3 SW	Kinshasa/Kigali/ Dar-es-Salaam	

ATS REQUIREMENTS FOR SPEECH COMMUNICATIONS			CIRCUIT			REMARKS
TERMINAL I	TERMINAL II	TYPE	SERVICE	DIR/SW	TO BE SWITCHED VIA	
1	2	3	4	5	6	7
	ENTEBBE	A	LTF	2 SW	Kinshasa/Kigali	
	KHARTOUM	A	LTF	1 SW	Kinshasa	
	KIGALI	A	LTF	2 SW	Kinshasa/Kigali	
	LUANDA	A	LTF	1 SW	Kinshasa	
	LUSAKA	A	LTF	2 SW	Kinshasa/Lusaka	
LUBUMBASHI	NDOLA	A	LTF	DIR		
DJIBOUTI						
DJIBOUTI	ADDIS ABABA	A	LTF	1 SW	Addis Ababa	
APP	ASMARA	A	LTF	1 SW	Addis Ababa	
	DIRE DAWA	A	LTF	1 SW	Addis Ababa	
	HARGHEISA	A	RTF	DIR		or PSTN
	MOGADISHU	A	LTF	DIR	or Addis Ababa/Nairobi	
	SANA'A	A	LTF	1 SW	Addis Ababa	
EQUATORIAL GUINEA						
BATA	DOUALA	A	LTF	1 SW	Douala	
APP	LIBREVILLE	A	LTF	2 SW	Douala/Libreville	
	MALABO	A	LTF	1 SW	Douala	
MALABO	BATA	A	LTF	1 SW	Douala	
APP	DOUALA	A	LTF	1 SW	Douala	
	LIBREVILLE	A	LTF	2 SW	Douala/Libreville	
ERITREA						
ASMARA	ADDIS ABABA	A	LTF	1 SW	Addis Ababa	
ACC	DJIBOUTI	A	LTF	1 SW	Addis Ababa	
	JEDDAH	A	LTF	1 SW	Addis Ababa	
	KHARTOUM	A	LTF	1 SW	Addis Ababa	
	SANA'A	A	LTF	1 SW	Addis Ababa	
ETHIOPIA						
ADDIS ABABA	ASMARA	A	LTF	1 SW	Addis Ababa	
ACC/FIC	DJIBOUTI	A	LTF	1 SW	Addis Ababa	
	JEDDAH	A	LTF	1 SW	Addis Ababa	
	KHARTOUM	A	LTF	1 SW	Addis Ababa	
	MOGADISHU	A	LTF	2 SW	Addis Ababa/Nairobi	
	NAIROBI	A	LTF	2 SW	Addis Ababa/Nairobi	
	SANA'A	A	LTF	1 SW	Addis Ababa	
DIRE DAWA TWR	DJIBOUTI	A	LTF	DIR		or PSTN
GABON						
LIBREVILLE	ACCRA	A	LTF	1 SW	Libreville	
ACC	BATA	A	LTF	2 SW	Libreville/Douala	
	BRAZZAVILLE	A	LTF	1 SW	Libreville	
	DOUALA	A	LTF	2 SW	Libreville/Douala	
	KANO	A	LTF	3 SW	Libreville/Douala/Lagos	
	LAGOS	A	LTF	3 SW	Libreville/Douala/Lagos	
	MALABO	A	LTF	2 SW	Libreville/Douala	
	SAO TOME	A	LTF	1 SW	Libreville	
GAMBIA						
BANJUL	BISSAU	A	LTF	DIR		
APP	DAKAR	A	LTF	DIR		
GHANA						
ACCRA	ABIDJAN	A	LTF	1 SW	Abidjan	
APP/FIC	BOBO DIOULASSO	A	LTF	1 SW	Abidjan	
	BRAZZAVILLE	A	LTF	1 SW	Libreville	
	COTONOU	A	LTF	DIR		
	KANO	A	LTF	1 SW	Lagos	

ATS REQUIREMENTS FOR SPEECH COMMUNICATIONS			CIRCUIT			REMARKS
TERMINAL I	TERMINAL II	TYPE	SERVICE	DIR/SW	TO BE SWITCHED VIA	
1	2	3	4	5	6	7
	LAGOS	A	LTF	1 SW	Lagos	
	LIBREVILLE	A	LTF	1 SW	Libreville	
	LOME	A	LTF	DIR		
	LUANDA	A	LTF	DIR		
	NIAMEY	A	LTF	2 SW	Abidjan/Niamey	
	OUAGADOUGOU	A	LTF	1 SW	Abidjan	
	SAO TOME	A	LTF	1 SW	Libreville	
GUINEA						
CONAKRY	BISSAU	A	LTF	DIR		
APP	FREETOWN	A	LTF	DIR		
	ROBERTSFIELD	A	LTF	DIR		
GUINEA-BISSAU						
BISSAU	BANJUL	A	LTF	DIR		
APP	CONAKRY	A	LTF	DIR		or PSTN
	DAKAR	A	LTF	DIR		
KENYA						
MOMBASA	DAR-ES-SALAAM	d	LTF	2 SW	Nairobi/Dar-es-Salaam	
APP	KILIMANJARO	A	LTF	2 SW	Nairobi/Dar-es-Salaam	
	NAIROBI	d	LTF	1 SW	Nairobi	
NAIROBI	ADDIS ABABA	A	LTF	2 SW	Nairobi/Addis Ababa	
ACC	DAR-ES-SALAAM	A	LTF	2 SW	Nairobi/Dar-es-Salaam	
	ENTEBBE	A	LTF	1 SW	Nairobi	
	KHARTOUM	A	LTF	2 SW	Nairobi/Addis Ababa	
	KILIMANJARO	d	LTF	2 SW	Nairobi/Dar-es-Salaam	
	MOGADISHU	A	LTF	1 SW	Nairobi	
	MOMBASA	d	LTF	1 SW	Nairobi	
	SEYCHELLES	A	LTF	DIR		or PSTN
LESOTHO						
MASERU	BLOEMFONTEIN	A	LTF	DIR		
APP						
LIBERIA						
ROBERTSFIELD	ABIDJAN	A	LTF	1 SW	Abidjan	
ACC/FIC	BAMAKO	A	LTF	1 SW	Abidjan	
	CONAKRY	A	LTF	DIR		
	DAKAR	A	LTF	1 SW	Abidjan	
	FREETOWN	A	LTF	DIR		
MADAGASCAR						
ANTANANARIVO	BEIRA	A	LTF	DIR		
ACC/FIC	DAR-ES-SALAAM	A	LTF	1 SW	Dar-es-Salaam	
	DZAOUDZI	A	RTF	DIR		
	JOHANNESBURG	A	LTF	DIR		
	MAURITIUS	A	RTF	DIR		
	MORONI	A	RTF	DIR		
	SAINT-DENIS	A	LTF	DIR		
	SEYCHELLES	A	LTF	DIR		
MALAWI						
LILONGWE	BEIRA	A	LTF	1 SW	Lusaka	or PSTN

ATS REQUIREMENTS FOR SPEECH COMMUNICATIONS			CIRCUIT			REMARKS
TERMINAL I	TERMINAL II	TYPE	SERVICE	DIR/SW	TO BE SWITCHED VIA	
1	2	3	4	5	6	7
ACC/FIC	DAR-ES-SALAAM	A	LTF	2 SW	Lusaka/Dar-es-Salaam	
	HARARE	A	LTF	1 SW	Lusaka	
	LUSAKA	A	LTF	1 SW	Lusaka	
MALI						
BAMAKO	ABIDJAN	A	LTF	1 SW	Abidjan	
APP	BOBO DIOULASSO	A	LTF	1 SW	Abidjan	
	DAKAR	A	LTF	1 SW	Abidjan	or PSTN
	GAO	A	LTF	2 SW	Abidjan/Niamey	
	MOPTI	A	LTF	2 SW	Abidjan/Niamey	
	OUAGADOUGOU	A	LTF	1 SW	Abidjan	
	ROBERTSFIELD	A	LTF	1 SW	Abidjan	
GAO	BAMAKO	A	LTF	2 SW	Abidjan/Niamey	
APP	MOPTI	A	LTF	1 SW	Niamey	
	NIAMEY	A	LTF	1 SW	Niamey	
MOPTI	GAO	A	LTF	1 SW	Niamey	
TWR	BAMAKO	A	LTF	2 SW	Niamey/Abidjan	
MAURITANIA						
NOUADHIBOU	DAKAR	A	LTF	DIR		or PSTN
APP	LAS PALMAS	A	LTF	DIR		
	NOUAKCHOTT	A	LTF	DIR		
NOUAKCHOTT	DAKAR	A	LTF	DIR		
APP	NOUADHIBOU	A	LTF	DIR		
MAURITIUS						
MAURITIUS	ANTANANARIVO	A	RTF	DIR		
ACC/FIR	BOMBAY	A	LTF	DIR		or PSTN
	COCOS	A	LTF	DIR		or PSTN
	JOHANNESBURG	A	LTF	DIR		
	PERTH	A	LTF	DIR		or PSTN
	SAINT-DENIS	A	LTF	DIR		
	SEYCHELLES	A	LTF	DIR		or PSTN
MOZAMBIQUE						
BEIRA	ANTANANARIVO	A	LTF	DIR		
ACC/FIC	DAR-ES-SALAAM	A	LTF	2 SW	Lusaka/Dar-es-Salaam	
	HARARE	A	LTF	1 SW	Lusaka	
	LILONGWE	A	LTF	1 SW	Lusaka	or PSTN
	LUSAKA	A	LTF	1 SW	Lusaka	
	MAPUTO	A	LTF	DIR		
MAPUTO	BEIRA	A	LTF	DIR		
APP	DURBAN	A	LTF	DIR		
	JOHANNESBURG	A	LTF	DIR		
	MANZINI	A	LTF	DIR		
NAMIBIA						
WINDHOEK	BLOEMFONTEIN	A	LTF	DIR		
ACC/FIC	CAPETOWN	A	LTF	DIR		
	GABORONE	A	LTF	DIR		
	JOHANNESBURG	A	LTF	DIR		
	LUANDA	A	LTF	DIR		
NIGER						
NIAMEY	ABIDJAN	A	LTF	2 SW	Abidjan/Niamey	
ACC/FIC	ACCRA	A	LTF	2 SW	Niamey/Abidjan	or PSTN
	ALGER	A	LTF	DIR		
	DAKAR	A	LTF	1 SW	Abidjan	
	GAO	A	LTF	1 SW	Niamey	

ATS REQUIREMENTS FOR SPEECH COMMUNICATIONS			CIRCUIT			REMARKS
TERMINAL I	TERMINAL II	TYPE	SERVICE	DIR/SW	TO BE SWITCHED VIA	
1	2	3	4	5	6	7
	KANO	A	LTF	1 SW	Niamey	
	N'DJAMENA	A	LTF	2 SW	Niamey/N'Djamena	
	OUAGADOUGOU	A	LTF	1 SW	Niamey	or PSTN
	TRIPOLI	A	LTF	1 SW	Niamey	
NIGERIA						
KANO	ACCRA	A	LTF	1 SW	Lagos	
ACC/FIC	BRAZZAVILLE	A	LTF	2 SW	Lagos/Douala	
	DOUALA	A	LTF	2 SW	Lagos/Douala	
	LAGOS	A	LTF	1 SW	Lagos	
	LIBREVILLE	A	LTF	3 SW	Lagos/Douala/Libreville	
	MAIDUGURI	A	LTF	DIR		
	N'DJAMENA	A	LTF	2 SW	Niamey/N'Djamena	
	NIAMEY	A	LTF	1 SW	Niamey	
LAGOS	ACCRA	A	LTF	1 SW	Lagos	
ACC/FIC	COTONOU	A	LTF	DIR		
	DOUALA	A	LTF	2 SW	Lagos/Douala	
	KANO	A	LTF	1 SW	Lagos	
	LIBREVILLE	A	LTF	3 SW	Lagos/Douala/Libreville	
MAIDUGURI	KANO	A	LTF	DIR		
APP	N'DJAMENA	A	LTF	1 SW	N'Djamena	
REUNION (France)						
SAINT-DENIS	ANTANANARIVO	A	LTF	DIR		
APP	MAURITIUS	A	LTF	DIR		
RWANDA						
KIGALI	BUJUMBURA	A	LTF	1 SW	Kigali	
APP	BUKAVU	A	LTF	1 SW	Kigali	
	DAR-ES-SALAAM	A	LTF	2 SW	Kigali/Dar-es-Salaam	
	ENTEBBE	A	LTF	1 SW	Kigali	
	GOMA	A	LTF	1 SW	Kigali	
	KINSHASA	A	LTF	2 SW	Kigali/Kinshasa	
SAO TOME AND PRINCIPE						
SAO TOME						
TWR	ACCRA	A	LTF	1 SW	Libreville	
	BRAZZAVILLE	A	LTF	1 SW	Libreville	
	LIBREVILLE	A	LTF	1 SW	Libreville	
SENEGAL						
DAKAR	ABIDJAN	A	LTF	1 SW	Abidjan	
ACC/FIC	ALGER	A	LTF	DIR		
	BAMAKO	A	LTF	1 SW	Abidjan	or PSTN
	BANJUL	A	LTF	DIR		
	BISSAU	A	LTF	DIR		
	CASABLANCA	A	LTF	DIR		
	LAS PALMAS	A	LTF	DIR		
	NIAMEY	A	LTF	DIR		
	NOUADHIBOU	A	LTF	DIR		
	NOUAKCHOTT	A	LTF	DIR		
	RECIFE	A	LTF	DIR		
	ROBERTSFIELD	A	LTF	1 SW	Abidjan	
	SAL	A	LTF	DIR		
SEYCHELLES						
SEYCHELLES	ANTANANARIVO	A	LTF	DIR		
APP	BOMBAY	A	LTF	DIR		
	DAR-ES-SALAAM	A	LTF	2 SW	Dar-es-Salaam/Nairobi	
	MALE	A	LTF	DIR		

ATS REQUIREMENTS FOR SPEECH COMMUNICATIONS			CIRCUIT			REMARKS
TERMINAL I	TERMINAL II	TYPE	SERVICE	DIR/SW	TO BE SWITCHED VIA	
1	2	3	4	5	6	7
	MAURITIUS	A	LTF	DIR		or PSTN
	MOGADISHU	A	LTF	DIR		or PSTN
	NAIROBI	A	LTF	DIR		or PSTN
SIERRA LEONE						
FREETOWN	CONAKRY	d	LTF	DIR		
APP	ROBERTSFIELD	d	LTF	DIR		
SOMALIA						
MOGADISHU	ADDIS ABABA	A	LTF	2 SW	Nairobi/Addis Ababa	
ACC/FIC	BOMBAY	A	LTF	DIR		
	DJIBOUTI	A	LTF	DIR		
	NAIROBI	A	LTF	1 SW	Nairobi	
	SANA'A	A	LTF	DIR		
	SEYCHELLES	A	LTF	DIR		or PSTN
HARGEISA	DJIBOUTI	A	RTF	DIR		or PSTN
APP						
SOUTH AFRICA						
BLOEMFONTEIN	CAPETOWN	A	LTF	DIR		
	DURBAN	A	LTF	DIR		
	JOHANNESBURG	A	LTF	DIR		
	MASERU	A	LTF	DIR		
	PORT ELIZABETH	A	LTF	DIR		
	WINDHOEK	A	LTF	DIR		
CAPETOWN	BLOEMFONTEIN	A	LTF	DIR		
	JOHANNESBURG	A	LTF	DIR		
	PORT ELIZABETH	A	LTF	DIR		
	WINDHOEK	A	LTF	DIR		
DURBAN	BLOEMFONTEIN	A	LTF	DIR		
	JOHANNESBURG	A	LTF	DIR		
	MANZINI	A	LTF	DIR		
	MAPUTO	A	LTF	DIR		
	PORT ELIZABETH	A	LTF	DIR		
JOHANNESBURG	ANTANANARIVO	A	LTF	DIR		
	BLOEMFONTEIN	A	LTF	DIR		
	BRASILIA	A	LTF	1 SW	Ezeiza	(SAM)
	CAPETOWN	A	LTF	DIR		
	DURBAN	A	LTF	DIR		
	EZEIZA	A	LTF	1 SW	Ezeiza	(SAM)
	GABORONE	A	LTF	DIR		
	HARARE	A	LTF	DIR		
	LUANDA	A	LTF	DIR		
	MANZINI	A	LTF	DIR		
	MAPUTO	A	LTF	DIR		
	MAURITIUS	A	LTF	DIR		
	MONTEVIDEO	A	LTF	1 SW	Ezeiza	(SAM)
	PERTH	A	LTF	DIR		
	PORT ELIZABETH	A	LTF	DIR		
	RIVADAVIA	A	LTF	1 SW	Ezeiza	(SAM)
	WINDHOEK	A	LTF	DIR		
PORT ELIZABETH	BLOEMFONTEIN	A	LTF	DIR		
	CAPETOWN	A	LTF	DIR		
	DURBAN	A	LTF	DIR		
	JOHANNESBURG	A	LTF	DIR		
SOUTH SUDAN						
JUBA	NAIROBI	A	LTF	DIR		

ATS REQUIREMENTS FOR SPEECH COMMUNICATIONS			CIRCUIT			REMARKS
TERMINAL I	TERMINAL II	TYPE	SERVICE	DIR/SW	TO BE SWITCHED VIA	
1	2	3	4	5	6	7
	KHARTOUM	A	LTF	DIR		
SWAZILAND						
MANZINI	DURBAN	A	LTF	DIR		
	JOHANNESBURG	A	LTF	DIR		
	MAPUTO	A	LTF	DIR		
TOGO						
LOME	ACCRA	A	LTF	DIR		
	COTONOU	A	LTF	DIR		
	NIAMTOUGOU	A	LTF	DIR		
NIAMTOUGOU	ACCRA	A	LTF	DIR		
	LOME	A	LTF	DIR		
	OUAGADOUGOU	A	LTF	DIR		
UGANDA						
ENTEBBE	DAR-ES-SALAAM	A	LTF	2 SW	Nairobi/Dar-es-Salaam	
	KHARTOUM	A	LTF	2 SW	Nairobi/Addis Ababa	
	KIGALI	A	LTF	1 SW	Kigali	
	KINSHASA	A	LTF	2 SW	Kigali/Kinshasa	
	NAIROBI	A	LTF	1 SW	Nairobi	
UNITED REPUBLIC OF TANZANIA						
DAR-ES-SALAAM	ANTANANARIVO	A	LTF	1 SW	Dar-es-Salaam	
ACC/FIC	BEIRA	A	LTF	2 SW	Dar-es-Salaam/Lusaka	
	BUJUMBURA	A	LTF	2 SW	Dar-es-Salaam/Kigali	
	ENTEBBE	A	LTF	2 SW	Dar-es-Salaam/Nairobi	
	KIGALI	A	LTF	2 SW	Dar-es-Salaam/Kigali	
	KILIMANJARO	A	LTF	1 SW	Dar-es-Salaam	
	KINSHASA	A	LTF	3 SW	Dar-es-Salaam/Kigali/ Kinshasa	
	LILONGWE	A	LTF	2 SW	Dar-es-Salaam/Lusaka	
	LUSAKA	A	LTF	2 SW	Dar-es-Salaam/Lusaka	
	MOMBASA	d	LTF	2 SW	Dar-es-Salaam/Nairobi	
	NAIROBI	A	LTF	2 SW	Dar-es-Salaam/Nairobi	
	SEYCHELLES	A	LTF	2 SW	Dar-es-Salaam/Nairobi	
	ZANZIBAR	A	LTF	1 SW	Dar-es-Salaam	
KILIMANJARO	DAR-ES-SALAAM	A	LTF	1 SW	Dar-es-Salaam	
APP	MOMBASA	A	LTF	2 SW	Dar-es-Salaam/Nairobi	
	NAIROBI	A	LTF	2 SW	Dar-es-Salaam/Nairobi	
ZANZIBAR	DAR-ES-SALAAM	A	LTF	1 SW	Dar-es-Salaam	
WESTERN SAHARA						
EL AIOUN	LAS PALMAS	A	LTF	DIR		
DAKHLA	NOUADHIBOU	A	LTF	DIR		
ZAMBIA						
LUSAKA	BEIRA	A	LTF	1 SW	Lusaka	
	DAR-ES-SALAAM	A	LTF	2 SW	Lusaka/Dar-es-Salaam	
	GABORONE	A	LTF	DIR		
	HARARE	A	LTF	1 SW	Lusaka	
	KINSHASA	A	LTF	2 SW	Lusaka/Kinshasa	
	LILONGWE	A	LTF	1 SW	Lusaka	
	LUANDA	A	LTF	2 SW	Lusaka/Kinshasa	
	NDOLA	A	LTF	DIR		
NDOLA	LUBUMBASHI	A	LTF	DIR		
	LUSAKA	A	LTF	DIR		

ATS REQUIREMENTS FOR SPEECH COMMUNICATIONS			CIRCUIT			REMARKS
TERMINAL I	**TERMINAL II**	**TYPE**	**SERVICE**	**DIR/SW**	**TO BE SWITCHED VIA**	
1	**2**	**3**	**4**	**5**	**6**	**7**
ZIMBABWE						
BULAWAYO	FRANCISTOWN	A	LTF	DIR		
	HARARE	A	LTF	DIR		
HARARE	BEIRA	A	LTF	1 SW	Lusaka	
	BULAWAYO	A	LTF	DIR		
	GABORONE	A	LTF	DIR		
	JOHANNESBURG	A	LTF	DIR		
	LILONGWE	A	LTF	DIR		
	LUSAKA	A	LTF	1 SW	Lusaka	

TABLE CNS II-4

HF NETWORK DESIGNATORS

EXPLANATION OF THE TABLE

Column

1 Name of station, preceded by its location indicator.

2 Network designators assigned to the facility providing HF radiotelephony en-route communications (selected from the provisions of the allotment plan in Appendix S27 to the ITU Radio Regulations).

NOTES

The ICAO designators for HF MWARA and VOLMET networks in the AFI Region are derived from the ITU allotment area abbreviations as contained in Appendix S27 to the ITU Radio Regulations.

ITU allotment area:

Two- and three-letter alpha entries indicate major world air route areas (MWARA): (TBD)

Four-letter alpha entries indicate VOLMET areas: *(TBD)*

TABLE CNS II-4 - HF NETWORK DESIGNATORS

	Location Indicator and Name of location	HF en-route family
	1	2
1.	ANGOLA FNHU HUAMBO/Albano Machado TWR 1 APP-L 1 FNLU LUANDA ACC-U 2 GP 1 ACC-L 1 FNLU LUANDA/4 de Fevereiro SMC 1 TWR 1 APP-U 1 APP-I 1 APP-L 1 VOLMET ATIS 1	
2.	BENIN DBBB COTONOU/Cadjehoun TWR 1 APP-I 1	
3.	BOTSWANA FBFT FRANCISTOWN/Francistown TWR 1 APP-H 1 SMC 1 FBSK GABORONE ACC-U 2-ER FBSK GABORONE/Sir Seretse Khama TWR 1 APP-H 2 SMC 1 FBMN MAUN/Maun TWR 1 APP-H 1 SMC 1 FBKE KASANE/Kasane	
4.	BURKINA FASO DFOO BOBO-DIOULASSO/ Bobo-Dioulasso DFOO BOBO-DIOULASSO/ Bobo-Dioulasso TWR 1 APP-I 1 DFFD OUAGADOUGOU DFFD OUAGADOUGOU/Ouagadougou TWR 1	

	APP-U	1	
5.	BURUNDI		
	HBBA BUJUMBURA		
	ACC-I ER	1	
	HBBA BUJUMBURA/Bujumbura		
	SMC	1	
	TWR	1	
	APP-H	1	
6.	CAMEROON		
	FKKK DOUALA		
	ACC-U 2-ER NE SE	2	
	VOLMET	1	
	FKKD DOUALA/Douala		
	SMC	1	
	TWR	1	
	APP-I	1	
	APP-U	1	
	FKKR GAROUA		
	FKKR GAROUA/Garoua		
	TWR	1	
	APP-I	1	
	FKKL MAROUA		
	FKKL MAROUA/Salak		
	TWR	1	
	FKKN N'GAOUNDERE/N'Gaoundéré		
	TWR	1	
	FKYS YAOUNDE/Nsimalen		
	TWR	1	
	APP-I	1	
7.	CAPE VERDE		
	GVFM PRAIA/Francisco Mendes		
	TWR	1	
	APP-L	1	
	GVAC SAL I.		
	ACC-U 2-ER	2	
	ACC-L	1	
	GVAC SAL I./Amilcar Cabral		
	TWR	1	
	APP-I	1	
8.	CENTRAL AFRICAN REPUBLIC		
	FEFF BANGUI		
	FIS-L 2-ER	2	
	FEFF BANGUI/M'Poko		
	TWR	1	
	APP-I	1	
9.	CHAD		
	FTTT N'DJAMENA		
	ACC-U	1	
	FIS-L 1-ER	1	
	FTTJ N'DJAMENA/N'Djamena		
	TWR	1	

	APP-I 1	
10.	CONGO FCCC BRAZZAVILLE ACC-U 1 FIS-U 2-ER 2 VOLMET (HF) FCBB BRAZZAVILLE/Maya-Maya TWR 1 APP-U 1 FCPP POINTE NOIRE/Agostino Neto TWR 1 APP-I 1	
11.	COMOROS FMCV ANJOUAN/Ouani TWR 1 FMCZ DZAOUDZI/Pamanzi, Mayotte I. TWR 1 APP-I 1 FMCH MORONI FMCH MORONI/Hahaia TWR 1 APP-L 1	
12.	COTE D'IVOIRE DIII ABIDJAN ACC-U 1 VOLMET 1 DIAP ABIDJAN/Felix H. Boigny SMC 1 TWR 1 APP-H 1 DIBK BOUAKE/Bouaké SMC 1 TWR 1 APP-I 1	
13.	DEMOCRATIC REPUBLIC OF THE CONGO FZNA GOMA FZNA GOMA/Goma TWR 1 APP-I 1 FZZA KINSHASA ACC-U 4-ER 4 FZAA KINSHASA/N'Djili TWR 1 APP-I 1 FZIC KISANGANI FIS-U 1 ACC-I 1 FZIC KISANGANI/Bangoka TWR 1 APP-I 1 FZQA LUBUMBASHI ACC-U 1	

	HESH SHARM EL SHEIK/Sharm El Sheikh TWR 2 APP-I 1 APP-L 1 SMC 1	
14.	DJIBOUTI HDDD DJIBOUTI HDAM DJIBOUTI/Ambouli SMC 1 TWR 1 APP-H 1	
15.	EQUATORIAL GUINEA FGSL MALABO/Malabo TWR 1 APP-I 1	
16.	ERITREA HHSB ASSAB/Assab Intl. 1 HHAS ASMARA/Asmara Intl. SMC 1 TWR 1 APP-U 1 ACC-U 2	
17.	ETHIOPIA HAAB ADDIS ABABA ACC-U 3-ER 3 HAAB ADDIS ABABA/Bole Intl SMC 1 TWR 1 APP-I 1 HADR DIRE DAWA/Aba Tenna SMC 1 TWR 1 APP-I 1	
18.	GABON FOON FRANCEVILLE FOON FRANCEVILLE/M'Vengué TWR 1 APP-L 1 SMC 1 FOOO LIBREVILLE ACC-U 1 FIS-L 1 FOOL LIBREVILLE/Léon M'Ba SMC 1 TWR 1 APP-U 1 FOOG PORT GENTIL FOOG PORT GENTIL/Port Gentil TWR 1 APP-I 1 SMC 1	
19.	GAMBIA GBYD BANJUL/Yundum	

	SMC 1 TWR 1 APP-H 1	
20.	GHANA DGAA ACCRA ACC-U 2-ER 2 DGAA ACCRA/Kotoka Intl SMC 1 TWR 1 APP-I 1 APP-U 1 DGSI KUMASI/Kumasi TWR 1	
21.	GUINEA GUOK BOKE/Baralandé TWR 1 GUCY CONAKRY GUCY CONAKRY/Gbessia SMC 1 TWR 1 APP-I 1 GUFH FARANAH/Badala TWR 1 GUXD KANKAN/Diankana TWR 1 GULB LABE/Tata TWR 1 GUNZ N'ZEREKORE/Konia TWR 1 APP-I 1	
22.	GUINEA-BISSAU GGOV BISSAU/Oswaldo Viera Intl TWR 1 APP-H 1 FIS-L 1 SMC 1	
23.	KENYA HKEL ELDORET/Eldoret Intl. SMC TWR APP-I HKMO MOMBASA/Moi Intl SMC 1 TWR 1 APP-U 1 HKNA NAIROBI ACC-U 6 FIS-L 1 HKNA NAIROBI/Jomo Kenyatta Intl SMC 1 TWR 1 APP-U 1 APP-I 2	

24.	LESOTHO FXMM MASERU FIS-L FXMM MASERU/Moshoeshoe I Intl SMC 1 TWR 1 APP-H 1	
25.	LIBERIA GLRB MONROVIA ACC-U 2-ER 2 AFI-1R GLRB MONROVIA/Roberts Intl SMC 2 TWR 1 APP-I 1	
26.	MALAWI FWCL BLANTYRE/Chileka SMC 1 TWR 1 APP-U 1 FWLI LILONGWE/Lilongwe Intl. SMC 1 TWR 1 APP-U 1 APP-I 1 FWLL LILONGWE ACC-U ER 1	
27.	MALI GABS BAMAKO GABS BAMAKO/Sénou TWR 1 APP-I 1 APP-U 1 GAGO GAO GAGO GAO/Gao TWR 1 APP-I 1 GAKY KAYES/Kayes TWR 1 GAMB MOPTI-BARBE/Mopti-Barbe TWR 1 GANR NIORO/Nioro TWR 1 GATB TOMBOUCTOU/Tombouctou TWR 1	
28.	MAURITANIA GQPP NOUADHIBOU GQPP NOUADHIBOU/Nouadhibou TWR 1 APP-I 1	

	GQNN NOUAKCHOTT GQNN NOUAKCHOTT/Nouakchott TWR 1 APP-I 1 APP-U 1	
29.	MAURITIUS FIMP MAURITIUS ACC-U 1 FIMP MAURITIUS/Sir Seewoosagur Ramgoolam Intl SMC 1 TWR 1 APP-U 1	
30.	MOZAMBIQUE FQBR BEIRA ACC-U 3-ER 3 FIS-L ER 1 FIS-U FQBR BEIRA/Beira TWR 1 APP-I 1 SMC 1 FQMA MAPUTO ACC-U ER 1 FQMA MAPUTO/Maputo TWR 1 APP-U 1 SMC 1 FQTT TETE GP ER FQWP NAMPULA GP ER 1	
31.	NAMIBIA FYKT KEETMANSHOOP/ Keetmanshoop TWR 1 APP 1 FYWB WALVIS BAY/Walvis Bay TWR 1 APP 1 FYWH WINDHOEK FYWH WINDHOEK/Windhoek Intl. TWR 1 APP-I 1	
32.	NIGER DRZA AGADES/Sud TWR 1 DRRR NIAMEY ACC-U 2-ER 2 FIS-U 2 DRRN NIAMEY/Diori Hamani Intl TWR 1 APP-U 1	

33.	NIGERIA DNAA ABUJA/Nnamdi Azikiwe TWR 1 APP-I 1 SMC 1 DNCA CALABAR/Calabar TWR 1 APP-L 1 DNIL ILORIN/Ilorin TWR 1 APP-L 1 DNKA KADUNA/Kaduna TWR 1 APP-L 1 DNKK KANO ACC-U 2-ER 4 DNKN KANO/Mallam Aminu Kano SMC 1 TWR 1 APP-U 2 DNLL LAGOS ACC-U 3-ER 4 DNMM LAGOS/Murtala Muhammed SMC 1 TWR 1 APP-U 2 DNMA MAIDUGURI/Maiduguri TWR 1 APP-I 1 DNPO PORT HARCOURT/Port Harcourt SMC 1 TWR 1 APP-L 1 APP-U 1 DNSO SOKOTO/Siddiq Abubakar III TWR 1 APP-L 1	
34.	RWANDA HRYR KIGALI/Gregoire Kayibanda SMC 1 TWR 1 APP-H 1 ACC-L 1	
35.	SAO TOME AND PRINCIPE FPST SAO TOME FPST SAO TOME/Sao Tome TWR 1 APP-I 1 SMC 1	
36.	SENEGAL GOGS CAP SKIRING/Cap Skiring TWR 1 GOOO DAKAR ACC-U 3-ER 3	

	FIS-U 2 2 GOOY DAKAR/Léopold Sédar Senghor SMC 1 TWR 1 APP-U 2 GOSS SAINT-LOUIS/Saint-Louis TWR 1 GOGG ZIGUINCHOR/Ziguinchor TWR 1	
37.	SEYCHELLES FSIA MAHE ACC-U ER 1 FSIA MAHE/Seychelles Intl SMC 1 TWR 1 APP-U 1	
38.	SIERRA LEONE GFLL FREETOWN GFLL FREETOWN/Lungi SMC 1 TWR 1 APP-I 1	
39.	SOMALIA HCMI BERBERA/Berbera TWR 1 APP-U 1 HCMV BURAO/Burao TWR 1 HCMH HARGEISA/Hargeisa TWR 1 APP-U 1 HCMK KISIMAYU/Kisimayu TWR 1 APP-U 1 HCMM MOGADISHU ACC-U 1 HCMM MOGADISHU/Mogadishu SMC 1 TWR 1 APP-U 1	
40.	SOUTH AFRICA FAAB ALEXANDER BAY/ Alexander Bay TWR 1 FABL BLOEMFONTEIN ACC-U 1 FIS-L 1 FABL BLOEMFONTEIN/Bloemfontein TWR 1 APP-I 1 FACT CAPE TOWN ACC-U 1	

	FACT CAPE TOWN/CapeTown TWR 1 FADN DURBAN/Durban ACC-U 1 FIS-L 1 FADN DURBAN/Durban TWR 1 APP-I 2 FAJS JOHANNESBURG ACC-U 1 GP 2 FAJS JOHANNESBURG/Johannesburg TWR 1 APP-I 2 FAGM JOHANNESBURG/Rand TWR 1 FALA LANSERIA/Lanseria TWR 1 FAUP UPINGTON/Upington TWR 1	
41.	SWAZILAND FDMS MANZINI FDMS MANZINI/Matsapha TWR 1 APP-I 1	
42.	TOGO DXXX LOMÉ DXXX LOMÉ/Tokoin TWR 1 APP-I 1 DXNG NIAMTOUGOU/Niamtougou TWR 1 APP-H 1	
43.	UGANDA HUEN ENTEBBE ACC-U 1 1 HUEN ENTEBBE/Entebbe Intl TWR 1 APP-L 1	
44.	UNITED REPUBLIC OF TANZANIA HTDA DAR-ES-SALAAM ACC-U 2 ACC-L 4 VOLMET 1 HTDA DAR-ES-SALAAM/ Dar-es-Salaam SMC 1 TWR 1 APP-L 1 APP-I 3	

	HTKJ KILIMANJARO/Kilimanjaro Intl SMC 1 TWR 1 APP-I 3 HTZA ZANZIBAR/Zanzibar SMC 1 TWR 1 APP-I 2	
45.	ZAMBIA FLLI LIVINGSTONE/Livingstone Intl TWR 1 APP-H 1 FLLS LUSAKA ACC-U 3-ER 3 FLLS LUSAKA/Lusaka Intl TWR 1 APP-H 2 FLMF MFUWE/Mfuwe TWR 1 APP-H 1 FLND NDOLA/Ndola TWR 1 APP-H 1	
46.	ZIMBABWE FVBU BULAWAYO FVBU BULAWAYO/Bulawayo TWR 1 APP-H 1 FVHA HARARE ACC-U 1 GP 1 FIS-L 2-ER 2 FVHA HARARE/Harare TWR 1 APP-I 1 FVFA VICTORIA FALLS/Victoria Falls TWR 1 APP-I 1	

HF FREQUENCIES AND THEIR ICAO NETWORK DESIGNATORS BASED ON ITU APPENDIX S27 ALLOTMENT AREAS

Frequency (kHz)	ITU allotment area	***[NAME] xxx***	***[NAME] xxy***			Remarks
1	**2**	**3**	**4**	**5**	**6….**	**8**

AFI ANP, VOLUME II

PART IV - AIR TRAFFIC MANAGEMENT (ATM)

1. INTRODUCTION

1.1 This part of the AFI ANP, Volume II, complements the provisions in Standards, Recommended Practices and Procedures (SARPs) related to air traffic management (ATM). It contains dynamic plan elements related to the assignment of responsibilities to States for the provision of ATM facilities and services within a specified area in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300); and mandatory requirements related to ATM facilities and services to be implemented by States in accordance with regional air navigation agreements. Such agreement indicates a commitment on the part of the State(s) concerned to implement the requirement(s) specified.

2. GENERAL REGIONAL REQUIREMENTS

Optimization of traffic flows

2.1 The Planning and Implementation Regional Groups (PIRG), through regional air navigation agreement, are responsible for the optimization of the traffic flows through the continuous improvement of the regional ATS route network and organized track systems and implementation of random routing areas and free route airspace in the Region(s) through the set-up of appropriate mechanisms for regional and inter-regional planning and coordination.

2.2 Whenever practicable, States should, in close coordination with operators, establish the most efficient routings.

2.3 The requirements for regional ATS route network, in particular, for ATS routes over the high seas and airspace of undetermined sovereignty, should be agreed upon through regional air navigation agreement.

Note: States' AIPs and other States publications should be consulted for information on the implemented ATS routes.

Aircraft Identification-SSR Code Management

2.4 Within the context of air traffic management (ATM) and the provision of air traffic services (ATS), SSR code management is a key element of ATM to ensure continuous, unambiguous aircraft identification. The number of secondary surveillance radar (SSR) codes is limited and poor management of the assignment of SSR codes results in capacity constraints and aircraft delays. States and air navigation service providers (ANSP) should apply the SSR Code Allocation Plan approved by the APIRG. The SSR Codes Allocation Plan of the AFI Region is addressed in the Specific Regional Requirements of Volume II

3. SPECIFIC REGIONAL REQUIREMENTS

EXAMPLE

Optimization of traffic flows

3.1 The ATS routes agreed through regional air navigation agreement are listed in **Table ATM II-AFI-1.** The routes should be developed based on the ICAO SARPs and PANS-OPS and PANS-ATM criteria and parameters. The following should be taken into consideration for the development and management of the AFI Region ATS route network:

Where possible, routes should be established to increase efficiency, reduce complexity and provide additional benefits to users;

separation assurance principles should apply;

routes should be established with sufficient separation to operate independently;

where possible, routes in a radar environment should be procedurally (laterally) separated;

segregated tracks should be established on medium/high density routes and be determined by set criteria;

where required, routes should be constructed to support terminal area management procedures, e.g. SID s/STARs and flow management techniques, as applicable;

holding patterns should be laterally separated from other tracks, and tolerances captured within a single sector;

multiple crossing points involving major traffic flows should be avoided;

en-route crossings should be minimized. Where crossings are inevitable, they should, where possible, be established for cruise configuration. Such crossings should occur, wherever possible, within surveillance coverage;

airspace sectorization should take account of the route structure, and workload considerations. If necessary, airspace should be re-sectorized to accommodate changes to air route configuration;

routes should be constructed so as to reflect the optimum navigation capabilities of the principle users (primarily RNAV);

Consideration should also be given to the provision of a range of routes which will permit operators to choose cost-efficient routes over the range of expected seasonal wind patterns;

periodic safety audit and review process of routes should be conducted to test demand against capacity criteria, and the principles. This should ideally be done in parallel with the annual sectorization review; and

routes that can no longer be justified should be deleted.

Aircraft Identification-SSR Code Management

3.2 The SSR Codes Allocation Plan of the AFI Region is in **Table ATM II-AFI 2**.

TABLE ATM II-AFI-1

AFI REGION ATS ROUTES

EXPLANATION OF THE TABLE

Column

1 Designator of ATS route and Type (Conventional, RNAV10, RNAV5 or RNAV1 etc.)

2 Significant points defining the ATS routes. Only prominent locations have been listed. Additional points where facilities are provided to complete navigational guidance along a route, but not otherwise marking significant characteristics of the route (change of heading of centre line, intersection with other routes, etc.) have normally not been included. Locations shown in parentheses indicate significant points outside the Region.

Note 1. Not representing the operator's requirements. Operator's required route and/or navaids are shown in square brackets ([ ]).

Note 2. Subject to further study. Including the associated navigation aid coverage.

Note 3 Subject to military agreement.

Note 4. Not acceptable at present.

Note 5. At present, implementation possible only during specific periods (e.g. weekends, nights, etc., as published).

Note 6. At present, implementation of the RNAV route only possible above FL 300, or as published.

Note 7. Unidirectional use.

Note 8. For ATS route or part thereof is RNAV 1

Whenever reference to name States is made in Table ATM II-AFI 1 in connection with the above notes, the following abbreviations, based on those indicated in Location Indicators (Doc 7910), are used:

DB Benin
DF Burkina Faso
DG Ghana
DI Côte d'Ivoire
DN Nigeria
DR Niger
DX Togo
FA South Africa
FB Botswana
FC Congo
FD Swaziland
FE Central African Republic
FI Mauritius
FJ British Indian Ocean Territory
FK Cameroon
FL Zambia
FM Madagascar
FM Comoros
FM Réunion (France)
FN Angola
FO Gabon
FP Sao Tome and Principe
FQ Mozambique
FS Seychelles

FG Equatorial Guinea
FH Ascension
FW Malawi
FX Lesotho
FY Namibia
FZ Democratic Republic of the Congo
GA Mali
GB Gambia
GF Sierra Leone
GG Guinea-Bissau
GL Liberia
GO Senegal
GQ Mauritania
GS Western Sahara
GU Guinea
GV Cape Verde
FT Chad
FV Zimbabwe
HA Ethiopia
HB Burundi
HC Somalia
HD Djibouti
HE Egypt
HH Eritrea
HK Kenya
HR Rwanda
HS Sudan
HT United Republic of Tanzania
HU Uganda
SB Brazil
VO India

LOWER AIRSPACE		UPPER AIRSPACE	
Designator Type 1	**Significant Points 2**	**Designator Type 1**	**Significant Points 2**
		UA214	(Pekanbaru) BUSUX (0355S 06000E) GITOP (0400S 05901E) Praslin
		UA302	Dakar Vitoria
A327	Plaisance KALBI 02826S 07500E Phuket	UA327	Plaisance KALBI 02826S 07500E Phuket
A400	Abidjan Sao Tome Luanda Luena Kaoma *Note (FL) EVOLU 1543S 02638E Lusaka *Note (FL) Chileka	UA400	Abidjan Sao Tome Luanda Luena *Note 1 (FL) Kaoma EVOLU 1543S 02638E *Note 1 (FL) Lusaka Antananarivo Moramanga Plaisance
A401	Dar es Salaam Moroni Mahajanga Ankazobe Antananarivo Moramanga Saint Denis	UA401	Entebbe Dar es Salaam Moroni Mahajanga Ankazobe Antananarivo Moramanga

	Plaisance		Saint Denis Plaisance
A402	Durban Johannesburg	UA402	Cape Town Durban *Note (FAS) Tolagnaro Plaisance
A403	Kadra Gheriat Sebha TUMMO N'Djamena Berberati Brazzaville	UA403	Kadra Gheriat Sebha TUMMO N'Djamena Berberati Brazzaville
A404	Chileka Tete Harare Maun Windhoek Walvis Bay	UA404	Chileka Tete Harare Maun Windhoek Walvis Bay
A405	Harare Masvingo Greefswald Hartebeespoortdam Johannesburg	UA405	Hargeisa Mandera Wajir *Note 3 (HK) Nairobi Mbeya Harare *Note 1 (Harare Hartebeespoortdam) Masvingo Greefswald Hartebeespoortdam Johannesburg Cape Town ETOBO (233900S 0100000W) (Recife)
A406	Kinshasa Lubumbashi Ndola Mfuwe Lilongwe	UA406	Kinshasa Lubumbashi Ndola Mfuwe Lilongwe
		UA407	Lusaka Dar es Salaam Mombasa Mogadishu
A408	Harare Kalemie Bujumbura Kigali Entebbe	UA408	Harare Kalemie Bujumbura Kigali Entebbe Lodwar Addis Ababa Saleh (Hodeidah)

		UA409	Kalemie Mansa Ndola Lusaka Gabarone
A410	Brazzaville Bangui Khartoum	UA410	Brazzaville Bangui Khartoum
		UA416	(Sanaa) PARIM Djibouti
A451	TOKAR 1806N 03748E Asmara Assab PARIM 1230N 04328E (Aden)	UA451	TOKAR 1806N 03748E Asmara Assab PARIM 1230N 04328E (Aden)
		UA452	GOLEM (1157N 06722E) ELKEL (0149N 06911E) Diego Garcia
		UA474	Plaisance MURUS (Mumbai)
		UA557	Cape Town MUNES (La Plata)
		UA559	Cape Town ITMET (34 12 00S 015 00 00E) ETULA (34 21 00S 010 00 00E) GERAM (34 03 00S 000 00 00W) ITGIV (32 56 00S 010 00 00W) Brasilia FIRB (Rio de Janeiro)
		UA560	Accra (Vitoria)
		UA572	Freetown (Vitoria)
A600	Agadir El Aaiun Villa Cisneros Nouadhibou Nouakchott Kayes Bamako Niamey	UA600	Agadir El Aaiun Villa Cisneros Nouadhibou Nouakchott Bamako Niamey
A601	Dakar Tambacounda Bamako	UA601	Dakar Tambacounda Bamako

	Bobo-Dioulasso Tamale Cotonou		Bobo-Dioulasso Tamale Cotonou Malabo
A602	(Sal) TITOR 1300N 1800W Bissau	UA602	(Sal) TITOR 1300N 1800W Bissau
A603	Gao Accra	UA603	Gao Accra
A604	Mostaganem El Bayadh El Golea Tamanrasset Douala Franceville Brazzaville	UA604	Mostaganem El Bayadh El Golea Tamanrasset Douala Franceville Brazzaville
		UA605	(ETOIL 3944N 0710E) Constantine Djanet Maiduguri
A607	Ghadames *Note 4 (DA) Dirkou N'Djamena Bangui	UA607	Ghadames *Note 4 (DA) Dirkou N'Djamena Bangui Lubumbashi N'Dola Harare
A608	Niamey Cotonou	UA608	El Bayadh Niamey *Note 4 (DR) Cotonou
A609	Accra Lomé Cotonou Lagos Mamfe Foumban Bangui Buta Bunia Entebbe Nairobi Mombasa	UA609	Accra Lomé Cotonou Lagos Mamfe Foumban Bangui Buta Entebbe Nairobi Mombasa Antsiranana Plaisance
A610	Kilimanjaro Mombasa	UA610	Yaoundé Kisangani Entebbe Kilimanjaro *Note 2 (HT, HK) Mombasa Praslin
A611	Kinshasa	UA611	Kinshasa

	Luanda		Luanda ILGER 1727S 01000W (Rio de Janeiro)
A612	Conakry Bamako Mopti Gao	UA612	Conakry Bamako
		UA613	Kinshasa Kindu Bujumbura
		UA614	Timimoun Abidjan
A616	Sao Tomé Libreville		
		UA617	Kinshasa Windhoek
		UA618	Lubumbashi Bukavu SAGBU Malakal
		UA620	Malakal N'Djamena
		UA861	Lagos Garoua
		UB335	Plaisance PEDPI 1317S 07500E (Pekanbaru)
		UB344	(Medan) LELED 1116.5S 07500.0E Plaisance
B400	Lilongwe Harare	UB400	(ODAKA 1434N 05234E) ALULA 1207N 05105E Mogadishu Dar es Salaam Lilongwe Harare Bulawayo Francistown Gaborone Mandera
		UB403	ATUKO (081704N 0460635E) UBTEN (120816N 0495648E) (ODAKA) (1434N 05234E) BOSKI (1607.3N 05416.8E)
B404	(ODAKA) IMRUB Hargeissa	UB404	(ODAKA) (1434N 05234E) IMRUB Hargeissa

B413	Port Sudan (DANAK) Hodidar Taiz Aden	UB413	Port Sudan (DANAK) Hodidar Taiz Aden (ZIZAN) (GAGDO) Praslin
		UB459	(Mumbai) CLAVA (0134N 06000E) *Note 2 (FS) Praslin NORSI MIROV
		UB504	Johannesburg Francistown Victoria Falls Livingstone
		UB525	ITGEV Addis Ababa *Note 3 (HA) ALEBA Luxor
		UB526	Khartoum Kassala Asmara (Hodeidah)
B527	Khartoum Kenana Malakal Juba Kigali Bujumbura Kalemie Lubumbashi	UB527	Khartoum Kenana Malakal Juba Kigali Bujumbura Kalemie Lubumbashi
B528	Luena Livingstone Bulawayo KURLA	UB528	Luena Livingstone Bulawayo KURLA
B529	Lusaka Fylde Masvingo KURLA 2157S 03146E *Note 1 (Masvingo-Maputo) Maputo Durban	UB529	Lusaka Fylde Masvingo KURLA 2157S 03146E *Note 1 (Masvingo-Maputo) Maputo Durban
		UB530	NDOLA S 12 59.9 E 028 40.0 KASAMA S 10 12.9 E 031 08.6 TUNDA S 09 17 42 E 032 45 06

MBEYA (MB) S 08 54 52.53 E 033 27 29.65

B531	Kisangani Goma Kigali	UB531	Kisangani Goma Kigali

			Mwanza Kilimanjaro
		UB532	Kindu Kigali Nairobi
		UB533	Nairobi Dar es Salaam
B534	Carolina Matsapha	UB534	Carolina Matsapha
B535	(Aden) TORBA 1210N 04402E Djibouti Addis Ababa Juba Kisangani Kinshasa	UB535	(Aden) TORBA 1210N 04402E Djibouti Addis Ababa Juba Kisangani Kinshasa
		UB536	Maputo Morandava Antananarivo
		UB540	Hartebeepoortam Francistown Victoria Falls Livingstone
B600	Las Palmas/Gran Canaria Villa Cisneros Nouadhibou Dakar Banjul Bissau Conakry Monrovia Abidjan Accra	UB600	Las Palmas/Gran Canaria Villa Cisneros Nouadhibou Dakar Banjul Bissau Conakry Monrovia Abidjan Accra Libreville
		UB601	El Aaiun Nouakchott Dakar
B607	(Sitia) El Daba New-Valley NUBAR Goma Bujumbura	UB607	(Sitia) El Daba New-Valley *Note 1 (New Valley-Dongola) NUBAR Dongola *Note 3 (HS) El Obeid Goma Bujumbura Dar-es-Salaam
		UB612	ORNAT 2000N 02500E El Obeid Malakal Nakuru

B614	Conakry Freetown Monrovia	UB614	Conakry Freetown Monrovia
B726	Zemmouri Bou-Saada El Golea Niamtougou Accra	UB726	Zemmouri Bou-Saada El Golea Niamtougou Accra
B727	Freetown *Note 2 (GF) Bamako	UB727	Freetown *Note 2 (GF) Bamako Tombouctou Tessalit Tamanrasset Zarzaitine/In-Amenas
		UB728	Atar Tambacounda Conakry
		UB729	Conakry Abidjan
B730	El Golea Bordj Omar Driss Djanet Dirkou	UB730	El Golea Bordj Omar Driss Djanet Dirkou *Note 1 (Djanet-Djamena) N'Djamena
		UB731	TOBUK 2156N 00913E Agades Sokoto Gwasero Lagos
B732	Port Gentil Pointe Noire Brazzaville		
		UB733	Kinshasa Luena Maun Gaborone
		UB735	Timimoun Bamako
B737	Sao Tomé Malabo Douala	UB737	Sao Tomé Douala
		UB790	St-Denis Dzaoudzi
		UB791	Jos N'Djamena Jeddah
		UB796	El Obeid AVONO (0920.3N 03356.0E)

UB980	Luena N'Djamena
UG200	Cocos Island Plaisance
UG300	Mandera TIKAT (1224.3N 03538.2E)
UG402	Gao TYE Sao Tome
UG404	Casablanca Niamey
UG424	(Mumbai) (ALATO 1340.7N 06344.0E) VUTAS 0912.0N 060000.0E Dar es Salaam Lubumbashi
UG433	Monrovia/Roberts (Vitoria)
UG450	Luanda Tshikapa Kananga Bujumbura Mwanza Nairobi Mogadishu (Mumbai)
UB454	(Colombo) BOBOD (0600S 07155E) Plaisance
UG465	(Rio de Janeiro) AXODA (2912S 01000W) Johannesburg Beira Praslin *Note 2 (FS) (Male)
UG615	Nouckchott Mopti
UG616	RIPOL Kano
UG617	GAMUS N'djamena
UG619	URSUT Maiduguri
UG620	Bosso N'djamena
UG622	Khartoum

			RIPOL Zinder Kano Bosso Nimir
		UG624	Bangui Garoua
		UG625	Libreville Moros Bangui
		UG626	Jos Maiduguri
		UG627	Ruacana Namibe BOSNI
		UG628	ANVAG Lubango
		UG634	Plaisance SOLIT, 2355S 07500E
		UG635	Plaisance MABAD, 2648.4S 07500E (Perth)
G650	(Jeddah) Asmara Addis Ababa Nakuru Nairobi	UG650	(Jeddah) Asmara Addis Ababa Nakuru Nairobi
UG653	Windhoek Gaborone Johannesburg Carolina Maputo	UG653	Windhoek Gaborone Johannesburg Carolina Maputo Toliara Saint-Denis
		UG654	Durban Note (FAS) Toliara
G655	Johannesburg Maseru	UG655	Tebessa FARES (3210.3N 01056.9E) Sebha GARIN Faya Largeau Buta Kisangani Kindu Lubumbashi *Note (FZ, FL) Lusaka Bulawayo *Note (FAS)

			Johannesburg *Note (FAS) Maseru
G656	Juba TORNO (02330N 03158E) Entebbe	UG656	Juba TORNO (02330N 03158E) Entebbe Mbeya Lilongwe Tete Maputo
G657	Maseru Vrede Manzini Maputo	UG657	Maseru Vrede Manzini Maputo Beira Dar es Salaam Mombasa Mandera Hargeisa
		UG658	Nairobi Praslin
G660	Niamey GULEN Kano Maiduguri KELAK N'Djamena Geneina El Fasher El-Obeid Khartoum Port Sudan *Note (HS, OE) (Jeddah)	UG660	Niamey GULEN Kano Maiduguri KELAK N'Djamena Geneina El Fasher El-Obeid Khartoum Port Sudan *Note (HS, OE) (Jeddah)
		UG661	Dar es Salaam Mauritius
G727	(GIANO 3854N 01226E) *Note 2 (LI) INDOR Cap Bon Monastir Jerba	UG727	(GIANO 3854N 01226E) *Note 2 (LI) INDOR Cap Bon Monastir Jerba *Note 2 (DT) Nalut *Note (HL) Dirkou Maiduguri Garoua Ngaoundere Brazzaville
G740	Abidjan Kumasi	UG740	Abidjan Kumasi
G745	Johannesburg	UG740	Johannesburg

	Nelspruit Maputo		Nelspruit Maputo
G851	(Porto Santo) Tenerife MIYEC (2342N 01259W) Zouerate Bamako Bouake Abidjan	UG851	(Porto Santo) Tenerife MIYEC (2342N 01259W) Zouerate Bamako Bouake Abidjan
		UG852	El Golea Bamako Monrovia/Roberts
G853	Luanda Kuito Cuito Cuanavale Maun Hartebeespoortdam Johannesburg Durban	UG853	Las Palmas/Gran Canaria *Note (GC) DEMAR 0539N 01100W DEVLI 0400N 00730W Luanda Kuito Cuito Cuanavale Maun Hartebeespoortdam Johannesburg Durban
G854	Conakry Bobo-Dioulasso Ouagadougou Niamey Zinder N'Djamena	UG854	Conakry Bobo-Dioulasso Ouagadougou Niamey Zinder N'Djamena
G855	Tripoli Ghadames	UG855	Tamanrasset Niamey Tamale Abidjan
G856	Libreville Brazzaville	UG856	Lagos Libreville Brazzaville
G857	N'Djamena Maroua Garoua Foumban Douala Bata Libreville Port Gentil	UG857	N'Djamena Foumban Douala Libreville
		UG858	Kano DEKIL Sebha
G859	Anaba *Notes (LI), 4 (DT) Constantine Biskra Ghardaia El Golea In Salah	UG859	Anaba Constantine Biskra Ghardaia El Golea In Salah Tessalit

	Tessalit Gao Ouagadougou Abidjan		Gao Ouagadougou Abidjan
G860	Bamako Ouagadougou	UG860	Bamako Ouagadougou
		UG861	Douala Pointe Noire
		UG862	Bunia ONUDA 0809N 2251E *Note 4 (FT) Dirkou
		UL211	(KILOS) MUNES Cape Town
		UL244	(OPERA) ITGIV Cape Town
		UL303	MAGUD N052041.28 E060 00 00.91 MOGDU N 02 00 24 E 045 17 36 KESOM N 00 07 48 E 041 00 06 NAIROBI S011759.65 E0357 15.22
		UL307	ONTAR S 09 37 44 E 011 23 07 ABAPU S 17 49 38 E 019 02 02 AVOGU S200107.67 E 021 00 00.88 UVLUK S 24158.83 E 024 42 54.01 GABORONE S243551.77 E02549 56.84
		UL311	HARGEISA N 09 31 12 E 044 05 30 DAROT N 09 11 24 E 047 21 12 AXINA N 06 49.80 E 055 00.00 MAGUD N 05 20.70 E 060 00.00
		UL313	DJIBOUTI N 11 32.90 E 043 05.60 EGROV N 11 20.70 E 045 58.90 ORLID N 11 17.10 E 060 00 .10
		UL316	DULGO S 25 00.00 E 013 59.80 KEETMANSHOOP S 26 32.20 E 018 06.80 UTANI S 27 13 46.73 E 021 00 34.80 AVUSA S 27 29.90 E 022 13.50
		UL375	(LOKIM) S112000 W0150000 ETAXO S155124 W0100000 BUTOG S165336 W0081030 USENA S182748 W0060712 BOLUM S192000 W0050000 OSEPA S230000 W0000000 DABUR S262000 E0050000 ASONI S292000 E0100000 BUXIR S320000 E0150000 RIV S334800 E0182130
CTV (FACT-Cape Town) S335806 E0183612			
		UL435	(PAKER) N152000 W0400000 IRELA N140000 W0372600 DIGUN N093930 W0312200

			BUXON N082848 W0294642 ASEBA N071836 W0281300 IRAVU N065124 W0273706 MAROA N062606 W0270336 BUVUK N053000 W0255000 ASOBU N042318 W0241236 BITEX N012012 W0194736 MIGED S001924 W0172418 ATANI S031906 W0130506 EKAGO S034630 W0122642 BUTEM S053000 W0100000 URAPI S095130 W0035336 BODEX S123300 E0000200 EGOLI S133306 E0012800 ILDIR S180000 E0100000 DETUX S200000 E0141830 AKETE S213336 E0175448 BOPAN S222412 E0200000 GBV S243554 E0255000 NESEK S250112 E0263700 HBV S254036 E0275000
FAJS (Johannesburg) S260800 E0281436			
		UL612	Goma El Dhaba (Paleohora)
		UL682	N'DJAMENA 12 08 30.1N 015 02 17.9E DENAT 11 52 58.40N 017 34 32.67E ERESA 11 38 21.22N 019 46 44.51E KURAM 11 02 03.91N 022 56 13.65E TETAL (10 18 48.16N 031 16 06.35E) UVAKI (10 3 21.26N 034 14 23.18E) Addis Ababa
		UL683	TAMALE N 09 34 24.59 W 000 50 49.68 GANDA N 09 28 46.26 E 003 10 00.60 ILGAM N 09 04 51.58 E 006 26 38.13 ABUJA N 09 02 16.06 E 007 17 06.35
		UL684	MIYEC N 23 42.0 W 012 59.0 OSVOR N 23 27 18.39 E 012 12 25.07 GAO N 16 14.3 W 000 01.6 ODMAP 12 27 05.87 E 003 37 49.52 ABUJA N 09 02 1.06 E 007 17 06.35
		UL685	IBLOK S 18 47.60 E 011 40.50 APKEL S 22 14 24.61 E 017 04 51.02 WINDHOEK S 22 28.60 E 017 28.20
		UL686	WINDHOEK S 22 28.60 E 017 28.20 EGNOR S 27 29 55.15 E 020 39 40.57 UDLON S27 43 50.57 E 020 48 47.32 UPINGTON S 28 24.10 E 021 15.60
		UL688	BRNO N 49 09.0 E 016 41.6 ATMUL N 22 00.0 E 029 05.4
L689	Kilimanjaro Nairobi	UL689	Kilimanjaro Nairobi

Lodwar GABTA (03 59 33.94N 035 23 43.27E) DUKNA (05 11 42.54N 035 06 0.32E) EGMER UMTES (09 39 42.22N 034 0 11.75E) APLOM (10 29 3.42N 033 48 4.59E) IXETA (13 54 49.03N 032 56 49.03E) Khartoum Merowe NUBAR	Lodwar GABTA (03 59 33.94N 035 23 43.27E) DUKNA (05 11 42.54N 035 06 0.32E) EGMER UMTES (09 39 42.22N 034 0 11.75E) APLOM (10 29 3.42N 033 48 4.59E) IXETA (13 54 49.03N 032 56 49.03E) Khartoum Merowe NUBAR
	UM104 Timimoun Abidjan
	UM108 Timimoun Bamako
	UM114 Lagos Ghardaia Alger
	UM117 Casablanca Ouarzazate *Note 4 (DA) Gao
	UM122 Agadir BULIS (2740N 0090854W) Bamako
	UM214 Johannesburg ETMIT 2312.8S 02737.7E FTV VOR 2109.8S 02728.4E AVOMU 1714.0S 02626.9E MBY VOR 0606.8S 02333.8E EDLAN 0005.8S 02251.3E KEDOT 0335.1N 02144.4E IPANI 0633.1N 02100.0E ERESA 1138.3N 01946.7E ILDOR 2009.6N 01801.3E GARIN 220000.00N 0170636.00E SEB VOR 265944.21N 0142735.05E
	UM215 Johannesburg TAVLA 2237.4S 02817.6E DANAM 2139.1S 02826.0E VBU VOR 2001.7S 02838.6E RETAR 1637.7S 02828.3E VLS VOR 1519.6S 02825.2E MOTAM 1200.0S 02735.8E LUB VOR 1136.1S 02730.3E KIN VOR 0255.0S 02554.0E KGI VOR 0029.7S 02518.8E BUT VOR 0249.1S 02448.6E MERON 0455.0N 02402.7E ONUDA 0809.7N 02251.1E BULGO 1119.9N 02140.0E ARBEG 131314.39N 0195842.98E TONBA 2135.3N 01951.2E Dahra (DHR VOR N 2928.0N 01755.9E

UM216	Hargeisa 093112.00N 440530.00E AXAPO 0915.54N 434512.68E EGMEP 081442.79N 423019.99E ETLOT 071549.20N 411827.02E OKNUL 061336.21N 400220.96E IMKIT 054110.90N 392303.00E RUDOL 040009.20N 372213.76E LOV-VOR 030627.00N 353645.86E PATAR 022731.06N 345700.00E NABRO 014935.00N 341500.00E NM-VOR 000311.11N 322617.06E EGREK 010111.00S 301447.49E OVPAP 011934.41S 293526.65E XIBKI 012916.27S 291426.90E BULNA 013323.59S 290017.60E KIN-VOR 025500.00S 255400.00E RAPOL 040236.00S 231236.00E LINUD 052458.84S 202435.57E NANIB 054927.39S 193328.12E MIPKU 062608.16S 181821.96E KINPA 064441.13S 173954.59E UNDOP 070407.61S 165911.49E UTIVO 075939.60S 150322.23E VNA-VOR 085043.72S 131450.94E ONTAR 094000.00S 112400.00E
UM220	Abu Simbel Lodwar
UM372	(Faro) Casablanca Marrakech BULIS 2740N 00915W Conakry
UM426	ADDIS ABEBA N 09 06.4 E 038 46.2 MASLO N 07 25.0 E 039 03.2 IMKIT N 05 41.2 E 039 23.2 ALEMU N 04 00.2 E 039 39.9
UM429	DUGRA S 11 39 36 E 011 20 34 APGAL S 13 20 25 E 012 29 41 ANVAG S 17 23 30 E 015 49 22 OTAVI S 19 09.21 E 017 03 29
UM431	NEVEP S 20 20 00 E 012 14 04.44 OKPIS S 22 19 41.19 E 017 05 10.46 WINDHOEK S 22 28.60 E 017 28.20
UM432	CLAVA N 01 40.60 E 060 00.10 ETONI N 01 07 16.13 E 052 21 40.78 EGLOM N 00 44.90 E 047 24.20 RAGGS N 00 19 30 E 044 09 36 KESOM N 00 07 48 E 041 00 06
UM433	KEETMANSHOOP S 26 32.20 E 018 06.80 AVORU S 26 32.60 E 017 40.30 APGAS S 26 33.90 E 015 50.70 NIGAM S 26 33.90 E 014 37.20

		UM562	KISANGANI N 00 29 42.00 E 025 18 48.00 GUROT N 00 38 38.37 E 022 18 24.62 BATVU N 00 35 27.98 E 017 53 24.83 GODAL N 00 32 55.71 E 014 33 18.02 LIBREVILLE N 00 28.80 E 009 24.10
		UM563	MALAKAL N 09 33.8 E 031 39.2 LAGOS N 06 42.5 E 003 19.6
		UM564	ERKEL N 20 58 00 E 007 42 00 GITEP N 18 56 27.97 E 007 08 21.57 OSLEK N 16,00 00.00 E 006 21 21.98 BIRNI N 13 45 59.40 E 005 45 57.20
		UM565	INISA N 17 26.6 E 011 30.0 TANAD N 14 20.9 E 013 52.1 N'DJAMENA N 12 08.5 E 015 02.3
		UM566	TAMALE N 09 34 24.59 W 000 50 49.68 LIPUS N 09 13 30 W 000 00 42 KELEX N 07 51 47.45 E 002 21 25.67 OPALA N 07 24 00.00 E 002 45 00.00
		UM567	Lagos Jos Garoua KAFIA IBSUN (08 45 14.83N 024 20 52.50E) TEVOL (08 58 47.45N 033 35 38.91E) EGMER Addis Ababa
		UM608	El Bayadh Niamey
M651	(Aden) Hargeisa	UM651	(Aden) Hargeisa Praslin
M652	Brazzaville Kinshasa Saurimo NIDOS 1304S 02651E Lusaka Harare	UM652	Brazzaville Kinshasa Saurimo NIDOS 1304S 02651E Lusaka Harare Beira Toliara AXOTA (Perth)
		UM665	Plaisance Mandera Addis Ababa Merowe
		UM725	Sorrento Tunis Tebessa Ghardaia Timimoun Dakar

UM731	Carbonara OSMAR Tunis Jerba FARES Dirkou N'Djamena Berberati Saurimo Johannesburg
UM739	Cap Bon SONAK 3637N 01130E (Lampedusa)
UM863	(KING ABDULAZIZ) N 21 42 37 E 039 09 48 ASKOL N 15 48 54.51 E 024 00 05.35 KITOB N 15 21 43.64 E 022 58 45.75 N'DJAMENA
UM974	Niamey Dakar
UM997	Wajir Dire Dawa Djibouti
UM998	(Martigues) BALEN Constantine Bordj Omar Driss Tobuk INISA (1733.5N 01130.0E) Maiduguri Garoua Kinshasa Luena Maun Gaborone
UN181	WALVIS BAY ETUSO S 23 12 39.35 E 015 30 03.26 GABSI TETUS JOHANNESBURG
UN182	GABORONE S 24 35.9 E 025 49.9 UTRIS AXODO S 22 43.0 E 018 19.6 WINDHOEK APGEK S 21 57 04.98 E 014 17 55.10 ETUDU S 21 40 00 E 012 43 21.18
UN183	GABORONE S 24 35.9 E 025 49.9 XORAK WALVIS BAY NIBEK S 22 58.50 E 013 12.90
UN184	EGNAB S 14 25 30 E 011 17 24

EVUVI S 17 24 01 E 014 21 22
OTAVI S 19 09 21 E 017 03 29
DUPKI S 21 43 38.41 E 021 00 31.04
GABORONE S 24 35 51.77 E 025 49 56.84
ETOSA
JOHANNESBURG S 26 09.4 E 028 13.9

UN185 WINDHOEK
USUKI
CAPE TOWN

UN186 CAPE TOWN
EKBAT
WINDHOEK
OMATA S 20 49.0 E 017 15.7
KINSHASA. S 04 24 08.75 E 015 25 06.75

UN187 WINDHOEK
UTSEX S 21 59 54.57 E 017 18 22.44
APNUM S 18 22 43.45 E 016 05 28.39
ANVAG S 17 22.00 E 015 45.60
LUANDA S 08 50.7 E 013 14.8

UN188 WALVIS BAY
XUDAN
CAPE TOWN

UN189 WINDHOEK
AKAZU
KINSHASA

UN190 WALVIS BAY
APGEK S 21 57 04.98 E 014 17 55.10
IXEPA S 19 39 21.10 E 013 32 48.32
OKDOL S 17 07.80 E 012 44.70
OKBIK S 16 35.8 E 012 34.7
NAMIBE S 15 15 12.8 E 012 09 54

UN303 Hargeissa
PARIM

UN550 KANO N 12 02.2 E 008 29.8
LUKRO N 08 13.3 E 008 04.3

UN551 TAMALE N 09 34 24.59 W 000 50 49.68
BANGUI N 04 22.6 E 018 31.5

UN552 GAO N 16 14.3 W 000 01.6
BATIA N 11 00.0 E 001 27.3
LOSIN S 03 08.0 E 036 07.3

UN553 LODWAR N 03 06 27.00 E 035 36 45.86
PATAR N 02 26 52.54 E 034 58 31.45
OVGAT N 02 14 48.92 E 033 53 04.94
NALOS N 01 47 18.40 E 030 59 44.64
BUNIA N 01 33 58.62 E 030 13 25.37

UN554 RUDOL N 03 59 49.06 E 037 25 03.18
KAMAS N 01 37 14.57 E 035 51 03.56
AKUMU S 01 00 29.90 E 034 01 35.58
MWANZA S 02 26 18.09 E 032 55 20.39

UN555 ABUJA N 09 02 1.06 E 007 17 06.35

			AMPAS N 06 40.0 W 007 49.0 LUNGI N 08 37.0 W 013 11.5
		UN556	JUBA N 04 53.3 E 031 34.9 GONGU N 01 13 32.02 E 034 47 32.34 NAIROBI S 01 17 59.65 E 036 57 15.22
		UN557	EPMES S 13 00.00 E 011 19 24 EVUKU S 13 54 36 E 012 23 42 LUBANGO S 14 55 26 E 013 35 52
		UN558	ORLID N 11 17.10 E 060 00.10 AVEDA N 09 13 29 30 E 049 40 06 DAROT N 09 11 24 E 047 21 12 HARGEISA N 09 31 12 E 044 05 30
		UN559	ANTEP S 24 00.00 E 013 36.40 APDOV S 24 42 18.80 E 019 59 59.18 EPMON S 24 54 58.97 E 022 37 42.67
		UN560	ETUDU S 21 40 00 E 012 43 21.18 WALVIS BAY S 22 58.90 E 014 38.70
		UN561	Addis Ababa NEVIM (08 47 34.80N 033 28 55.19E) GESOB (08 15 28.80N 024 28 44.40E) ONUDA MISRU AKLIS LAG (Lagos)
		UP312	Riyan PARKER Hargeissa
P557	KATAB N 29 25.0 E 29 05.1 MISUK N 29 05.1 E 029 06.3 ALKED N 22 21.9 E 031 30.9 NUBAR N 22 00.00 E 031 38.10 AMUDO N 12 42 42.81 E 036 43 30.62 BAHIR DAR N 11 36.4 E 037 19.0 LABLA N 10 32.4 E 037 53.9 ADDIS ABEBA N 09 06.4 E 038 46.2	UP557	KATAB N 29 25.0 E 29 05.1 MISUK N 29 05.1 E 029 06.3 ALKED N 22 21.9 E 031 30.9 NUBAR N 22 00.00 E 031 38.10 AMUDO N 12 42 42.81 E 036 43 30.62 BAHIR DAR N 11 36.4 E 037 19.0 LABLA N 10 32.4 E 037 53.9 ADDIS ABEBA N 09 06.4 E 038 46.2
		UP676	NAIROBI S 01 17 59.65 E 036 57 15.22 MAGAD S 02 10 52.49 E 036 09 04.31 ESRES S 08 12 51.66 E 030 40 44.85 LUBUMBASHI S113607.85 E02730 20.32
		UP677	BESHO S 12 00.0 E 027 49.9 GEPET S 12 56.50 E 030 20.00 MFUWE S 13 15.60 E 031 54.90
		UP678	LUANDA S 08 50 43 E 013 14 51 UTSAG S 08 49 33 E 011 13 39
		UP679	ETLOV S 16 00 00 E 011 15 24 OKBIK S 16 35 48 E 012 34 42 EVUVI S 17 24 01 E 014 21 22
		UP680	GAMBELLA N 08 08.0 E 034 33.9 DATSU N 07 49 21.34 E 033 08 00.97 ASKON N 06 17 44.81 E 026 25 36.56

			GOPUR N 04 48 24.00 E 020 15 30.00 ABAVO N 04 26 24.00 E 018 46 48.00 BANGUI N 04 22.6 E 018 31.5
		UP681	VUTAS N 09 12.10 E 060 00.10 UNRED N 09 13 43.23 E 058 04 34.97 AVEDA N 09 13 29 30 E 049 40 06 DAROT N 09 11 24 E 047 21 12 HARGEISA N 09 31 12 E 044 05 30
		UP682	GABORONE S 24 35 51.77 E 025 49 56.84 EPMON S 24 54 58.97 E 022 37 42.67
		UP683	LUANDA S 08 50 43 E 013 14 51 ANSUS S 10 31 00 E 012 07 24 DUGRA S 11 39 36 E 011 20 34
		UP684	EPMON S 24 54 58.97 E 022 37 42.67 IMLAN S 24 59 07.98 E 020 19 41.19 DULGO S 25 00.00 E 013 59.80
		UP685	BAMAKO N 12 32 46.00 W 007 55 49.70 BEPOM N 10 54 12.70 W 006 06 24.61 INPOS N 10 22 41.18 W 005 31 49.74 ANUVO N07 50 59.01 W 002 48 04.42 DOUALA N 03 55 38.00 E 009 44 36.48
		UP686	CASABLANCA N 33 31.30 W 007 40.60 TADOX N 32 53.0 W 007 26.7 OUARZAZATE N 30 56.40 W 006 54.30 GAO N 16 14.3 W 000 01.6
		UP688	GOPDA (16 11 12.00N 032 51 29.99E) IXETA (13 54 49.03N 032 56 49.03E)
R212	Praslin PERRY 06000.0S 06000.0E Diego Garcia GUDUG 0704.6S 07500.0E PIBED 0520.2S 09044.0E	UR212	Praslin PERRY 06000.0S 06000.0E Diego Garcia GUDUG 0704.6S 07500.0E PIBED 0520.2S 09044.0E
R329	Plaisance Diego Garcia (Gan)	UR329	Plaisance Diego Garcia (Gan)
R348	KADAP (0200.0S 08409.6E LATEP (0610.3S 7500.0E) Diego Garcia	UR348	KADAP (0200.0S 08409.6E LATEP (0610.3S 7500.0E) Diego Garcia Antananarivo
		UR400	Abu Simbel *Note 4 (HS) Kassala Bahir Dar *Note 4 (HA) Mogadishu Praslin Plaisance
		UR401	Saint-Denis Praslin

			KADER (15 06 00N 055 00 00E) DATRA (16 42 00N 055 30 00E) Haima
R409	Masvingo Lilongwe	UR409	Lilongwe Dodoma Nairobi
		UR410	Masvingo Chileka Lilongwe
R525	Harare KURLA 2157S 03146E Maputo	UR525	Kaoma Harare KURLA 2157S 03146E Maputo
		UR526	Luanda Libreville
R603	Lagos São Tomé	UR603	Lagos São Tomé
R611	(Caraffa) Benina DITAR AMTUL Merowe Khartoum Addis Ababa *Note 1 (Addis Ababa-Garisa-Lake Awasa)	UR611	(Caraffa) Benina DITAR AMTUL Merowe Khartoum Addis Ababa *Note 3 (HK) Wajir Mombasa
		UR620	Bissau Atar
R722	(Faro) Casablanca Marrakech	UR722	(Faro) Casablanca Marrakech BULIS 2740N 00915W Conakry
R723	(ETOIL 3944N 00710E) *Note 5 (LF) Cap Bon	UR723	(ETOIL 3944N 00710E) *Note 5 (LF) Cap Bon
R329	(Aden) Seychelles		
R775	Luxor (Jeddah) (DANAK 1608N 04129E) RAGAS 1218N 04218E *Note (HF) Djibouti Hargeisa Belet Ven Mogadishu	UR775	Luxor (Jeddah) (DANAK 1608N 04129E) ATBON 1543N 04134E RAGAS 1218N 04218E *Note (HF) Djibouti Hargeisa Belet Ven Mogadishu

			Mahajanga
R778	(VELOX 3349N 03405E) *Note 3 (HE) Port Said *Note 3 (HE) Cairo Fayoum KATAB 2925N 02905E *Note 3 (HE) Kufra *Note 2 (FT, DR) Kano Kaduna Vida Lagos	UR778	(VELOX 3349N 03405E) *Note 3 (HE) Port Said *Note 3 (HE) Cairo Fayoum KATAB 2925N 02905E *Note 3 (HE) Kufra *Note 2 (FT, DR) Kano Kaduna Vida Lagos
R779	Lusaka Livingstone Maun	UR779	Mbeya Lusaka Livingstone Maun
		UR780	Asmara Dire Dawa Mogadishu Saint-Denis
		UR782	Lusaka Chipata Lilongwe Lichinga Moroni Praslin
		UR784	Lubumbashi Mwanza
R765	Nouakchott Conakry	UR765	Nouakchott Conakry
R866	BULIS 2740N 00915W Ouagadougou	UR866	BULIS 2740N 00915W Ouagadougou
R975	Fes Casablanca Agadir ECHED (2740N 0103100W) Zouerate Atar Nouakchott Dakar	UR975	Fes Casablanca Agadir ECHED (2740N 0103100W) Zouerate Atar Dakar
R976	Dakar Sal	UR976	Dakar Sal (NAT)
		UR977	Agadir BULIS (2740N 0090854W Bamako Accra
		UR978	(BALEN 4057N 00541E)

			Constantine El-Oued Bordj Omar Driss Agades
		UR979	Dakar Abidjan Libreville
R981	Gao Niamey Lagos	UR981	Casablanca Marrakech BULLIS Gao Niamey Lagos
R982	Ouagadougou Tamale Accra	UR982	Ouagadougou Tamale Accra
R983	Lomé PAMPA (0840N 00034E) Ouagadougou	UR983	Lomé PAMPA (0840N 00034E) Ouagadougou
R984	Ouagadougou Lagos Port Harcourt Douala Yaoundé Berberati Bangui Kasama Lilongwe	UR984	Ouagadougou Lagos Port Harcourt Douala Yaoundé Berberati Bangui Kasama Lilongwe
R986	Tunis Ghadames In Amenas Djanet Kano	UR986	Tunis Ghadames In Amenas Djanet Kano Foumban Yaoundé Franceville
R987	Libreville Pointe Noire Cabinda Luanda Ondangwa Windhoek Kertmanshoop Cape Town	UR987	Niamey Port Harcourt Libreville Pointe Noire Cabinda Luanda Ondangwa Windhoek Kertmanshoop Cape Town
R988	Franceville Pointe Noire	UR988	Franceville Pointe Noire
		UR991	DEMAR 0539N 01100W ARLEM 0023N 00720W ILDIR 1800S 01000E Gaborone
		UR993	Djibouti

	ASMARA
UR995	Addis Ababa Merowe

TABLE ATM II-AFI 2

SSR CODE ALLOCATION PLAN

State/FIR	Domestic Codes	Domestic Codes	Transit Codes	Transit Codes
Accra	3000-3077	3100-3177	4600-4677	-
	5700-5777	6600-6677	-	-
	6700-6700	7001-7077	-	-
Addis Ababa	1300-1377	-	2400-2477	-
Antananarivo	1300-1377	-	0200-0277	-
Asmara	3100-3177	-	4600-4677	-
Beira	3100-3177	5700-5777	7400-7477	-
Brazzaville	0400-0477	1200-1277	5100-5177	-
	5200-5277	5300-5377	-	-
Bujumbura	-	-	-	-
Cape Town	0500-0577	-	-	-
Dakar	1300-1377	-	5000-5077	-
Dar es Salaam	0400-0477	1200-1277	0300-0377	-
	5200-5277	5300-5377	-	-
Djibouti	-	-	-	-
Entebbe	3000-3077	3100-3177	4200-4277	-
Gaborone	1300-1377	-	4300-4377	-
Gillot APP	-	-	-	-
Harare	0400-0477	1200-1277	3600-3677	-
	5200-5277	5300-5377	-	-
Johannesburg	0600-0677	0700-0777	2600-2677	1101-1177
	0700-0777	-	-	-
Kano	0500-0577	-	1700-1777	-
Khartoum	1200-1277	5200-5277	0100-0177	-
	5300-5377	-	-	-
Kigali	-	-	-	-
Kinshasa	1300-1377	-	6100-6177	-
Lilongwe	1300-1377	-	3300-3377	-
Luanda	3000-3077	3100-3177	6200-6277	-
Lusaka	0600-0677	0700-0777	1500-1577	-
Maseru	-	-	-	-
Matsapha	-	-	-	-
Mauritius	0500-0577	0600-0677	4400-4477	-
	0700-0777	-	-	-
Mogadishu	0400-0477	1200-1277	3400-3477	-
	5200-5277	5300-5377	-	-
Nairobi	0500-0577	0600-0677	1400-1477	-
	0700-0777	-	-	-
N’djamena	3000-3077	3100-3177	4100-4177	-

	5700-5777	7001-7077	-	-
Roberts	0500-0577	0600-0677	1500-1577	-
	0700-0777	-	-	-
Sal	0500-0577	0600-0677	3700-3777	-
	0700-0777	-	-	-
Seychelles	3000-3077	3100-3177	1600-1677	-
	5700-5777	7001-7077	-	-
Windhoek	0400-0477	1200-1277	7100-7177	-
	5200-5277	5300-5377	-	-

AFI ANP, VOLUME II

PART V – METEOROLOGY (MET)

1. INTRODUCTION

1.1 This part of the AFI ANP, Volume II, complements the provisions in the ICAO SARPs and PANS related to aeronautical meteorology (MET). It contains dynamic plan elements related to the assignment of responsibilities to States for the provision of MET facilities and services within a specified area in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300); and mandatory requirements related to the MET facilities and services to be implemented by States in accordance with regional air navigation agreements. Such agreement indicates a commitment on the part of the States concerned to implement the requirements specified.

2. GENERAL REGIONAL REQUIREMENTS

Meteorological offices

2.1 In the AFI Region, meteorological watch offices (MWO) have been designated to maintain continuous watch on meteorological conditions affecting flight operations within their area(s) of responsibility, as indicated at Table MET II-1.

Meteorological observations and reports

2.2 In the AFI Region, routine observations, issued as a METAR, should be made throughout the 24 hours of each day at intervals of one hour or, for RS and AS designated aerodromes [1], at intervals of one-half hour at aerodromes as indicated in Table MET II-2. For aerodromes included on the VHF VOLMET broadcast as indicated in Table MET II-3, routine observations, issued as METAR, should be made throughout the 24 hours of each day, at intervals of one-half-hour if applicable.

2.3 At aerodromes that are not operational throughout 24 hours, METAR should be issued at least 3 hours prior to the aerodrome resuming operations in the AFI Region.

Forecasts

2.4 In the AFI Region, an aerodrome forecast, issued as a TAF, should be for the aerodrome indicated in Table MET II-2.

2.5 In the AFI Region, an aerodrome forecast, issued as a TAF, should be for the aerodrome indicated in Table MET II-2.

2.6 In the AFI Region, the forecast maximum and minimum temperatures expected to occur during the period of validity together with their corresponding day and time of occurrence, should be included in TAF at aerodromes indicated in Table MET II-2.

2.7 In the AFI Region(s), landing forecasts (prepared in the form of a trend forecast) should be provided at aerodromes indicated in Table MET II-2.

Requirements for and use of communications

2.8 Operational meteorological information prepared as METAR, SPECI and TAF for aerodromes indicated in Table MET II-2, and SIGMET and AIRMET (if applicable) messages prepared for flight information regions or control areas indicated in Table MET II-1, should be disseminated to the international OPMET databanks designated for the AFI Region (namely Dakar and Pretoria of OPMET databanks) and to the centre designated for the operation of the aeronautical fixed service satellite distribution system (SADIS 2G) and the Internet-based service (Secure SADIS FTP) in the AFI Region. The data will be forwarded to other international databanks and to the WIFS Provider State in accordance with international agreements.

2.9 SIGMET messages should be disseminated to other meteorological offices in the AFI Region in accordance with the AFI meteorological bulletin exchange scheme (AMBEX).

2.10 Special air-reports that do not warrant the issuance of a SIGMET should be disseminated to other meteorological offices in the AFI Region, in accordance with the AFI meteorological bulletin exchange scheme (AMBEX).

2.11 In the AFI Region, meteorological information for use by aircraft in flight should be supplied through VOLMET broadcasts.

2.12 In the AFI Region, the aerodromes for which METAR and SPECI are to be included in VOLMET broadcasts, the sequence in which they are to be transmitted and the broadcast time, is indicated in Table MET II-3.

3. SPECIFIC REGIONAL REQUIREMENTS

EXAMPLES

Meteorological observations and reports

3.1 For the EUR Region, routine observations, issued as METAR, should be made throughout the 24 hours of each day at intervals of one half-hour

3.2 In the AFI Region, aeronautical meteorological stations have been established on offshore structures or at other points of significance in support of helicopter operations to offshore structures, as indicated at Table MET II-AFI-X (Former MET 1C Offshore structures).

3.3 In the AFI Region, information on the sea-surface temperature and the State of the sea or the significant wave height from aeronautical meteorological stations established on offshore structures in support of helicopter operations should be included as supplementary information in METAR and SPECI as indicated in Table MET-II-AFI.

3.4 In the AFI Region, information on the state of the runway should be included as supplementary information in METAR and SPECI as indicated in Table MET II-2 (Former MET 1A Aerodrome meteorological offices).

3.5 In the AFI Region, GAMET area forecasts and/or area forecasts for low-level flights in chart form prepared in support of the issuance of AIRMET information and AIRMET information for low-level flights relevant to the whole route should be supplied to operators and flight crew members and kept up to date. Section II of the GAMET area forecast should include information in addition to the provisions in Annex 3, as contained at Appendix MET LLF to Part V (MET).

AIRMET information

3.6 In the AFI Region, AIRMET information should be issued by WMO for its areas of responsibility as indicated in Table MET II-1 (Former MET 1B Meteorological watch offices).

OPMET information

3.7 In the AFI Region, the details of the exchange scheme to be used the OPMET information is given in the E UR Region-EUR OPMET Data Management Handbook (EUR Doc 018).

Service for operators and flight crew members

3.8 In the AFI Region, meteorological information for pre-flight planning by operators of helicopters flying to offshore structures as indicated in Table MID MET II-X (Former MET 1C offshore structures) should include data covering the layers from sea level to FL 100. Particular mention should be made of [the expected surface visibility, the amount, type (where available), base and tops of cloud below FL 100, the sea state and sea-surface temperature, the mean sea-level pressure and the occurrence or expected occurrence of turbulence and icing]. [if applicable]

3.9 In the AFI Region, scheduled VOLMET broadcasts should contain TAF and SIGMET.

3.10 In the AFI Region, METAR, SPECI and TAF should be available for uplink to aircraft in flight via D-VOLMET

TABLE MET II-1

METEOROLOGICAL WATCH OFFICES

EXPLANATION OF THE TABLE

Column

1 Name of the State where meteorological service is required

2 Name of the flight information region (FIR) or control area (CTA) where meteorological service is required

Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.

3 ICAO location indicator of the FIR or CTA

4 Name of the meteorological watch office (MWO) responsible for the provision of meteorological service for the FIR or CTA

Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a

State	FIR or CTA Where Meteorological Service is Required	Responsible Meteorological Watch Office	Meteorological Service To Be Provided

State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.

5 ICAO location indicator of the responsible MWO

6 Requirement for SIGMET information (excluding for volcanic ash and for tropical cyclones) to be provided by the MWO for the FIR or CTA concerned, where:
Y – Yes, required
N – No, not required

7 Requirement for SIGMET information for volcanic ash to be provided by the MWO for the FIR or CTA concerned, where:
Y – Yes, required
N – No, not required

8 Requirement for SIGMET information for tropical cyclone to be provided by the MWO for the FIR or CTA concerned, where:
Y – Yes, required
N – No, not required

9 Requirement for AIRMET information to be provided by the MWO for the FIR or CTA concerned, where
Y – Yes, required
N – No, not required

	Name	ICAO Location Indicator	Name	ICAO Location Indicator	SIGMET (WS)	SIGMET (WV)	SIGMET (WC)	SIGMET (WA)
1	2	3	4	5	6	7	8	9
ANGOLA	LUANDA	FNAN	LUANDA/4 de Fevereiro	FNLU	Y	Y		
BOTSWANA	GABORONE/ SIR SERETSE KHAMA INT	FBGR	GABORONE/Sir Sereste Khama	FBSK	Y	Y	Y	
BURUNDI	BUNJUMBURA	HBBA	BUNJUMBURA	HBBA	Y	Y		
CAPE VERDE	SAL OCEANIC	GVSC	SAL/Gran Canary	GVAC	Y	Y		
CHAD	N'DJAMENA	FTTT	N'DJAMENA	FTTJ	Y	Y		
CONGO	BRAZZAVILLE/MAYA-MAYA	FCCC	BRAZZAVILLE/MAYA-MAYA	FCBB	Y	Y		
DEMOCRATIC REP. OF CONGO	KINSHASA/N'DJILI	FZAA	KINSHASA/N'DJILI	FZAA	Y	Y		
ETHIOPIA	ADDIS ABABA	HAAA	ADDIS ABABA/Bole Int	HAAB	Y	Y		
ERITREA	ASMARA	HHAA	ASMARA	HHAS	Y	Y		
GHANA	ACCRA	DGAC	ACCRA/Kotoka Int	DGAA	Y	Y		
KENYA	NAIROBI	HKNA	NAIROBI/Jomo Kenyatta Int	HKJK	Y	Y	Y	
LIBERIA	ROBERTS	GLRB	ROBERTS/Roberts Int	GLRB	Y	Y		
MADAGASCAR	ANTANANARIVO	FMMM	ANTANANARIVO/Ivato	FMMI	Y	Y	Y	
MALAWI	LILONGWE	FWLL	LILONGWE/Lilongwe Int	FWLI	Y	Y	Y	
MAURITIUS	MAURITIUS	FIMM	MAURITIUS/Sir Seewoosagur Ramgoolam Int	FIMP	Y	Y	Y	
MOZAMBIQUE	BEIRA	FQBE	MAPUTO/Maputo Int	FQMA	Y	Y	Y	
NAMIBIA	WINDHOEK	FYWH	WINDHOEK/Hosea Kutako	FYWH	Y	Y		
NIGER	NIAMEY	DRRR	NIAMEY/Diori Hmani Int	DRRN	Y	Y		
NIGERIA	KANO	DNKK	KANO/Mallam Aminu Kano Int.	DNKN	Y	Y		
RWANDA	KIGALI	HRYR	KIGALI/Gregoire Kayibanda	HRYR	Y	Y		
SENEGAL	DAKAR	GOOO	Leopold Sedar Senghor	GOOY	Y	Y		
SEYCHELLES	SEYCHELLES	FSSS	SEYCHELLES Int.	FSIA	Y	Y	Y	

State	FIR or CTA Where Meteorological Service is Required		Responsible Meteorological Watch Office		Meteorological Service To Be Provided			
	Name	ICAO Location Indicator	Name	ICAO Location Indicator	SIGMET (WS)	SIGMET (WV)	SIGMET (WC)	SIGMET (WA)
1	2	3	4	5	6	7	8	9
SOMALIA	MOGADISHU	HCSM	MOGADISHU	HCMM	Y	Y		
SOUTH AFRICA	CAPE TOWN	FACA	Johannesburg Int	FAOR	Y	Y		
	JOHANNESBURG	FAJA			Y	Y	Y	
	JOHANESBURG OCEANIC	FAJO			Y	Y		
TOGO	LOME	DXXX	GNASSINGBE EYADEMA INT.	DXXX	Y	Y		
UGANDA	ENTEBBE	HUEC	ENTEBBE Int	HUEN	Y	Y		
UNITED REPUBLIC OF TANZANIA	DAR-ES-SALAAM	HTDC	DAR-ES-SALAAM	HTDA	Y	Y	Y	
ZAMBIA	LUSAKA	FLFI	KENETH KAUNDA	FLKK	Y	Y		
ZIMBABWE	HARARE	FVHA	HARARE Int	FVHA	Y	Y	Y	

TABLE MET II-2

AERODROME METEOROLOGICAL OFFICES

EXPLANATION OF THE TABLE

Column

1 Name of the State where meteorological service is required

2 Name of the AOP aerodrome where meteorological service is required

Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.

3 ICAO location indicator of the AOP aerodrome

4 Designation of AOP aerodrome:
RG - international general aviation, regular use
RS - international scheduled air transport, regular use
RNS - international non-scheduled air transport, regular use
AS - international scheduled air transport, alternate use
ANS - international non-scheduled air transport, alternate use

5 Name of the aerodrome meteorological office responsible for the provision of meteorological service

Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.

6 ICAO location indicator of the responsible aerodrome meteorological office

7 Requirement for METAR/SPECI from the aerodrome concerned, where:
Y – Yes, required
N – No, not required

8 Requirement for information on the state of the runway provided by the appropriate airport authority to be included as supplementary information in METAR/SPECI from the aerodrome concerned, where:
Y – Yes, required
N – No, not required

9 Requirement for trend forecast to be appended to METAR/SPECI from the aerodrome concerned, where
Y – Yes, required
N – No, not required

10 Requirement for TAF from the aerodrome concerned, where
C - Requirement for 9-hour validity aerodrome forecasts in TAF code (9H)
T - Requirement for 18/24-hour validity aerodrome forecasts in TAF code (18/24H)
X - Requirement for 30-hour validity aerodrome forecasts in TAF code (30H)

N – No, not required

11 Requirement for maximum and minimum temperature (expected to occur during the period of validity of the TAF) to be included in TAF from the aerodrome concerned, where:
Y – Yes, required
N – No, not required

12 Availability of METAR/SPECI and TAF from the aerodrome concerned, where:
F – Full availability : OPMET information as listed issued for the aerodrome all through the 24-hour period
P – Partial availability: OPMET information as listed not issued for the aerodrome for the entire 24-hour period

State	AOP Aerodrome where meteorological service is to be provided			Responsible aerodrome meteorological office		Observations and forecasts to be provided					METAR/SPECI and TAF availability
	Name	ICAO Location Indicator	Use	Name	ICAO Location Indicator	METAR/SPECI	State of the runway	Trend forecast	TAF	Temperature Tx/Tn	
1	2	3	4	5	6	7	8	9	10	11	12
Angola	HUAMBO/ ALBANO MACHADO	FNHU	RS	LUANDA/ 4 DE FEVEREIRO	FNLU					N	F
	LUANDA/4 DE FEVEREIRO	FNLU	RS	VEREIRO	FNLU		Y	Y	X	N	F
Benin	CARDINAL BERNARDIN GANTIN DE CADJEHOUN INTERNATIONAL	DBBB	RS	CARDINAL BERNARDIN GANTIN DE CADJEHOUN INTERNATIONAL	DBBB		Y	Y	X	N	F
Botswana	FRANCISTOWN	FBFT	RS	GABORONE/SIR SERETSE KHAMA INT'L	FBSK					N	F
	GABORONE/SIR SERETSE KHAMA INT'L	FBSK	RS	GABORONE/SIR SERETSE KHAMA INT'L	FBSK		Y	Y	X	N	F
	KASANE	FBKE	RS	GABORONE/ SIR SERETSE KHAMA INT'L	FBSK					N	F
	MAUN	FBSP	RS	GABORONE/ SIR SERETSE KHAMA INT'L	FBSK					N	F
	SELIBE-PHIKWE	FBSP		GABORONE /SIR SERETSE KHAMA INT'L	FBSK					N	F
Burkina Faso	BOBO DIOULASSO	DFOO	RS	OUAGADOUGOU/ AEROPORT	DFFD					N	
	OUAGADOUGOU/AEROPORT	DFFD	RS	OUAGADOUGOU/ AEROPORT	DFFD					N	
Burundi	BUNJUBURA	HBBA					Y	Y	T	N	F

Cameroon	DOULALA/ AEROPORT	FKKD	RS	DUALA/ AEROPORT	FKKD	Y	Y	X	N	F
	GAROUA	FKKR	AS	GAROUA	FKKR		Y		N	F
	MAROUA/ SALAK	FKKL	RS	DOUALA/ AEROPORT	FKKD				N	F
	N'GAOUNDERE	FKKN	RS	DOUALA/ AEROPORT	FKKD				N	F
	YAOUNDE/NSIMALEN	FKYS	RS	YAOUNDE/ NSIMALEN	FKYS	Y	Y	T	N	F
Cape Verde	AMICAR CABRAL/SAL ISLAND	GVAC	RS	AMICAR CABRAL/ SAL ISLAND	GVAC	Y	Y	X	N	F
	PRAIA/NELSON MANDELA	GVNP	RS	AMICAR CABRAL/ SAL ISLAND	GVAC				N	F
Central Africa Republic	BANGUI/M'POKO	FEFF	RS	BANGUI/M'POKO	FEFF	Y	Y	X	N	F
	BERBEATI	FEFT		BANGUI/M'POKO	FEFF					F
Chad	N'DJAMENA/ AERPORT	FTTJ	RS	N'DJAMENA/ AERPORT	FTTJ	Y	Y	X	N	F
Comoros	ANJOUAN/OUANI	FMCV								
	MORONI/PRINCE SAID IBRAHIM	FMCH	RS	MORONI/ PRINCE SAID IBRAHIM	FMCH	Y	Y	T	N	F
Congo	BRAZZAVILLE/MAYA -MAYA	FCBB	RS	BRAZZAVILLE/ MAYA-MAYA	FCBB	Y	Y	X	N	F
	POINTE NOIRE	FCPP	RS	POINTE NOIRE	FCPP		Y	T	N	F
Côte D'Ivore	ABIDJAN/FELIX HOUPHOUET BOIGNY	DIAP	RS	ABIDJAN/ FELIX HOUPHOUET BOIGNY	DIAP	Y			N	
	BOUAKE	DIBK	RS	ABIDJAN/ FELIX HOUPHOUET BOIGNY	DIAP				N	F
Democratic Republic of the Congo	GOMA	FZNA	RS	KINSHASA/ N'DJILI	FZAA					P
	KINSHASA/N'DJILI	FZNA	RS	KINSHASA/ N'DJILI	FZAA	Y	Y	X	N	F
	KISANGANI-BANGOKA	FZIC	AS	KINSHASA/ N'DJILI	FZAA				N	P
	LUBUMBASHI	FZQA	AS	KINSHASA/ N'DJILI	FZAA				N	F
	MBUJI-MAJI	FZWA	AS	KINSHASA/ N'DJILI	FZAA				N	P
Djibouti	AMBOULI	HDAM	RS	AMBOULI	ADAM	Y	Y	T	N	F
Equatorial Guinea	MALABO	FGSL	RS	MALABO	FGSL	Y	Y	X	N	F
Eritrea	ASMARA AIS/APP/COM/ MET/TWR	HHAS	RS	ASMARA AIS/APP/ COM/MET/ TWR	HHAS	Y	Y	T	N	F
	ASSAB	HHSB	RS	ASSAB	HHSB		Y		N	F
Ethiopia	ADDIS ABABA/BOLE COM/MET/NOF	HAAB	RS	ADDIS ABABA/ BOLE COM/MET/NOF	HAAB	Y	Y	X	N	F
	DIRE DAWA	HADR	RS	ADDIS ABABA/ BOLE	HAAB				N	F

				COM/MET/NOF						
Gabon	FRANCEVILLE/ MVENGUE	FOON	RS	LIBREVILLE/ LEON M'BA	FOOL				N	F
	LIBREVILLE/ LEON M'BA	FOOL	RS	LIBREVILLE/ LEON M'BA	FOOL	Y	Y	X	N	F
	PORT-GENTIL	FOOG	RS	LIBREVILLE/ LEON M'BA	FOOL	Y		T	N	F
Gambia	BANJUL INTERNATIONAL	GBYD	RS	BANJUL INTERNATIONAL	GBYD	Y		X	N	F
Ghana	ACCRA/KOTOKA INTERNATIONAL	DGAA	RS	ACCRA/KOTOKA INTERNATIONAL	DGAA	Y	Y	X	N	F
	KUMASI	DGSI	RS	ACCRA/KOTOKA INTERNATIONAL	DGAA			T	N	F
	TAMALE	DGLE	RS						N	F
Guinea-Bissau	BISSAU/ OSWALDO VIEIRA INTL	GGOV	RS	BISSAU/ OSWALDO VIEIRA INTL	GGOV	Y	Y	T	N	F
Kenya	ELDORET/INT. AIRPORT	HKEL	RS	ELDORET/INT. AIRPORT	HKEL	Y	Y	T	N	F
	MOMBASA	HKMO	RS	MOMBASA	HKMO	Y	Y	T	N	
	NAIROBI/ JOMO KENYATTA INTL. TWR/APP/NOF/ MET/CIVIL AIRLINES	HKJK	RS	NAIROBI/JOMO KENYATTA INTL. TWR/APP/NOF/ MET/CIVIL AIRLINES	HKJK	Y	Y	X	N N	F
Lesotho	MASERU MOSHOESHOE	FXMM	RS	MASERU MOSHOESHOE I	FXMM	Y	Y	T	N	F
Liberia	MONROVIA/ ROBERTS INT	GLRB	RS	MONROVIA/ ROBERTS INT	GLRB	Y	Y	T	N	F
Madagascar	ANTANANARIVO/ IVATO	FMMI	RS	ANTANANARIVO/I VATO	FMMI				N	
	ANTSIRANANA/ ARRACHART	FMNA							N	
	DZAOUDZI	FMCZ	RS					C	N	F
	MAHAJANGA/ PH.TSIRANANA	FMNM	RS	MAHAJANGA /PH.TSIRANANA	FMNM	Y	Y	T	N	F
	NOSY-BE	FMNN	RS	MAHAJANGA/ PH.TSIRANANA	FMNM				N	F
	SAINTE-MARIE	FMMS	RS	TOAMASINA	FMMT				N	F
	TOAMASINA	FMMT	RS	TOAMASINA	FMMT	Y	Y	T	N	F
	TOLAGNARO	FMSD	RS	ANTANANARIVO/I VATO	FMMI				N	F
Malawi	BLANTYRE/ CHILEKA	FWCL	RS	BLANTYRE/ CHILEKA	FWCL		Y		N	F
	LILONGWE/ KAMUZU INTERNATIONAL	FWKI	RS	LILONGWE/ KAMUZU INTERNATIONAL	FWKI	Y	Y	X	N	F
Mali	BAMAKO/ SENOU	GABS	RS	BAMAKO/ SENOU	GABS	Y	Y	X	N	F
	GAO	GAGO	RS	BAMAKO/ SENOU	GABS			T	N	F
	KAYES	GAKD	RS	BAMAKO/ SENOU	GABS				N	F
	KIDAL	GAKL	RS	BAMAKO/ SENOU	GABS				N	F
	MOPTI/	GAMB	RS	BAMAKO/	GABS				N	F

	AMBODEDO			SENOU						
	NIORO	GANR	RS	BAMAKO/ SENOU	GABS				N	F
	TOMBOUCTOU	GATB	RS	BAMAKO/ SENOU	GABS				N	F
Mauritania	ATAR	GQPA	RS	NOUAKCHOTT/ AEROPORT	GQNN				N	F
	NEMA	GQNI	RS	NOUAKCHOTT/ AEROPORT	GQNN				N	F
	NOUADHIBOU	GQPP	RS	NOUADHIBOU	GQPP	Y	Y	T	N	F
	NOUKCHOTT/ AEROPORT	GQNN	RS	NOUAKCHOTT/ AEROPORT	GQNN	Y	Y	X	N	F
	ZOUERATT/ AZADIT	GQPZ	RS	NOUAKCHOTT/ AEROPORT	GQNN				N	F
Mauritius	SIR SEEWOOSAGUR RAMGOOLAM INTERNATIONAL AIRPORT	FIMP	RS	SIR SEEWOOSAGUR RAMGOOLAM INTERNATIONAL AIRPORT	FIMP	Y	Y	X	N	F
Mozambique	BEIRA	FQBR	RS	BEIRA	FQBR	Y	Y	T	N	F
	MAPUTO	FQMA	RS	MAPUTO	FQMA	Y	Y	T	N	F
Namibia	HOSEA KUTAKO INTL AIRPORT	FYWH	RS	HOSEA KUTAKO INTL AIRPORT	FYWH	Y	Y	X	N	F
	KEETMANSHOOP	FYKT	RS	HOSEA KUTAKO INTL AIRPORT	FYWH				N	F
	WALVIS BAY	FYWB	RS	HOSEA KUTAKO INTL AIRPORT	FYWH				N	F
Niger	AGADES SUD	DRZA	RS	NIAMEY				T	N	F
	NIAMEY	DRRN	RS	NIAMEY		Y	Y	X	N	F
	ZINDER	DRZR	RS	NIAMEY				T	N	F
Nigeria	ABUJA/ NNAMDI AZIKIWE	DNAA	RS	KANO/ MALLAM AMINU KANO	DNKN	Y	Y	X	N	F
	CALABAR/ MARGATET EKPO	DNCA	RS	LAGOS/ MURTALA MUHAMMED	DNMM			T	N	F
	ILORIN	DNIL	RS	LAGOS/ MURTALA MUHAMMED	DNMM			T	N	F
	KADUNA (NEW)	DNKA	RS	KATSINA	DNKT			T	N	F
	KANO/MALLAM AMINU KANO	DNKN	RS	KANO/ MALLAM AMINU KANO	DNKN	Y	Y	X	N	F
	LAGOS/ MURTALA MUHAMMED	DNMM	RS	LAGOS/ MURTALA MUHAMMED	DNMM	Y	Y	X	N	F
	MAIDUGURI	DNMA	RS	KANO/ MALLAM AMINU KANO	DNKN			T	N	F
	PORT HARCOURT	DNPO	RS	LAGOS/ MURTALA MUHAMMED	DNMM	Y	Y	X	N	F
	SOKOTO/	DNSO	RS	KANO/	DNKN			T	N	F

	SADDIQ ABUBAKAR III			MALLAM AMINU KANO						
Reunion (FRANCE)	LA REUNION-ROLAND GARROS	FMEE	RS	LA REUNION-ROLAND GARROS	FMEE	Y	Y	X	N	F
Rwanda	KIGALI INTERNATIONAL AIRPORT	HRYR	RS	KIGALI INTERNATIONAL AIRPORT	FRYR	Y	Y	T	N	F
Sao Tome and Principe	SAO TOME/INTERNATIONAL, SAO TOME ISLAND	FPST	RS	SAO TOME/ INTERNATIONAL SAO TOME ISLAND	FPST	Y	Y	X	N	F
Senegal	CAP SKIRING	GOGS	RS	DAKAR/YOFF	GOOY			T	N	F
	DAKAR/YOFF	GOOY	RS	DAKAR/YOFF	GOOY	Y	Y	X	N	F
	SAINT LOUIS	GOSS	RS	DAKAR/YOFF	GOOY			T	N	F
	TAMBACOUNDA	GOTT	RS	DAKAR/YOFF	GOOY				N	F
	ZIGUINCHOR	GOGG	RS	DAKAR/YOFF	GOOY				N	F
Seychelles	SEYCHELLES INTERNATONAL AIRPORT	FSIA	RS	SEYCHELLES INTERNATONAL AIRPORT	FSIA	Y	Y	T	N	F
Sierra Leone	FREE TOWN/LUNGI	GFLL	RS	FREE TOWN/LUNGI	GFLL	Y	Y	X	N	F
Somalia	BERBERA	HCMI	AS	MOGADISHU	HCMM				N	F
	BURAO	HCMV	RS	MOGADISHU	HCMM				N	F
	EGAL INTERNATIONAL AIRPORT	HCMH	RS	MOGADISHU	HCMM				N	F
	KISIMAYU	HCMK	AS	MOGADISHU	HCMM				N	F
	MOGADISHU	HCMM	RS	MOGADISHU	HCMM	Y	Y	T	N	F
South Africa	BRAM FISCHER INTERNATIONAL AIRPORT	FABL	RS	BRAM FISCHER INTERNATIONAL AIRPORT	FABL	Y	Y	T	N	F
	CAPE TOWN (INTERNATIONAL AIRPORT)	FACT	RS	CAPE TOWN (INTERNATIONAL AIRPORT)	FACT	Y	Y	X	N	F
	O.R. TAMBO (JOHANNESBURG INTL AIRPORT)	FAOR	RS	O.R. TAMBO (JOHANNESBURG INTL AIRPORT)	FAOR	Y	Y	X	N	F
	LANSERIA	FALA	RS	O.R. TAMBO (JOHANNESBURG INTL AIRPORT)	FAOR				N	F
	MAFIKENG AD	FAMM	AS	O.R. TAMBO (JOHANNESBURG INTL AIRPORT)	FAOR				N	F
	NELSPRUIT	FANS	RS	GROOTFONTEIN	FAGF				N	F
	PIETERSBURG (CIVIL)	FAPI	AS	O.R. TAMBO (JOHANNESBURG INTL AIRPORT)	FAOR				N	F
	PORT ELIVABETH (PORT ELIZABETH AIRPORT)	FAPE	AS	O.R. TAMBO (JOHANNESBURG INTL AIRPORT)	FAOR				N	F
	UPINGTON	FAUP	AS	O.R. TAMBO (JOHANNESBURG INTL AIRPORT)	FAOR				N	F
Swaziland	MANZINI/MATSAPHA	FDMS	RS	MANZINI/	FDMS	Y	Y	T	N	F

				MATSAPHA						
Togo	LOME/GNASSINGBE EYADEMA	DXXX	RS	LOME/ GNASSINGBE EYADEMA	DXXX	Y	Y	X	N	F
	NIAMTOUGOU	DXNG	RS				Y	T	N	F
Uganda	ENTEBBE (INT)	HUEN	RS	ENTEBBE (INT)	HUEN	Y	Y	X	N	F
United Republic of Tanzania	DAR ES SALAAM APP,TWR,NOF,MET,COM,CIVIL AIRLINES	HTDA	RS	DAR ES SALAAM APP,TWR,NOF, MET,COM,CIVIL AIRLINES	HTDA	Y	Y	X	N	F
	KILIMANJARO APP,TWR,AIS,MET,IVIL AIRLINES	HTKJ	RS	KILIMANJARO APP,TWR,AIS,MET, IVIL AIRLINES	HTKJ	Y	Y	T	N	F
	ZANZIBAR-KISAUNI	HTZA	RS	ZANZIBAR-KISAUNI	HTZA	Y	Y	T	N	F
Zambia	HARRY NKUMBULA INTERNATIONAL	FLHN	RG	KENNETH KAUNDA	FLKK		Y	X	N	P
	KENNETH KAUNDA	FLKK	RG	KENNETH KAUNDA	FLKK	Y	Y	X	N	F
	MFUWE	FLMF	AS	KENNETH KAUNDA	FLKK				N	P
	SIMON KAPWEPWE	FLSK	RG & AS	KENNETH KAUNDA	FLKK		Y	X	N	P
Zimbabwe	HARARE INTERNATIONAL	FVHA	RS	HARARE INTERNATIONAL	FVHA	Y	Y	X	N	F
	J.M. NKOMO	FVBU	RS	J.M. NKOMO	FVBU				N	F
	VICTORIA FALLS	FVFA	RS	HARARE INTERNATIONAL	FVHA				N	F

TABLE MET II-3

VOLMET BROADCASTS

EXPLANATION OF THE TABLE

The transmitting station appears at the top of each block.

Names in lower case letters indicate aerodromes for which reports (routine or selected special) are required.

Names in upper case letters indicate aerodromes for which forecasts are required.

Brazzaville 15–25 45–55	**Antananarivo** 25–30 55–60
Brazzaville Douala Libreville Bangui N'Djamena Kinshasa Pointe-Noire Port-Gentil Yaoundé Luanda Sao Tomé Lagos Kano Garoca	Antananarivo Mahajanga Toamasina Moroni Saint-Denis Mauritius Nosy-Bé

AFI ANP, VOLUME II

PART VI - SEARCH AND RESCUE (SAR)

1. INTRODUCTION

1.1 This part of the AFI ANP, Volume II, complements the provisions in Standards, Recommended Practices and Procedures (SARPs) related to search and rescue (SAR). It contains dynamic plan elements related to the assignment of responsibilities to States for the provision of SAR facilities and services within a specified area in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300); and mandatory requirements related to the SAR facilities and services to be implemented by States in accordance with regional air navigation agreements. Such agreement indicates a commitment on the part of the State(s) concerned to implement the requirement(s) specified.

2. GENERAL REGIONAL REQUIREMENTS

2.1 The Rescue Coordination Centres (RCCs) and Rescue Sub-Centres (RSCs) for the AFI Region are listed in Table SAR II-1 and depicted in Chart SAR I-1.

2.2 In cases where the minimum SAR facilities are temporarily unavailable, alternative suitable means should be made available.

2.3 In cases where a SAR alert is proximate to a search and rescue region (SRR) boundary (e.g. 50 NM or less), or it is unclear if the alert corresponds to a position entirely contained within an SRR, the adjacent RCC or RSC should be notified of the alert immediately.

3. SPECIFIC REGIONAL REQUIREMENTS

3.1. The details of the facilities and/or services to be provided to fulfill the basic requirements of the plan could be found in Table SAR II-1. Such agreement indicates a commitment on the part of the State(s) concerned to implement the requirement(s) specified.

TABLE SAR II-1

SEARCH AND RESCUE FACILITIES IN THE AFI REGION

EXPLANATION OF THE TABLE

Column

1 State
2 Name of the Rescue Coordination Centre (RCC) and Rescue Sub-Centre (RSC).
3 SAR points of contact (SPOC). Name of the SPOC.
4 Remarks. Supplementary information such as the type of RCC (e.g. maritime or aviation or joint).

State	Name of and RCC/RSC	SPOC	Remarks
1	2	3	4
ANGOLA	LUANDA RCC Luanda	Mr. Arquimedes Ferreira Director Air Navigation Tel: +244 222 372 819 Mob: +244 912 506 739 Email: arquimedesf@gmail.com Email: arquimedes.ferreira@inavic.gv.ao	*Details of rescue facilities to be provided by the State*
BENIN	COTONOU RSC Cotonou	Centre de Recherche et de Sauvetage 01 B.P. N°305, Cotonou Tél: +229 21 00 10 18 Tél: +229 21 30 45 71	
BOTSWANA	BOTSWANA RCC Gaborone	Phopho P. Motsumi Tel: +267 3914404 Tel: +267 3959440 (ACC) RCC: +267 3914403 (when activated during SAR Ops): Mob: +267 73536033 Fax: +267 3904559 AFS: FBGRYCYX Email: ppmotsumi@caab.co.bw	*Details of rescue facilities to be provided by the State*
	RSC Francistown	OIC: Moisrael Ntshonyane Tel: +267 2413692 Fax: +267 2404555 Email: mentshonyane@caab.co.bw AFS: FBFTZTZX	
	RSC Maun	OIC: Gaobolele Phalane Tel: +267 68664403 Tel: +267 6861541 (APC) Tel: +267 6860312 (TWR) Fax: +267 6860186 Email: gphalane@caab.co.bw AFS: FBMNZAZX	
	RSC Kasane	OIC: Onneile Motshele Tel: +267 6250140 Tel: +267 6250133 Fax: +267 6251760 Email: omotshele@caab.co.bw AFS: FBKEZTZX	
BURKINA FASO	OUAGADOUGOU RSC Quagadougou	Centre Secondaire de Recherches et de Sauvetage Etat Major Général des Armées	*Details of rescue facilities to be provided by the State*

		B.P.533, Ouagadougou, Burkina Faso Tél: +226 50 30 63 73 Tél: +226 50 31 07 76 /78/79 Fax: +226 50 31 17 24	
BURUNDI	BUJUMBURA RCC	M. Emmanuel HABIMANA Chef du Service de la Navigtion Aérienne Autorité de l'Aviation Civile B.P. 694, Bujumbura Tél: +257 222 23707 Tél: +257 222 23797 Fax +257 222 23428 AFTN: HBBAYAYX	*Details of rescue facilities to be provided by the State*
CAMEROON	DOUALA RSC Douala	Centre Secondaire de Sauvetage du Cameroun - Yaoundé Postal Address: S/C Etat-Major de l'Armée de l'air Base Aérienne 101, B.P. 6075 - Yaoundé-Cameroun ou s/c Direction Générale de l'Autorité Aéronautique Cameroun (CCAA) B.P. 6998 – Yaoundé, Cameroun Tél: +237 22 30 52 00 Tél: +237 22 30 52 09 Fax: +237 22 30 52 03 Fax: + 237 22.30 52 14	*Details of rescue facilities to be provided by the State*
CAPE VERDE	SAL RCC Sal	Agência de Aviação Civil – AAC P.O. Box 371 Avenida Cidade de Lisboa, No. 34 Várzea, Praia Tél: +238 260 34 30 Mob: +238 991 28 04 Fax +238 261 10 75	*Details of rescue facilities to be provided by the State*
CENTRAL AFRICAN REPUBLIC	BANGUI RSC Bangui	Centre Secondaire de Recherches et de Sauvetage Adresse postale: Escadrille Centrafricaine à Bangui (RCA) B.P. 967 – Bangui, Centre-Afrique Tél: +236 21 61 07 55	*Details of rescue facilities to be provided by the State*
CHAD	N'Djamena RCC N'Djamena	Centre de Coordination de Recherches et de Sauvetage Etat Major de l'Armée Nationale B.P.444 – N'Djamena, Tchad Tél: +235 22 52 57 76 Tél: +235 52 52 95 Mob: +235 66 29 03 60	*Details of rescue facilities to be provided by the State*

		Fax: +235 22 52 59 63 Email: yankim@yahoo.fr B.P. 923 - N'Djamena, Tchad Tél: +235 22 52 54 14 Mob: +235 66 78 00 33 Fax: +235 22 52 29 09 Email: adac@intnet.td	
COMOROS	MORONI RSC Moroni	Centre Secondaire de Recherches et de Sauvetage Cordinateur SAR, ANACM Tel: +269 7738003 Mob: +269 3353709	*Details of rescue facilities to be provided by the State*
CONGO	BRAZZAVILLE RCC Brazzaville	Centre de Coordination de Recherches et de Sauvetage Postal Address: B. P. 218, Brazzaville, Congo Tél: +242 27 75 30 27 Tél: +242 27 75 30 28	*Details of rescue facilities to be provided by the State*
COTE D'IVOIRE	ABIDJAN RCC Abidjan	Centre de Coordination de Recherches et de Sauvetage B.P. N° 7010, Abidjan Aviation, Côte D'Ivoire Tél: +225 21 21 58 86	*Details of rescue facilities to be provided by the State*
DEMOCRATIC REPUBLIC OF CONGO	KINSHASA RCC Kinshasa	Autorité de l'Aviation Civile Avenue le Marinel No. 911 Immeuble SOFIDE 2e Niveau Kinshasa/Gombe Tél: +243 81037 37 66 Tél: +243 81 2237 602 Fax +001 270 813 9293 AFTN: FZABYAYX	
DJIBOUTI	DJIBOUTI RSC Djibouti	Centre Secondaire de Recherches et de Sauvetage Tel: +253 21 340977 Tel: +253 21 340350 Fax: + 253 21 340723 AFTN:HDAMYDYX Email: twr@aeroport-jib.aero	*Zone of responsibility: Djibouti TMA* *a)MRG, Hel-M – Armée de l'air- Aéroport de Djibouti.* *b)Vedettes hauturière, bateaux de secours (dragueur selon disponibilité et assistance des unités navales.* *c)Divers, équipes terrestre de secours – Armée de terre.* *d)HEL-MRG, MRG & LRG avions,*

			Hel-SAR/MER – Armée Française. (Délai de mis en place 1 heure)
EQUATORIAL GUINEA	BATA RSC Bata	Dirección General de Aviación Civil Calle Acacio Maã'e Ela, S/N Malabo (Bioko Norte) Tel: +240 333 15 82 Tel: +240 222 27 66 07 Fax +240 333 09 39 99 AFTN: FGSLYDYX AFTN: FGSLYDYT	*Details of rescue facilities to be provided by the State*
ERITREA	ASMARA RCC Asmara	Mr Mesfin Berhane Director Air Navigation Division Tel: +291 1 182729 / 181424 Fax: +291 1 181520 Email: ercaahq@gmail.com Email: mesfin.berhane6@gmail.com	*Details of rescue facilities to be provided by the State*
ETHIOPIA	ADDIS ABABA RCC Addis Ababa	Tel: +251 011 6650265 Tel: +251 011 6650200, Ext 255 Fax: +251 011 6650281 AFTN: HAAAYAYX Email: caa.airnav@ethiinet.et	*Details of rescue facilities to be provided by the State*
GABON	LIBREVILL RSC Libreville	Adresse postale: Centre Secondaire de Recherches et de Sauvetage B.P. 10070, Libreville, Gabon Tél: +241 73 24 75	*Details of rescue facilities to be provided by the State*
GAMBIA	BANJUI RSC Banjui	Gambia Civil Aviation Authority Banjul International Airport Private Mail Bag 285 Tel: +220 44 739 96/728 31 Tel: +220 3359901/6 Fax +220 44 721 90 AFTN: GBYDYAYX AFTN: GBYDYAYT	*Details of rescue facilities to be provided by the State*
GHANA	ACCRA RCC Accra	Ghana Civil Aviation Authority Private Mail Bag Kotoka International Airport Accra Tel: +233 30 2776171 Tel: +233 30 2777320 Fax +233 30 2773293 AFTN: DGAAYFYX	*Details of rescue facilities to be provided by the State*
GUINEA	CONAKRY RSC Conakry	Direction Nationale de l'Aviation Civile	*Details of rescue facilities to be provided*

		Ministère des Transports B.P. 95, Conakry Tel: +224 60 21 53 14 Tel: +224 64 20 10 65 Fax: +224 30 41 35 77 Fax: +224 30 45 34 57 AFTN: DFFVYAYX	*by the State*
GUINEA-BISSAU	BISSAU RSC Bissau	Agence de l'Aviation Civile Aeroporto International Osvaldo Vieira, B.P. 77 1037 Bissau Cedex Tel: +245 661 23 41 Tel: +245 535 16 85 AFTN: GGOVYAYX	*Details of rescue facilities to be provided by the State*
KENYA	NAIROBI RCC Nairobi	James E. Seda, CATCO & SAR POC Tel: +254 722 600 090 Tel: +254 737 200 090 ACC: +254 20 827101 RCC: +254 20 827026 Fax: +254 20 827102 AFTN: HKNAYAYC AFTN: HKNAZQZX	*Trained and qualified SMCs.* *Details of rescue facilities under review and an update to be provided by the State*
LESOTHO	MASERU RSC Maseru	Mr. Andreas Tieho Ntobo Chief Air Traffic Control, NCAA Tel: +266 22 312 499 Tel: +266 22 322 498 AFTN: FXMKMYAYX	*Details of rescue facilities to be provided by the State*
LIBERIA	ROBERTS RCC Monrovia	Liberia Civil Aviation Authority Ministry of Transport P.O. Box 68 Harbel, Margibi County Tel: +231 776 998800 Tel: +231 776 998849 Fax: +231 404 5069617	
MADAGASCAR	ANTANANARIVO RCC Antananarivo	Ivato Aéroport, Antananarivo, Tel: +261 20 22 44410 Tel: + 261 20 22 45909 Inmarsat: +870 77 250 5563 Inmarsat: +870 77 250 5564 Fax: +261 20 22 44410 Fax: +261 20 22 45909 Email: jrccmad@moov.mg	*1 SRG (on request), 1 MRG (on request), divers, land rescue units, assistance from other marine vessels, as may be necessary*
MALAWI	LILONGWE RCC Lilongwe	SAR POC: Francis Kholowa Mob: +265 888368241	*Details of rescue facilities to be provided by the State*

		Email: francykholowa@yahoo.co.uk	
MALI	BAMAKO RSC Bamako	Centre Secondaire de Recherches et de Sauvetage Etat Major Armées de l'Air Postal Address: Search and Rescue Sub-Center Air-Army Headquarters B.P. 56 – Bamako, Mali Tél: +223 20 22 57 38 Tél: +223 20 22 29 31 Permanence Etat Major armée de l'Air: Tél: +223 20 22 57 38 Tél: +223 20 22 29 31 Tel: +223 76 46 85 66 Point Focal SAR (COSPAS-SARSAT): Tél: +223 20 22 1631 Tel: +223 20 22 6591/ 2820 Mob: +223 20 7457 0958 Email: ssdiallo@yahoo.fr Email: iallosidisadio@gmail.com	*Details of rescue facilities to be provided by the State*
MAURITANIA	NOUAKCHOTT RSC Nouakchott	Centre de Coordination de Recherches et de Sauvetage Postal Address: B.P. 208, Aéroport de Nouakchott République Islamique de Mauritanie Tél: +222 45 24 13 21 Tel: +222 45 21 81 40 Fax: +222) 45 25 96 73 Email: RCCNKTT@ yahoo.com	*Details of rescue facilities to be provided by the State*
MAURITIUS	MAURITIUS RCC Mauritius	Sir Seewoosagur Rangoolam Int'l Airport Tel: +230 603200 Fax: +230 6373164 AFS: FIMPYAYX Email: civil-aviation@gmail.gov.mu	*a)ELR: on deployment from Perth* *b)C160 MRG: on deployment from St. Denis, Reunion. Endurance 9hrs, 150/180 kts* *c)DO228: National Coast Guard* *d)Helicopter (1 or 2)* *e)RV: national Coast Guard* *f)24 RB: National Coast Guard*

MOZAMBIQUE	BEIRA RCC Beira	Maria Gorete Cazanca SAR Coordinator Mob: +258 825142354 Mob: +258 824559189 Beira International Airport Tel: +258 23 302330 (Dct RCC) Tel: +258 23 301626 (ACC) Tel: +258 23 301072 Fax: +258 23 302330 / 302331 AFTN: FQBEYCYX AFTN: FQBEZIZX	*Details of rescue facilities to be provided by the State* *Note: MOU signed with South Africa to provide SAR assets*
NAMIBIA	WINDHOEK RSC Windhoek	Directorate of Civil Aviation Tel: +264 61 702286 (ACC - First POC) Fax: +264 62 702218 SAR OIC: Victor Likando Tel: +264 61 702070 Tel: +264 61 702071 AFS: FYHQYCYX Email: victorlikando@yahoo.com	*a) LJ31, AS350, C182, C208, C210, C404, C441, C500, BE90, F406, PA31T, Y12, AN26, SA315, Z9, UH1H, MD500, RH44 Raven II, Bell jet ranger.* *b) Marlin class patrol boats, offshore patrol vessel and Oryx class patrol boat.* *c)Navy ships avlb on demand (classified)* *Note: Helicopter, B350 & F406 avlb at Arandis.*
NIGER	NIAMEY RCC Niamey	Centre de Coordination de Recherches et de Sauvetage B.P.1005, Niamey, Niger Tél: +227 20.34 00 85 Tél: +227 94 08 09 48	*Details of rescue facilities to be provided by the State*
NIGERIA	KANO RCC Kano	Marcel Nonye Onwuakpa GM, SAR/CMC Nigerian Airspace Management Agency (NAMA) Nigeria Tel: +234 809 176 4589 Tel: +234 706 361 5950 Fax: +234 1 279 0421 Emails: marcelonwuakpa@namahqtr.net marcelonwuakpa@yahoo.com AFTN: DNLLYAYX	*Details of rescue facilities to be provided by the State*

REUNION (FRANCE)	REUNION RSC Pointe des Galets	Mrs Isabelle Bazvatechi SAR Manager Tel: +262 262 728832 Tel: +262 262 728830 Tel: +262 262 728851 Fax: +262 262 728800 Fax: +262 262 728815 AFTN: FMEEYCYX	*Details of rescue facilities to be provided by the State.*
RWANDA	KIGALI RCC Kigali	Kigali RCC Kigali International Airport P.O. Box 1122, Kigali Tel: +250 252 585 499 Tel: +250 252 585 845 Email: controltower@caa.gov.rw	*Military and Police helicopters available at Kigali International Airport. Montain rescue units and local pólice units can be activated at short notice. Patrol boats are bailable over territorial waters of lakes Kivu and Muhazi.*
SAO TOME AND PRINCIPE	SAO TOME RSC Sao Tome	Civil Aviation National Institute (INAC) C.P. 97, Sao Tome Tel: +239 2 241450 Fax: +239 2 221848 Fax: +239 2 225218 AFTN: FPSTYAYX	*Details of rescue facilities to be provided by the State*
SENEGAL	DAKAR RCC Dakar	Centre de Coordination de Recherches et de Sauvetage Postal Address: B.P. N° 8014, Dakar, Senegal Tél: +221 33 860 33 26 Tél: +221 33 860 47 87 Tél: +221 77 333 84 18 Fax: +221 33 860 33 26 Email: ccs-dakar@yahoo.fr	*Details of rescue facilities to be provided by the State*
SEYCHELLES	SEYCHELLES RCC Mahe	Mr. Dominic Savy SAR Officer, JRCC Tel: +248 4290900 / 4224411 Mob: +248 2520020 (SMC) Fax: +248 4224665 / 4323288 AFS: FSIAYAYX AFS: FSSSZQZX Email: mrcc.seycoast@email.sc	*a) 3 EC120B, 1 P68, 1 B1900D, 1 DO228, 3 DHC6, I Y12E, 1 F406, 2 rescue vessels (inshore).* *b)Other rescue vessels & maritime merchants on request through GMDSS, in coordination with Seychelles Port Authority.*
SIERRA LEONE	FREETOWN RSC Feeetown	Sierra Leone Civil Aviation Authority (SLCAA)	*Details of rescue facilities to be provided*

		21/23 Siaka Stevens Street Freetown Tel: +232 33 601 788 Tel: +232 78 601 788 Fax: +232 22 222106 AFTN: GFLLYYCYX	*by the State*
SOMALIA	MOGADISHU RCC Mogadishu	Civil Aviation Caretaker Authority for Somalia (CACAS) P.O. Box 46294, 00100, Nairobi, Kenya Tel: +254 20 762 2774 Tel: +254 20 762 2785 Fax: +254 20 712 2340 AFTN: HCMMYAYX E-mail: somalia@icao.unon	*Internal discussions on-going with appropriate authorities to try and establish a proper SAR organization/structure, to include the Federal Government of Somalia and other stakeholders within the country.*
SOUTH AFRICA	JOHANNESBURG ARCC Johannesburg	Aeronautical Rescue Coordination Centre OR Tambo ATCC Tel: +27 11 9216523 Tel: +27 11 394829	*Details of rescue facilities to be provided by the State*
SOUTH SUDAN	SOUTH SUDAN RSC Juba	Capt (Rtd) Jalling Deloro Director AAID, Min of Transport, Juba RSS Mob: +211 955 002 775 Mob: +211 928 281 222 Email: jdeloro58@yahoo.com	*Details of rescue facilities to be provided by the State*
SWAZILAND	SWAZILAND RSC Mbabane	Mr. Jabu Ngubane SAR Coordinator Tel: +268 2518 4390 Mob: +268 7603 3933 Fax: +268 2518 4655 Email: jabu@swacaa.co.sz Email: info@swacaa.co.sz	*Details of rescue facilities to be provided by the State*
TOGO	LOME RSC Lomé	Centre Secondaire de Recherches et de Sauvetage B.P.2699, Lome, Togo Tél: +228 22 61 84 85 Tel: +228 22 61 84 86 Point de Contact SAR: Aéroport International de NIAMTOUGOU Tél: +228 26 65 02 61	
UGANDA	ENTEBBE RCC Entebbe	OIC Contact: Mob: +256 755 534 343 Mob: +256 772 686 721 Mob: +256 751 613 119 (David	*Helicopters (fitted with winches), Marine patrol vessels and fire trucks available on*

		Amoni) Entebbe International Airport Tel: +256 414 320964 Tel: +256 414 320907 Tel: +256 414 323428 Fax: +256 414 320964 AFTN: HUENYFYX AFTN: HUECZQZX Email: aviation@caa.co.ug	*request.*
UNITED REPUBLIC OF TANZANIA	DAR ES SALAAM RCC Dar es Salaam	Julius Nyerere International Airport Tel: +255 22 2110223 / 2110224 Tel: +255 22 2110254 Mob: +255 754 211254 Fax: +255 22 2110264 Email: tcaadia@tcaa.go.tz	*Details of rescue facilities to be provided by the State*
ZAMBIA	LUSAKA RCC Lusaka	Mr. Alex Sinyangwe Chief ATM Inspector Tel: +260 211 251861 Tel: +260 211 251841 Mob:+260 977 421 424 Email: asinyangwe@yahoo.com	*Details of rescue facilities to be provided by the State*
ZIMBABWE	HARARE RCC Harare	POC: Mr Richard Munyenyiwa Chief ATC - Operations Tel: +263 4 575187 Tel: +263 4 575183 Tel: +263 4 585009 / 585017 Tel: +263 4 585073 / 585078 / 585074 Mob: +263 712 324566 Fax: +263 4 575163 AFTN: FVHAYCYX AFTN: FVHAZQZX Email: rmunyenyiwa@caaz.co.zw	*Arrangement for SAR aircraft to be provided by Ministry of Defence at short notice. Islander (BN2), CASA 212, Alouette helicopter (MK111), AB412 helicopter & C337 SRG.* *COSPAS/SARSAT messages receive through Cape Town, RSA, via AMHS and ATS/DS (VSAT)*

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PART VII - AERONAUTICAL INFORMATION MANAGEMENT (AIM)

INTRODUCTION

1.1 This part of the AFI ANP, Volume II, complements the provisions in ICAO SARPs and PANS related to AIS/AIM and aeronautical charts (MAP). It contains dynamic plan elements related to the assignment of responsibilities to States for the provision of AIS/AIM facilities and services within a specified area in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300); and mandatory requirements related to the AIS/AIM facilities and services to be implemented by States in accordance with regional air navigation agreements. Such agreement indicates a commitment on the part of the State(s) concerned to implement the requirement(s) specified.

2. GENERAL REGIONAL REQUIREMENTS

2.1 The responsibility for the provision of AIS/AIM facilities and services in the AFI Region, is reflected in the AFI Table AIM II-1**,** which shows the list of designated international NOTAM Office (NOF), designated State for AIP production, designated State for aeronautical charts (MAP) production, designated State for the provision of the authoritative Integrated Aeronautical Information Database (IAID) and designated State for the provision of the pre-flight information services.

2.2 States should designate and implement an authoritative Integrated Aeronautical Information Database (IAID) where data sets are integrated and used to produce current and future AIS/AIM products and services, which is a fundamental step in the transition to AIM. The designation of authoritative databases should be clearly stated in the Aeronautical Information Package AIP.

2.3 The national plans for the transition from AIS to AIM identifying clearly the timelines for the implementation of the different elements of the ICAO Roadmap for the transition from AIS to AIM should be submitted by States to the ICAO ESAF and WACAF Regional Offices. States should also inform the ICAO ESAF and WACAF Regional Offices of any update.

2.4 States should take necessary measures to ensure that aeronautical information and data they provide meet the regulatory Aeronautical Data quality requirements.

2.5 The Quality Management System (QMS) in AIS/AIM should define procedures to meet the safety and security objectives associated with the management of aeronautical data and information.

2.6 Recognizing the need to maintain or enhance existing safety levels of operations, States should ensure that any change to the existing systems or the introduction of new systems used for processing aeronautical data and/or information are preceded by a safety assessment.

2.7 Technical services responsible for origination of the raw aeronautical information should be acquainted with the requirements for promulgation and advance notification of changes that are operationally significant as established in Annexes 11 and 14 and other relevant ICAO documentation. They should take due

account of the time needed by AIS/AIM for the preparation, production and issue of the relevant material, including the compliance with the AIRAC procedures.

2.8 AIS/AIM personnel should be involved in the air navigation planning processes. This should ensure the timely preparation of appropriate AIS documentation and that the effective dates for changes to the air navigation system and procedures are satisfied.

2.9 States should produce relevant aeronautical charts required for civil air operations employing visual air navigation independently or in support of other forms of air navigation. The production responsibility for sheets of the World Aeronautical Chart (WAC) — ICAO 1: 1 000 000 or Aeronautical Chart — ICAO 1: 500 000 (*as an alternative to the World Aeronautical Chart — ICAO 1:1 000 000)* is set out in Table AIM II-2.

PART VII - AERONAUTICAL INFORMATION MANAGEMENT (AIM)

1. INTRODUCTION

1.1 This part of the **(AFI)** ANP, Volume II, complements the provisions in ICAO SARPs and PANS related to AIS/AIM and aeronautical charts (MAP). It contains dynamic plan elements related to the assignment of responsibilities to States for the provision of AIS/AIM facilities and services within a specified area in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300); and mandatory requirements related to the AIS/AIM facilities and services to be implemented by States in accordance with regional air navigation agreements. Such agreement indicates a commitment on the part of the State(s) concerned to implement the requirement(s) specified.

2. GENERAL REGIONAL REQUIREMENTS

2.1 The responsibility for the provision of AIS/AIM facilities and services in the **(AFI)** Region(s), is reflected in the **(AFI) Table AIM II-1,** which shows the list of designated international NOTAM Office (NOF), designated State for AIP production, designated State for aeronautical charts (MAP) production, designated State for the provision of the authoritative Integrated Aeronautical Information Database (IAID) and designated State for the provision of the pre-flight information services.

2.2 States should designate and implement an authoritative Integrated Aeronautical Information Database (IAID) where data sets are integrated and used to produce current and future AIS/AIM products and services, which is a fundamental step in the transition to AIM. The designation of authoritative databases should be clearly stated in the Aeronautical Information Package AIP.

2.3 The national plans for the transition from AIS to AIM identifying clearly the timelines for the implementation of the different elements of the ICAO Roadmap for the transition from AIS to AIM should be submitted by States to the ICAO **(AFI)** Regional Office(s). States should also inform the ICAO **(AFI)** Regional Office(s) of any update.

2.4 States should take necessary measures to ensure that aeronautical information and data they provide meet the regulatory Aeronautical Data quality requirements.

2.5 The Quality Management System (QMS) in AIS/AIM should define procedures to meet the safety and security objectives associated with the management of aeronautical data and information.

2.6 Recognizing the need to maintain or enhance existing safety levels of operations, States should ensure that any change to the existing systems or the introduction of new systems used for processing aeronautical data and/or information are preceded by a safety assessment.

2.7 Technical services responsible for origination of the raw aeronautical information should be acquainted with the requirements for promulgation and advance notification of changes that are operationally significant as established in Annexes 11 and 14 and other relevant ICAO documentation. They should take due account of the time needed by AIS/AIM for the preparation, production and issue of the relevant material, including the compliance with the AIRAC procedures.

2.8 AIS/AIM personnel should be involved in the air navigation planning processes. This should ensure the timely preparation of appropriate AIS documentation and that the effective dates for changes to the air navigation system and procedures are satisfied.

2.9 States should produce relevant aeronautical charts required for civil air operations employing visual air navigation

independently or in support of other forms of air navigation. The production responsibility for sheets of the World Aeronautical Chart (WAC) — ICAO 1: 1 000 000 or Aeronautical Chart — ICAO 1: 500 000 (*as an alternative to the World Aeronautical Chart — ICAO 1:1 000 000)* is set out in **Table AIM II-2**.

3. SPECIFIC REGIONAL REQUIREMENTS

TBD.

TABLE AIM II-1

RESPONSIBILITY FOR THE PROVISION OF AIS/AIM FACILITIES AND SERVICES

EXPLANATION OF THE TABLE

Column:

1 Name of the State or territory

2 Designated international NOTAM Office (NOF)

3 Designated State for AIP production

4 Designated State for aeronautical charts (MAP) production

5 Designated State for the provision of the authoritative Integrated Aeronautical Information Database (IAID)

6 Designated State for the provision of pre-flight information services

7 Remarks — additional information, as appropriate.

State	NOF	AIP	MAP	IAID	Pre-flight briefing	Remarks
1	2	3	4	5	6	7
Angola	Luanda	Angola	Angola	Angola	Aerodrome AIS Unit	
Benin	Accra/Dakar	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Burkina Faso	Dakar	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Botswana	Gaborone	Botswana	Botswana	Botswana	Aerodrome AIS Unit	
Burundi	Bujumbura	Burundi	Burundi	Burundi	Aerodrome AIS Unit	
Cameroon	Brazzaville	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Cape Verde	Sal	Cape Verde	Cape Verde	Cape Verde	Aerodrome AIS Unit	
Central African Republic	Brazzaville	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Chad	Brazzaville	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Comoros	Antananarivo	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Congo	Brazzaville	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Cote d'Ivoire	Dakar	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Democratic Republic of Congo (RDC)	Kinshasa (BNI)	AIP-RDC	MAP-RDC	RVA-RDC	RVA-RDC	RVA is the AIM Provider
Djibouti	Addis Ababa	Djibouti	Djibouti	Djibouti	Aerodrome	

State	NOF	AIP	MAP	IAID	Pre-flight briefing	Remarks
1	2	3	4	5	6	7
					AIS Unit	
Egypt	Cairo	Egypt	Egypt	Egypt	Aerodrome AIM Unit	
Equatorial Guinea	Brazzaville	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Eritrea	Asmara	Eritrea	Eritrea	Eritrea	Aerodrome AIS Unit	
Ethiopia	Addis Ababa	Ethiopia	Ethiopia	Ethiopia	Aerodrome AIS Unit	
Gabon	Brazzaville	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Gambia	DAKAR	GAMBIA	GAMBIA	GAMBIA	GAMBIA. Aerodrome AIS/M Unit	Outsourced To Jeppesen Map Production Company.
Ghana	ACCRA	GHANA	Outsource to map production company	GHANA	Aerodrome AIS Unit	Ghana in the process of installing software for the provision of PIB. common point of access to integrated aeronautical information not implemented.
Guinea	Robertsfield/Monrovia	Roberts FIR Secretariat	State Level	Roberts FIR Secretariat	Aerodrome AIS Unit	
Guinea Bissau	Dakar	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Kenya	Nairobi	Kenya	Kenya	Kenya	Aerodrome AIM Unit	
Lesotho	Maseru	Lesotho	Lesotho	Lesotho	Lesotho	Aerodrome AIS Unit
Liberia	Robertsfield/Monrovia	Roberts FIR Secretariat	Aerodrome AIM unit outsource to MAP production Company	Roberts FIR Secretariat	Aerodrome AIS Unit	Upgrade of the PIB and post flight information bulletin is ongoing in accordance with DOC 8126 specification.
Libya	Tripoli	Libya	Libya	Libya	Aerodrome AIS Unit	
Madagascar	Antananarivo	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Malawi						
Mali	Dakar	ASECNA	ASECNA	ASECNA	Aerodrome	

State	NOF	AIP	MAP	IAID	Pre-flight briefing	Remarks
1	2	3	4	5	6	7
					AIM Unit	
Morocco						
Mauritanie	Dakar	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Mauritius	Plaisance	Mauritius	Mauritius	Mauritius	Aerodrome AIM Unit	
Mozambique	Maputo	Mozambique	Mozambique	Mozambique	Aerodrome AIS Unit	
Namibia	*Windhoek*	Namibia	Namibia	Namibia	Aerodrome AIS Unit	
Niger	Dakar	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Nigeria	Lagos	Nigeria	Nigeria	Nigeria	Nigeria (Aerodrome Units)	
Rwanda	Kigali	Rwanda	Rwanda	Rwanda	Aerodrome AIS Unit	
Sao Tome and Principe	Brazzaville	Sao Tome and Principe	Sao Tome and Principe	Sao Tome and Principe	Aerodrome AIS Unit	
Senegal	Dakar	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Seychelles	Mahe	Seychelles	Seychelles	Seychelles	Aerodrome AIS Unit	
Sierra Leone	Roberts FIR/Monrovia	Roberts FIR Secretariat	Outsourced at State Level	Roberts FIR Secretariat	State Level	
Somalia	Mogadishu	Somalia	Somalia	Somalia	Aerodrome AIS Unit	
South Africa	Johannesburg	South Africa	South Africa	South Africa	ATNS	
South Sudan	Juba	South Sudan	South Sudan	South Sudan	Aerodrome AIS Unit	
Sudan	Khartoum	Sudan	Sudan	Sudan	Aerodrome AIS Unit	-
Swaziland	Manzini	Swaziland	Swaziland	Swaziland	Aerodrome AIS Unit	
Tunisia	Tunis	Tunisia	Tunisia	Tunisia	Aerodrome AIS Unit	
Togo	Accra-Dakar	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Uganda	Kampala	Uganda	Uganda	Uganda	Aerodrome AIS Unit	
United Republic of Tanzania	Dar-es- salaam	Tanzania	Tanzania	Tanzania	Aerodrome AIS Unit	
Zambia	Lusaka	Zambia	Zambia	Zambia	Aerodrome AIS Unit	
Zimbabwe	Harare	ZIMBABWE	ZIMBABWE	N/A	ZIMBABWE	IAID NOT YET IMPLEMENTED

TABLE AIM II-2

PRODUCTION RESPONSIBILITY FOR SHEETS OF THE WORLD AERONAUTICAL CHART - ICAO 1:1 000 000

OR AERONAUTICAL CHART — ICAO 1: 500 000

EXPLANATION OF THE TABLE

Column:

1 Name of the State accepting production responsibility.

2 World Aeronautical Chart — ICAO 1:1 000 000/Aeronautical Chart — 1: 500 000 sheet number(s) for which production responsibility is accepted.

3 Remarks.

Note — In those instances where the production responsibility for certain sheets has been accepted by more than one State, these States by mutual agreement should define limits of responsibility for those sheets. This should be reflected in the Remarks column

State	Sheet number(s)	Remarks
1	2	3
Angola		IGCA Instituto Nacional Geodetic de Angola
Benin	2816-2783	GHANA-NIGERIA
Burkina Faso	2695	ASECNA
Botswana		
Burundi		
Cameroon		
Cape Verde		
Central African Republic	2786-2812-2813	ASECNA
Chad	2664-2671-2692-2785	ASECNA
Comoros	3052-3156	ASECNA
Congo	2906-2935	ASECNA
Cote d'Ivoire	2781-2817	ASECNA
Democratic Republic of Congo	Nil	Jeppesen assistance
Djibouti		
Egypt		
Equatorial Guinea	2905	ASECNA
Eritrea		
Ethiopia	2688,2789,2788,2790,2809,2810	Ethiopia
Gabon	2936	ASECNA
Gambia	NIL	Coordination with Jeppesen for production before end of 2013
Ghana	1:1 000 000	1:500 000, 1: 250 000
Guinea	NIL	Awaiting autonomous administration
Guinea Bissau	2697	ASECNA
Kenya	Lake Turkana (2910), Kilimanjaro (2931)	
Lesotho		Staff shortage and training obstruct effective ops of AIS/AIM and financial constraints is one of the main issue for us staff recruitment and training is concerned

State	Sheet number(s)	Remarks
1	**2**	**3**
Liberia	NIL	Contacted outsource Mapping Company
Libya		
Madagascar	3156-3173-3174-3278-3297	ASECNA
Malawi		
Mali	2660-2696	ASECNA
Mauritania	2574-2658-2659	ASECNA
Mauritius		
Morocco		
Mozambique		
Namibia		
Niger	2570-2662-2663-2693-2694	ASECNA
Nigeria		
Rwanda		
Sao Tome and Principe		
Senegal	2697	ASECNA
Seychelles		
Sierra Leone	NIL	Agency contacted (ANSP)
Somalia		
South Africa	Bulawayo (3275), Inhambane (3276), Vryburg (3301), Johannesburg (3300), Maputo (3299), Calvinia (3396), Bloemfontein (3397), Durban (3398), Cape Town (3422), Port Elizabeth (3421)	1:1 000 000 – WAC 1:500 000 – Southern Africa 1:250 000 – Topo-Cadastral
South Sudan		
Sudan		
Swaziland		
Tunisia		
Togo	2782-2817	GHANA
Uganda	2909	
United Republic of Tanzania	LAKE VICTORIA 2932 ,LAKE TANGANYIKA 3030 , ZANZIBAR ISLAND 3031, RUVUMA 3053	
Zambia		
Zimbabwe		

AIR NAVIGATION PLAN – AFRICA-INDIAN OCEAN REGION

VOLUME III

TABLE OF CONTENTS

AFI ANP VOLUME III

PART 0 – INTRODUCTION

1. INTRODUCTION

1.1 The background to the publication of ANPs in three volumes is explained in the Introduction in Volume I. The procedure for amendment of Volume III is also described in Volume I. Volume III contains dynamic/flexible plan elements related to the implementation of the air navigation system and its modernization in line with the ICAO Aviation System Block Upgrades (ASBUs) and associated technology roadmaps described in the Global Air Navigation Plan (GANP).

1.2 The information contained in Volume III is related mainly to:

a) Planning: objectives set, priorities and targets planned at regional or sub-regional levels;

b) Implementation monitoring and reporting: monitoring of the progress of implementation towards targets planned. This information should be used as the basis for reporting purposes (i.e.: global and regional air navigation reports and performance dashboards); and/or

c) Guidance: providing regional guidance material for the implementation of specific system/procedures in a harmonized manner.

1.3 The management of Volume III is the responsibility of the AFI Planning and Implementation Regional Group (APIRG).

1.4 Volume III should be used as a tool for monitoring and reporting the status of implementation of the elements planned here above, through the use of tables/databases and/or references to online monitoring tools, as endorsed by APIRG. The status of implementation is updated on a regular basis as endorsed by APIRG.

2. AVIATION SYSTEM BLOCK UPGRADES (ASBUS), MODULES AND ROADMAPS

2.1. The ASBU Modules and Roadmaps form a key component to the GANP, noting that they will continue to evolve as more work is done on refining and updating their content and in subsequent development of related provisions, support material and training.

2.2. Although the GANP has a worldwide perspective, it is not intended that all Block Upgrade Modules are required to be applied in every State, sub-region and/or region. Many of the Block Upgrade Modules contained in the GANP are specialized packages that should be applied only where the specific operational requirement exists or corresponding benefits can be realistically projected. Accordingly, the Block Upgrade methodology establishes an important flexibility in the implementation of its various Modules depending on a region, sub-region and/or State's specific operational requirements. Guided by the GANP, ICAO AFI regional, sub-regional and State planning should identify Modules which best provide the needed operational improvements.

AFI ANP VOLUME III

PART I - GENERAL PLANNING ASPECTS (GEN)

1. PLANNING METHODOLOGY

1.1 Guided by the GANP, the regional planning process starts by identifying the homogeneous ATM areas, major traffic flows and international aerodromes. An analysis of this data leads to the identification of opportunities for performance improvement. Modules from the Aviation System Block Upgrades (ASBUs) are evaluated to identify which of those modules best provide the needed operational improvements. Depending on the complexity of the module, additional planning steps may need to be undertaken including financing and training needs. Finally, regional plans would be developed for the deployment of modules by drawing on supporting technology requirements. This is an iterative planning process which may require repeating several steps until a final plan with specific regional targets is in place. This planning methodology requires full involvement of States, service providers, airspace users and other stakeholders, thus ensuring commitment by all for implementation.

1.2 Block 0 features Modules characterized by technologies and capabilities which have already been developed and implemented in many parts of the world today. It therefore features a near-term availability milestone, or Initial Operating Capability (IOC), of 2013 for high density based on regional, sub-regional and State

operational need. Blocks 1 through 3 are characterized by both existing and projected performance area solutions, with availability milestones beginning in 2018, 2023 and 2028 respectively.

2. REVIEW AND EVALUATION OF AIR NAVIGATION PLANNING

2.1 The progress and effectiveness against the priorities set out in the regional air navigation plans should be annually reported, using a consistent reporting format, to ICAO.

2.2 Performance monitoring requires a measurement strategy. Data collection, processing, storage and reporting activities supporting the identified global/regional performance metrics are fundamental to the success of performance-based approaches.

2.3 The air navigation planning and implementation performance framework prescribes reporting, monitoring, analysis and review activities being conducted on a cyclical, annual basis. An Air Navigation Reporting Form (ANRF) reflecting selected key performance areas as defined in the Manual on Global Performance of the Air Navigation System (ICAO Doc 9883) has been developed for each ASBU Module. The ANRF is a customized tool which is recommended for the application of setting planning targets, monitoring implementation, and identifying challenges, measuring implementation/performance and reporting. If necessary, other reporting formats that provide more details may be used but should contain as a minimum the elements described in the ANRF template. A sample of the ANRF is provided in **Appendix A**. A sample Template of a planning table which may be used to show the elements planned in an ICAO region is provided in **Appendix B**.

3. REPORTING AND MONITORING RESULTS

3.1 Reporting and monitoring results will be analyzed by the PIRGs, States and ICAO Secretariat to steer the air navigation improvements, take corrective actions and review the allocated objectives, priorities and targets if needed. The results will also be used by ICAO and aviation partner stakeholders to develop the annual Global Air Navigation Report. The report results will provide an opportunity for the international civil aviation community to compare progress across different ICAO regions in the establishment of air navigation infrastructure and performance-based procedures.

3.2 The reports will also provide the ICAO Council with detailed annual results on the basis of which tactical adjustments will be made to the performance framework work programme, as well as triennial policy adjustments to the GANP and the Block Upgrade Modules.

3.3 **Table GEN III-1** contains a minimum set of High-Level Implementation Indicator(s) for each of the eighteen ASBU Block 0 Modules necessary for the monitoring of these Modules (if identified as a priority for implementation at regional or sub-regional level). These high-level indicators are intended to enable comparison between ICAO Regions with respect to ASBU Block 0 Modules and will apply only to commonly selected ASBU Modules. All regions/PIRGs reserve the right to select the ASBU Modules relevant to their needs and to endorse additional indicators, as deemed necessary. No reporting is required for ASBU Block 0 Modules that have not been selected.

4. PRIORITIZATION OF ASBU BLOCK 0 MODULES FOR THE AFI REGION

4.1 The Table below provides the list of Block 0 modules with suggested allocated priority for implementation within the AFI Region. The allocation of priority is based on the following criteria:
Priority 1 = immediate implementation; Priority 2 = recommended implementation. Although AFI region has categorized all 18 Block 0 Modules for its implementation, only 9 Modules will have priority 1 as it covers most of the AFI States. The remaining Modules are priority 2 and applies to only to specific States of AFI the Region.

PIA	Module Description	Module	Priority

PIA 1	Improve Traffic flow through Runway Sequencing (AMAN/DMAN)	B0-15 RSEQ	2
	Optimization of Approach Procedures including vertical guidance	B0-65 APTA	1
	Increased Runway Throughput through optimized Wake Turbulence Separation	B0-70 WAKE	2
	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)	B0-75 SURF	2
	Improved Airport Operations through Airport-CDM	B0-80 ACDM	1
PIA 2	Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration	B0-25 FICE	1
	Service Improvement through Digital Aeronautical Information Management	B0-30 DAIM	1
	Meteorological information supporting enhanced operational efficiency and safety	B0-105 AMET	1
PIA 3	Improved Operations through Enhanced En-Route Trajectories	B0-10 FRTO	1
	Improved Flow Performance through Planning based on a Network-Wide view	B0-35 NOPS	2
	Initial capability for ground surveillance	B0-84 ASUR	2
	Air Traffic Situational Awareness(ATSA)	B0-85 ASEP	2
	Improved access to Optimum Flight Levels through Climb/Descent Procedures using ADS-B	B0-86 OPFL	2
	ACAS Improvements	B0-101 ACAS	1
	Increased Effectiveness of Ground-Based Safety Nets	B0-102 SNET	2
PIA 4	Improved Flexibility and Efficiency in Descent Profiles (CDO)	B0-05 CDO	1
	Improved Safety and Efficiency through the initial application of Data Link En-Route	B0-40 TBO	2
	Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)	B0-20 CCO	1

Table GEN III-ASBU

TABLE GEN III-1

IMPLEMENTATION INDICATOR(S) FOR EACH ASBU BLOCK 0 MODULE

EXPLANATION OF TABLE

1 Block 0 Module Code

2 Block 0 Module Title

3 High level Implementation Indicator

4 Remarks

Module Code	Module Title	High level Implementation Indicator	Remarks
1	2	3	4
B0-APTA	Optimization of Approach Procedures including vertical guidance	% of international aerodromes having at least one runway end provided with APV Baro-VNAV or LPV procedures	
B0-WAKE	Increased Runway Throughput through Optimized Wake Turbulence Separation	% of applicable international aerodromes having implemented increased runway throughput through optimized wake turbulence separation	1. Not to be considered for the first reporting cycles due to lack of maturity. 2. List of ADs to be established through regional air navigation agreement.
B0-RSEQ	Improve Traffic flow through Runway Sequencing (AMAN/DMAN)	% of applicable international aerodromes having implemented AMAN / DMAN	1. Not to be considered for the first reporting cycles due to lack of maturity. 2. List of ADs to be established through regional air navigation agreement.
B0-SURF	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)	% of applicable international aerodromes having implemented A-SMGCS Level 2	List of ADs to be established through regional air navigation agreement.
B0-ACDM	Improved Airport Operations through Airport-CDM	% of applicable international aerodromes having implemented improved airport operations through airport-CDM	List of ADs to be established through regional air navigation agreement.
B0-FICE	Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration	% of FIRs within which all applicable ACCs have implemented at least one interface to use AIDC / OLDI with neighbouring ACCs	
B0-DATM	Service Improvement through Digital Aeronautical Information Management	- % of States having implemented an AIXM based AIS database - % of States having implemented QMS	
B0-AMET	Meteorological information supporting enhanced operational efficiency and safety	- % of States having implemented SADIS / WIFS - % of States having implemented QMS	

Module Code	Module Title	High level Implementation Indicator	Remarks
1	2	3	4
B0-FRTO	Improved Operations through Enhanced En-Route Trajectories	% of FIRs in which FUA is implemented	
B0-NOPS	Improved Flow Performance through Planning based on a Network-Wide view	% of FIRs within which all ACCs utilize ATFM systems	
B0-ASUR	Initial capability for ground surveillance	% of FIRs where ADS-B OUT and/or MLAT are implemented for the provision of surveillance services in identified areas.	1. Not to be considered for the first reporting cycles due to lack of maturity.
B0-ASEP	Air Traffic Situational Awareness (ATSA)	% of States having implemented air traffic situational awareness	1. Not to be considered for the first reporting cycles due to lack of maturity.
B0-OPFL	Improved access to optimum flight levels through climb/descent procedures using ADS-B	% of FIRs having implemented in-trail procedures	1. Not to be considered for the first reporting cycles due to lack of maturity.
B0-ACAS	ACAS Improvements	% of States requiring carriage of ACAS (with TCAS 7.1 evolution)	
B0-SNET	Increased Effectiveness of Ground-Based Safety Nets	% of States having implemented ground-based safety-nets (STCA, APW, MSAW, etc.)	
B0-CDO	Improved Flexibility and Efficiency in Descent Profiles (CDO)	- % of international aerodromes / TMAs with PBN STAR implemented - % of international aerodromes/TMA where CDO is implemented	
B0-TBO	Improved Safety and Efficiency through the initial application of Data Link En-Route	% of FIRs utilising data link en-route in applicable airspace	
B0-CCO	Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)	- % of international aerodromes / TMAs with PBN SID implemented - % of international aerodromes/TMA where CCO is implemented	

APPENDIX A

SAMPLE TEMPLATE

1. AIR NAVIGATION REPORT FORM (ANRF)

The data inserted here refers to ASBU B0-05/CDO as an example only)

Regional and National planning for ASBU Modules

2. REGIONAL/NATIONAL PERFORMANCE OBJECTIVE – B0-05/CDO: **Improved Flexibility and Efficiency in Descent Profiles** **Performance Improvement Area 4:** **Efficient Flight Path – Through Trajectory-based Operations**					
3. ASBU B0-05/CDO: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	N	N	Y	Y	Y
4. ASBU B0-05/CDO: Planning Targets and Implementation Progress					
5. Elements			**6. Targets and implementation progress** **(Ground and Air)**		
1. CDO					
2. PBN STARs					

7. ASBU B0-05/CDO: Implementation Challenges

Elements	Implementation Area			
	Ground system Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. CDO				
2. PBN STARs				

8. Performance Monitoring and Measurement

8A. ASBU B0-05/CDO: Implementation Monitoring

Elements	Performance Indicators/Supporting Metrics
1. CDO	Indicator: Percentage of international aerodromes/TMAs with CDO implemented Supporting metric: Number of international aerodromes/TMAs with CDO implemented
2. PBN STARs	Indicator: Percentage of international aerodromes/TMAs with PBN STARs implemented Supporting metric: Number of international aerodromes/TMAs with PBN STARs implemented

8. Performance Monitoring and Measurement

8 B. ASBU B0-05/CDO: Performance Monitoring

Key Performance Areas (Out of eleven KPAs, for the present until experienced gained, only five have been selected for reporting through ANRF)	**Where applicable, indicate qualitative Benefits,**
Access & Equity	Not applicable

Capacity	Not applicable
Efficiency	Cost savings through reduced fuel burn. Reduction in the number of required radio transmissions.
Environment	Reduced emissions as a result of reduced fuel burn
Safety	More consistent flight paths and stabilized approach paths. Reduction in the incidence of controlled flight into terrain (CFIT).
9. Identification of performance metrics: It is not necessary that every module contributes to all of the five KPAs. Consequently, a limited number of metrics per type of KPA, serving as an example to measure the module(s)' implementation benefits, without trying to apportion these benefits between module, have been identified on page 5. For the family of ASBU modules selected for air navigation implementation, States/Region to choose the applicable performance (benefit) metrics from the list available on page 5. This approach would facilitate States in collecting data for the chosen performance metrics. States/Region, however, could add new metrics for different KPAs based on maturity of the system and ability to collect relevant data.	

AIR NAVIGATION REPORT FORM

HOW TO USE -EXPLANATORY NOTES

1. Air Navigation Report Form (ANRF): This form is nothing but the revised version of Performance Framework Form that was being used by Planning and Implementation Regional Groups (PIRGs)/States until now. The ANRF is a customized tool for Aviation System Block Upgrades (ASBU) Modules which is recommended for application for setting planning targets, monitoring implementation, identifying challenges, measuring implementation/performance and reporting. Also, the PIRGs and States could use this report format for any other air navigation improvement programmes such as Search and Rescue. If necessary, other reporting formats that provide more details may be used but should contain as a minimum the elements described in this ANRF template. The results will be analysed by ICAO and aviation partners and utilized in developing the Regional Performance Dashboard and the Annual Global Air Navigation Report. The conclusions from the Global Air Navigation Report will serve as the basis for future policy adjustments, aiding safety practicality, affordability and global harmonization, amongst other concerns.

2. Regional/National Performance objective: In the ASBU methodology, the performance objective will be the title of the ASBU module itself. Furthermore, indicate alongside corresponding Performance Improvement area (PIA).

3. Impact on Main Key Performance Areas: Key to the achievement of a globally interoperable ATM system is a clear statement of the expectations/benefits to the ATM community. The expectations/benefits are referred to eleven Key Performance Areas (KPAs) and are interrelated and cannot be considered in isolation since all are necessary for the achievement of the objectives established for the system as a whole. It should be noted that while safety is the highest priority, the eleven KPAs shown below are in alphabetical order as they would appear in English. They are access/equity; capacity; cost effectiveness; efficiency; environment; flexibility; global interoperability; participation of ATM community; predictability; safety; and security. However, out of these eleven

KPAs, for the present, only five have been selected for reporting through ANRF, which are Access & Equity, Capacity, Efficiency, Environment and Safety. The KPAs applicable to respective ASBU module are to be identified by marking Y (Yes) or N (No). The impact assessment could be extended to more than five KPAs mentioned above if maturity of the national system allows and the process is available within the State to collect the data.

4. Planning Targets and Implementation Progress: This section indicates planning targets and status of progress in the implementation of different elements of the ASBU Module for both air and ground segments.

5. Elements related to ASBU module: Under this section list elements that are needed to implement the respective ASBU Module. Furthermore, should there be elements that are not reflected in the ASBU Module (example: In ASBU B0-80/ACDM, Aerodrome certification and data link applications D-VOLMET, D-ATIS, D-FIS are not included; Similarly in ASBU B0-30/DAIM, note that WGS-84 and eTOD are not included) but at the same time if they are closely linked to the module, ANRF should specify those elements. As a part of guidance to PIRGs/States, every Regional ANP will have the complete list of all 18 Modules of ASBU Block 0 along with corresponding elements, equipage required on the ground and in the air as well as metrics specific to both implementation and performance (benefits).

6. Targets and implementation progress (Ground and Air): Planned implementation date (month/year) and the current status/responsibility for each element are to be reported in this section. Please provide as much details as possible and should cover both avionics and ground systems. This ANRF being high level document, develop necessary detailed action plan separately for each element/equipage.

7. Implementation challenges: Any challenges/problems that are foreseen for the implementation of elements of the Module are to be reported in this section. The purpose of the section is to identify in advance any issues that will delay the implementation and if so, corrective action is to be initiated by the concerned person/entity. The four areas, under which implementation issues, if any, for the ASBU Module to be identified, are as follows:

a) Ground System Implementation:
b) Avionics Implementation:
c) Procedures Availability:
d) Operational Approvals:

Should be there no challenges to be resolved for the implementation of ASBU Module, indicate as “NIL”.

8. Performance Monitoring and Measurement: Performance monitoring and measurement is done through the collection of data for the supporting metrics. In other words, metrics are quantitative measure of system performance – how well the system is functioning. The metrics fulfil three functions. They form a basis for assessing and monitoring the provision of ATM services, they define what ATM services user value and they can provide common criteria for cost benefit analysis for air navigation systems development. The Metrics are of two types:

A. Implementation Monitoring: Under this section, the indicator supported by the data collected for the metric reflects the status of implementation of elements of the Module. For example- Percentage of international aerodromes with CDO implemented. This indicator requires data for the metric“number of international aerodromes with CDO”.

B. Performance Monitoring: The metric in this section allows to asses benefits accrued as a result of implementation of the module. The benefits or expectations, also known as Key Performance Areas (KPAs), are interrelated and cannot be considered in isolation since all are necessary for the achievement of the objectives established for the system as a whole. It should be noted that while safety is the highest priority, the eleven KPAs shown below are in alphabetical order as they would appear in English. They are access/equity; capacity; cost effectiveness; efficiency; environment; flexibility; global interoperability; participation of ATM community; predictability; safety; and security. However, out of these eleven KPAs, for the present until experienced gained, only five have been selected for reporting through ANRF, which are Access & Equity, Capacity, Efficiency, Environment and Safety. Where applicable, mention qualitative benefits under this section.

9. Identification of performance metrics: It is not necessary that every module contributes to all of the five KPAs. Consequently, a limited number of metrics per type of KPA, serving as an example to measure the module(s)' implementation benefits, without trying to apportion these benefits between module, have been identified on page 6. For the family of ASBU modules selected for air navigation implementation, States/Region to choose the applicable performance (benefit) metrics from the list available on page 6. This approach would facilitate States in collecting data for the chosen performance metrics. States/Region, however, could add new metrics for different KPAs based on maturity of the system and ability to collect relevant data.

AFI AIR NAVIGATION REPORT FORM (ANRF)

Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-15/RSEQ Improved Traffic Flow through Runway Sequencing (AMAN/DMAN) Performance Improvement Area 1: Airport Operations					
3. ASBU B0-15/RSEQ: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	**N**	**Y**	**Y**	**Y**	**N**
4. ASBU B0-15/RSEQ: Planning Targets and Implementation Progress					

5. Elements	6. Targets and Implementation Progress (Ground and Air)
1. AMAN and time-based metering	December 2015
2. Departure management	December 2015
3. Movement Area Capacity Optimization	December 2015

7. ASBU B0-15/RSEQ: Implementation Challenges

Elements	Implementation Area			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. AMAN and time-based metering	Lack of automation system to support synchronization	NIL	Lack of appropriate training. Lack of STARs PBN. Lack of slots assignment	Lack of procedures and inspectors for operational approvals
2. Departure management	Lack of automation system to support synchronization	NIL	Lack of appropriate training. Lack of SIDs PBN. Lack of slots assignment	Lack of procedures and inspectors for operational approvals
3. Movement Area Capacity Optimization	NIL	NIL	Lack of procedures for RWY, TWY & platform capacity calculation. Guidelines for movement area capacity organization.	Lack of procedures and inspectors for operational approvals

8. ASBU B0-15/RSEQ: Performance Monitoring and Measurement
8A. ASBU B0-86/OPFL: Implementation Monitoring

Elements	Performance Indicators / Supporting Metrics
1. AMAN and time-based metering	Indicator: Percentage of international aerodromes with AMAN and time-based metering. Supporting metric: Number of international airports with AMAN and time-based metering.
2. Departure management	Indicator: Percentage of international aerodromes with DMAN. Supporting metric: Number of international airports with DMAN.
3. Movement Area Capacity Optimization	Indicator: Percentage of international aerodromes with Airport-capacity calculated. Supporting metric: Number of international airports with Airport-capacity calculated.

8. ASBU B0-15/RSEQ: Performance Monitoring and Measurement
8B. ASBU B0-15/RSEQ: Performance Monitoring

Key Performance Areas	Metrics (if not , indicate qualitative benefits)
Access & Equity	N/A
Capacity	Improved airport movement area capacity through optimization
Efficiency	Efficiency is positively impacted as reflected by increased runway throughput and arrival rates
Environment	Reduction of carbon emissions
Safety	N/A

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-65/APTA
Optimization of Approach Procedures Including Vertical Guidance

Performance Improvement Area 1: Airport Operations

3. ASBU B0-65/APTA: Impact on Main Key Performance Areas (KPA)

	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	**Y**	**Y**	**Y**	**Y**	**Y**

4. ASBU B0-65/APTA: Planning Targets and Implementation Progress

5. Elements	6. Targets and Implementation Progress (Ground and Air)
1. APV with Baro-VNAV	December 2016 – Service Providers and users
2. APV with SBAS	December 2017 – As per AFI-GNSS Strategy.
3. APV with GBAS	December 2018 – Initial implementation at some States (service providers)

7. ASBU B0-65/APTA: Implementation Challenges

Elements	Implementation Area			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. APV with Baro-VNAV	NIL	Insufficient number of equipped aircraft	Insufficient appropriate training	Lack of appropriate training
2. APV with SBAS	Network infrastructure	Cost of Aircraft equipage	Limited to certain States who have implemented	Lack of knowledge and appropriate training.
3. APV with GBAS	Lack of cost-benefit analysis. Adverse ionosphere	Insufficient number of equipped aircraft	Insufficient appropriate training	Lack of appropriate training. Evaluation of a real operation requirement

8. ASBU B0-65/APTA: Performance Monitoring and Measurement
8A. ASBU B0-65/APTA: Implementation Monitoring

Elements	Performance Indicators / Supporting Metrics
1. APV with Baro-VNAV	Indicator: Percentage of international aerodromes having instrument runways provided with APV with Baro-VNAV procedure implemented (Where the % is defined)Supporting metric: Number of international airports having approved APV with Baro-VNAV procedure implemented
2. APV with SBAS	Indicator: Percentage of international aerodromes having instrument runways provided with APV SBAS procedure implemented
3. APV with GBAS	Indicator: Percentage of international aerodromes having instrument runways provided with APV with GBAS procedure implemented Supporting metric: Number of international airports having APV GBAS procedure implemented..

8. ASBU B0-65/APTA: Performance Monitoring and Measurement
8B. ASBU B0-65/APTA: Performance Monitoring

Key Performance Areas	Metrics (if not , indicate qualitative benefits)
Access & Equity	Increased aerodrome accessibility
Capacity	Increased runway capacity
Efficiency	Reduced fuel burn due to lower minima, fewer diversions, cancellations, delays
Environment	Reduced emissions due to reduced fuel burn
Safety	Increased safety through stabilized approach paths

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-75/SURF
Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)

Performance Improvement Area 1: Airport Operations

3. ASBU B0-75/SURF: Impact on Main Key Performance Areas (KPA)

	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	**Y**	**Y**	**Y**	**Y**	**Y**

4. ASBU B0-75/SURF: Planning Targets and Implementation Progress

5. Elements	6. Targets and Implementation Progress (Ground and Air)
1. Surveillance system for ground surface movement (PSR, SSR, ADS-B or Multilateration	December 2017 Service provider
2. Surveillance system on board (SSR transponder, ADS-B capacity)	December 2017 Service provider
3. Surveillance system for vehicle	December 2017 Service provider
4. Visual aids for navigation	December 2015 Service provider
5. Wildlife strike hazard reduction	December 2015 Aerodrome operator / wildlife committee
6. Display and processing information	December 2017 Service provider

7. ASBU B0-75/SURF: Implementation Challenges

Elements	Implementation Area			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. Surveillance system for ground surface movement (PSR, SSR, ADS-B or Multilateration)	Lack of adequate financial resources	NILNIL	Lack of procedures and training.	Lack of inspectors for operational approvals
2. Surveillance system on board (SSR transponder, ADS-B capacity)	NILNIL	Lack of surveillance system on board (ADS-B capacity) on general aviation and some commercial aircraft	Lack of procedures and training.	Lack of guidance materials for inspectors. Lack of inspectors
3. Surveillance system for vehicle	Lack of adequate financial resources	NILNIL	Lack of procedures and training.	Lack of guidance materials for inspectors. Lack of inspectors
4. Visual aids for navigation	Implementation of new technologies (such as LED) not compliant with Annex 14	NILNIL	NILNIL	Lack of calibration capacity
5. Wildlife strike hazard reduction	Implementation of new technologies	NILNIL	Lack of Wildlife Hazard Management Committee. Conflict between aviation law and state environment laws. Lack of training. Lack of community support	NILNIL

8. ASBU B0-75/SURF: Performance Monitoring and Measurement
8A. ASBU B0-75/SURF: Implementation Monitoring

Elements	Performance Indicators / Supporting Metrics
1. Surveillance system for ground surface movement (PSR, SSR, ADS-B or	Indicator: Percentage of international aerodromes with SMR / SSR Mode S /ADS-B Multilateration for ground surface movement Supporting metric: Number of international airports with SMR / SSR Mode S /ADS-B

Multilateration)	Multilateration for ground surface movement.
2. Surveillance system on board (SSR transponder, ADS-B capacity)	Indicator: Percentage of surveillance system on board (SSR transponder, ADS-B capacity). Supporting metric: Number of surveillance system on board (SSR transponder, ADS-B capacity).
3. Surveillance system for vehicle	Indicator: Percentage of international aerodromes with cooperative transponder system on vehicles. Supporting metric: Number of vehicles with transponder system installed.
4. Visual aids for navigation	Indicator: Percentage of international aerodromes complying with visual aid requirements as per Annex 14 Supporting metric: Number of international aerodromes complying with visual aid requirements as per Annex 14
5. Wildlife strike hazard reduction	Indicator: Percentage of reduction of wildlife incursions. Supporting metric: Number of runway incursions due to wildlife strike.
8. ASBU B0-75/SURF: Performance Monitoring and Measurement 8B. ASBU B0-75/SURF: Performance Monitoring	
Key Performance Areas	**Metrics (if not, indicate qualitative benefits)**
Access & Equity	Improves portions of the maneuvering area obscured from view of the control tower for vehicles and aircraft. Ensures equity in ATS handling of surface traffic regardless of the traffic's position on the international aerodrome
Capacity	Sustained level of aerodrome capacity during periods of reduced visibility
Efficiency	Reduced taxi times through diminished requirements for intermediate holdings based on reliance on visual surveillance only. Reduced fuel burn
Environment	Reduced emissions due to reduced fuel burn
Safety	Reduced runway incursions. Improved response to unsafe situations. Improved situational awareness leading to reduced ATC workload

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-80/ACDM **Improved Airport Operations through Airport** **Performance Improvement Area 1: Airport Operations**					
3. ASBU B0-80/ACDM: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	**Y**	**Y**	**Y**	**Y**	**Y**

4. ASBU B0-80/ACDM: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and Implementation Progress (Ground and Air)**
1. Airport – CDM	December 2015 – Airport Operator, ANSPs, aircraft operators
2. Aerodrome certification	December 2015 – State CAA
3. Airport planning	December 2017 – Airport Operators
4. Heliport operation	December 2017 – State CAA
5. SMS implementation	December 2014 – Aerodrome Operators
6. Development of regulations and technical guidance material for runway safety	December 2014 – State CAA
7. Development and implementation of runway safety programmes and reduce runway-related accidents and serious incidents to no more than eight per year.	December 2014 – State CAA

7. ASBU B0-80/ACDM: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. Airport – CDM	Interconnection of ground systems of different partners for Airport – CDM	NILNIL	Lack for coordination procedures. Lack of commitment from all stakeholders	NILNIL
2. Aerodrome certification	Lack of effective implementation of Annex 14 SARPs	NILNIL	Lack of procedures. Lack of training	Lack of adequately trained inspectors
3. Airport planning	NILNIL	NILNIL	Lack of procedures	Lack of adequately trained inspectors
4. Heliport operation	Lack of regulations	NILNIL	Lack of procedures	Lack of trained inspectors
5. SMS implementation	NILNIL	NILNIL	Lack of States regulations. Lack of training	Lack of high level management commitment
6. Development of regulations and technical guidance material for runway safety	NILNIL	NILNIL	Lack of States regulations	Lack of high level management commitment

7. Development and implementation of runway safety programmes and reduce runway-related accidents and serious incidents to no more than eight per year.	NILNIL	NILNIL	Lack of standards from ICAO. Lack of States regulations. Lack of training.	Lack of high level management commitment

8. ASBU B0-80/ACDM: Performance Monitoring and Measurement 8A. ASBU B0-80/ACDM: Implementation Monitoring	
Elements	**Performance Indicators / Supporting Metrics**
1. Airport – CDM	Indicator: Percentage of international aerodromes with Airport – CDM Supporting metric: Number of international aerodromes with Airport – CDM
2. Aerodrome certification	Indicator: Percentage of certified international aerodromes Supporting metric: Number of certified international aerodromes
3. Airport planning	Indicator: Percentage of international aerodromes with Master Plans Supporting metric: Number of international aerodromes with Master Plans
4. Heliport operation	Indicator: Percentage of Heliports with operational approval Supporting metric: Number of Heliports with operational approval
5. SMS implementation	Indicator: Percentage of aerodrome operators having implemented SMS
6. Development of regulations and technical guidance material for runway safety	Indicator:
7. Development and implementation of runway safety programmes and reduce runway-related accidents and serious incidents to no more than eight per year.	Indicator: Percentage of aerodromes with local runway safety teams (LRST)

8. ASBU B0-80/ACDM: Performance Monitoring and Measurement 8B. ASBU B0-80/ACDM: Performance Monitoring	
Key Performance Areas	**Metrics (if not, indicate qualitative benefits)**
Access & Equity	Enhanced equity on the use of aerodrome facilities
Capacity	Enhanced use of existing implementation for gate and stands (unlock latent capacity). Reduced workload, better organization of the activities to manage flights. Enhanced aerodrome capacity according to the demand.
Efficiency	Improved operational efficiency (fleet management); and reduced delay. Reduced fuel burn due to reduced taxi time and lower aircraft engine run time. Improved aerodrome expansion in accordance with Master Plan
Environment	Reduced emissions due to reduced fuel burn
Safety	N/A

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-105/AMET Meteorological Information Supporting Enhanced Operational Efficiency and Safety Performance Improvement Area 2: Global Interoperable Systems and Data – Through Globally Interoperable System-Wide Information Management					
3. ASBU B0-105/AMET: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	**N**	**Y**	**Y**	**Y**	**Y**

4. ASBU B0-105/AMET: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and Implementation Progress (Ground and Air)**
1. WAFS	In process of implementation
2. IAVW	In process of implementation
3. Tropical cyclone watch	In process of implementation
4. Aerodrome warnings	In process of implementation
5. Wind shear warnings and alerts	50% by December 2014
6. SIGMET	80% by December 2014
7. QMS/MET	75% by December 2014
8. 8. Other OPMET Information (METAR, SPECI, TAF)	In process of improvement

7. ASBU B0-105/AMET: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. WAFS	Connection to the AFS satellite and public internet distribution systems	NIL	Prepare a contingency plan in case of public internet failure	N/A
2. IAVW	Connection to the AFS satellite and public internet distribution	NIL	Prepare a contingency plan in	N/A

	systems		case of public internet failure	
3. Tropical cyclone watch	Connection to the AFS satellite and public internet distribution systems	NIL	Prepare a contingency plan in case of public internet failure	N/A
4. Aerodrome warnings	Connection to the AFTN	NIL	Local arrangements for reception of aerodrome warnings	N/A
5. Wind shear warnings and alerts	Connection to the AFTN	NIL	Local arrangements for reception of aerodrome warnings	N/A
6. SIGMET	Connection to the AFTN	NIL	Prepare a contingency plan in case of AFTN systems failure	N/A
7. QMS/MET	NIL		Appropriate arrangements for establishment and implementation of QMS	Commitment of top management
8. Other OPMET Information (METAR, SPECI, TAF)	Connection to the AFTN	NIL	Prepare a contingency plan in case of AFTN systems failure	N/A

8. ASBU B0-105/AMET: Performance Monitoring and Measurement
8A. ASBU B0-105/AMET: Implementation Monitoring

Elements	Performance Indicators / Supporting Metrics
1. WAFS	Indicator: States implementation of SADIS 2G/secure SADIS FTP Supporting metric. Supporting metric: Number of States implementation of SADIS 2G/secure SADIS FTP
2. IAVW	Indicator: States implementation of SADIS 2G/secure SADIS FTPSupporting metric: Number of States implementation of SADIS 2G/secure SADIS FTP
3. Tropical cyclone watch	Indicator: Percentage of international aerodromes/MWOs with Tropical cyclone watch procedures implemented Supporting metric: Number of international aerodromes/MWOs with Tropical cyclone watch
4. Aerodrome warnings	Indicator: Percentage of international aerodromes/AMOs with Aerodrome warnings implemented Supporting metric: Number of international aerodromes/AMOs with Aerodrome warnings implemented
5. Wind shear warnings and alerts	Indicator: Percentage of international aerodromes/AMOs with wind shear warnings procedures implemented Supporting metric: Number of international aerodromes/AMOs with shear warnings and alerts implemented
6. SIGMET	Indicator: Percentage of international aerodromes/MWOs with SIGMET procedures implemented Supporting metric: Number of international aerodromes/MWOs with SIGMET procedures implemented
7. QMS/MET	Indicator: Percentage of MET Provider States with QMS/MET implemented Supporting metric: Number of MET Provider States with QMS/MET certificated
8. Other OPMET Information (METAR, SPECI, TAF)	Indicator: Percentage of OPMET available at international aerodrome AMOs/MWOs Supporting metric: Number of international aerodromes/MWOs issuing required OPMET information

8. ASBU B0-105/AMET: Performance Monitoring and Measurement
8B. ASBU B0-105/AMET: Performance Monitoring

Key Performance Areas	Metrics (if not, indicate qualitative benefits)
Access & Equity	N/A
Capacity	Optimized usage of airspace and aerodrome capacity due to MET support
Efficiency	Reduced arrival/departure holding time, thus reduced fuel burn due to MET support
Environment	Reduced emission due to reduced fuel burn due to MET support
Safety	Reduced incidents/accidents in flight and at international aerodromes due to MET support

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-30/DATM **Service Improvement through Digital Aeronautical Information Management** **Performance Improvement Area 2: Global Interoperable Systems and Data** **– Through Globally Interoperable System-Wide Information Management**					
3. ASBU B0-30/DATM: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**

Applicable	**N**	**N**	**Y**	**Y**	**Y**

4. ASBU B0-30/DATM: Planning Targets and Implementation Progress

5. Elements	**6. Targets and Implementation Progress (Ground and Air)**
1. QMS for AIM	December 2014
2. e-TOD implementation	December 2016
3. WGS-84 implementation	Implemented
4. AIXM implementation	December 2016
5. e-AIP implementation	December 2014
6. Digital NOTAM	December 2017

7. ASBU B0-30/DATM: Implementation Challenges

Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. QMS for AIM 2. e-TOD implementation 3. WGS-84 implementation 4. AIXM implementation 5. e-AIP implementation 6. Digital NOTAM	Lack of electronic database. Lack of electronic access based on internet protocol services	NIL	Lack of procedures to allow digital AIS data provision to all users i.e. on-board devices, in particular electronic flight bags (EFBs). Lack of training for AIS/AIM personnel.	NIL

8. ASBU B0-30/DATM: Performance Monitoring and Measurement

8A. ASBU B0-30/DATM: Implementation

Elements	**Performance Indicators / Supporting Metrics**
1. QMS for AIM	Indicator: Percentage of States QMS certified Supporting metric: Number of States with QMS certification
2. e-TOD implementation	Indicator: Percentage of States e-TOD implemented Supporting metric: Number of States with e-TOD implemented
3. WGS-84 implementation	Indicator: Percentage of WGS-84 implemented

	Supporting metric: Number of States with WGS-84 implemented
4. AIXM implementation	Indicator: Percentage of States with AXIM implemented Supporting metric: Number of States with AXIM implemented
5. e-AIP implementation	Indicator: Percentage of States with e-AIP implemented Supporting metric: Number of States with e-AIP implemented
6. Digital NOTAM	Indicator: Percentage of States with Digital NOTAM implemented Supporting metric: Number of States with Digital NOTAM implemented
8. ASBU B0-30/DATM: Performance Monitoring and Measurement **8B. ASBU B0-30/DATM: Performance Monitoring**	
Key Performance Areas	**Metrics (if not, indicate qualitative benefits)**
Access & Equity	N/A
Capacity	N/A
Efficiency	Support Instrument procedure design implementation; Support aeronautical chart production and on-board databases; Support the implementation of PBN
Environment	Reduced amount of paper for promulgation of information
Safety	Reduction in the number of possible data inconsistencies Timely dissemination of information

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-35/NOPS Improved Flow Performance through Planning based on a Network-Wide view Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM					
3. ASBU B0-35/NOPS: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	**Y**	**Y**	**Y**	**Y**	**Y**

4. ASBU B0-35/NOPS: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and Implementation Progress (Ground and Air)**
1. Air Traffic Flow Management	December 2015

7. ASBU B0-35/NOPS: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. Air Traffic Flow Management	Funding	NIL	Lack of ATFM and CDM procedures. Lack of training	**NIL**

8. ASBU B0-35/NOPS: Performance Monitoring and Measurement 8A. ASBU B0-35/NOPS: Implementation Monitoring	
Elements	**Performance Indicators / Supporting Metrics**
1. Air Traffic Flow Management	Indicator: Percentage of implemented FMUs Supporting metric: Number of States with ATFM units implemented

8. ASBU B0-35/NOPS: Performance Monitoring and Measurement 8B. ASBU B0-35/NOPS: Performance Monitoring	
Key Performance Areas	**Metrics (if not, indicate qualitative benefits)**
Access & Equity	Improved access and equity in the use of airspace or aerodrome
Capacity	Number of aircrafts in a defined volume or airspace for a period of time.
Efficiency	Reduced fuel burn due to better anticipation of flow issues; Reduced block times and times with engines on
Environment	. Reduced CO_2 emissions per flight
Safety	Reduced number of occurrences of undesired sector overloads

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-101/ACAS ACAS Improvements **Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM**					
3. ASBU B0-101/ACAS: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	**N**	**N**	**Y**	**N**	**Y**

4. ASBU B0-101/ACAS: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and Implementation Progress (Ground and Air)**
1. ACAS II (TCAS Version 7.1)	2013-2018

7. ASBU B0-101/ACAS: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. ACAS II (TCAS Version 7.1)	NIL	Equipage	NIL	NIL

8. ASBU B0-101/ACAS: Performance Monitoring and Measurement **8A. ASBU B0-101/ACAS: Implementation Monitoring**	
Elements	**Performance Indicators / Supporting Metrics**
1. ACAS II (TCAS Version 7.1)	Indicator: Percentage of aircrafts that are equipped Supporting metric: Reduction in number of RA incidents

8. ASBU B0-101/ACAS: Performance Monitoring and Measurement **8B. ASBU B0-101/ACAS: Performance Monitoring**	
Key Performance Areas	**Metrics (if not, indicate qualitative benefits)**
Access & Equity	N/A
Capacity	ACAS improvement will reduce unnecessary resolution advisory (RA) and then reduce trajectory deviations
Efficiency	N/A
Environment	N/A
Safety	Reduced number of potential AIR-PROX. ACAS increases safety in the case of breakdown of separation

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-84/ASUR
Improved Flow Performance through Planning based on a Network-Wide view

Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM

3. ASBU B0-84/ASUR: Impact on Main Key Performance Areas (KPA)

	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	**N**	**Y**	**N**	**N**	**Y**

4. ASBU B0-84/ASUR: Planning Targets and Implementation Progress

5. Elements	6. Targets and Implementation Progress (Ground and Air)
1. Implementation of ADS-B	June 2018 – Users and service provider
2. Implementation of Multilateration	June 2018 – Users and service provider
3. Automation system (Presentation)	June 2017 – Users and service provider

7. ASBU B0-84/ASUR: Implementation Challenges

Elements	Implementation Area			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. Implementation of ADS-B	Lack of ADS-B systems implementation due to recent implementation of conventional surveillance systems	Lack of ADS-B implementation in general aviation, and old commercial fleet	Lack of procedures	Lack of inspector s with appropriate capability
2. Implementation of Multilateration	Facilities of remote stations. Establishment of communications networks	NIL	NIL	Lack of inspector s with appropriate capability
3. Automation system (Presentation)	Lack of any automation functionality	NIL	NIL	NIL

8. ASBU B0-84/ASUR: Performance Monitoring and Measurement
8A. ASBU B0-84/ASUR: Implementation Monitoring

Elements	Performance Indicators / Supporting Metrics
1. Implementation of ADS-B	Indicator: Percentage of international aerodromes with ADS-B implemented Supporting metric: Number of ADS-B implemented
2. Implementation of Multilateration	Indicator: Percentage of Multilateration system implemented Supporting metric: Number of Multilateration system implemented
3. Automation system (Presentation)	Indicator: Percentage of ATS units with automation system implemented Supporting metric: Number of automation system implemented in ATS units

8. ASBU B0-84/ASUR: Performance Monitoring and Measurement
8B. ASBU B0-84/ASUR: Performance Monitoring

Key Performance Areas	Metrics (if not, indicate qualitative benefits)
Access & Equity	N/A

Capacity	Typical separation minima are 3 NM or 5 NM enabling an increase in traffic density compared to procedural minima. TMA surveillance performance improvements are achieved through high accuracy, better velocity vector and improved coverage.
Efficiency	N/A
Environment	N/A
Safety	Reduction of the number of major incidents. Support to search and rescue

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-102/SNET
Increased Effectiveness of Ground-based Safety Nets

Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM

3. ASBU B0-102/SNET: Impact on Main Key Performance Areas (KPA)

	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	**N**	**N**	**NN**	**N**	**Y**

4. ASBU B0-102/SNET: Planning Targets and Implementation Progress

5. Elements	6. Targets and Implementation Progress (Ground and Air)
1. Short Term Conflict Alert (STCA)	June 2014 / Service provider 2013-2018
2. Area Proximity Warning (APW)	June 2014 / Service provider 2013-2018
3. Minimum Safe Altitude Warning (MSAW)	June 2014
4. Dangerous Area Infringement Warning (DAIW)	2013-2018

7. ASBU B0-102/SNET: Implementation Challenges

Elements	Implementation Area			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. Short Term Conflict Alert (STCA)	NIL Funding	NIL	NIL	NIL
2. Area Proximity Warning (APW)	NIL Funding	NIL	NIL	NIL
3. Minimum Safe Altitude Warning (MSAW)	NIL Funding	NIL	NIL	NIL
4. Dangerous Area Infringement Warning (DAIW)	Funding			

8. ASBU B0-102/SNET: Performance Monitoring and Measurement
8A. ASBU B0-102/SNET: Implementation Monitoring

Elements	Performance Indicators / Supporting Metrics
1. Short Term Conflict Alert (STCA)	Indicator: Percentage of ATS units with ground-based safety nets (STCA) implemented Supporting metric: Number of safety net (STCA) implemented
2. Area Proximity Warning (APW)	Indicator: Percentage of ATS units with ground-based safety nets (APW)implemented Supporting metric: Number of safety net (APW)implemented
3. Minimum Safe Altitude Warning (MSAW)	Indicator: Percentage of ATS units with ground-based safety nets (MSAW) implemented Supporting metric: Number of safety net (MSAW) implemented

4. Dangerous Area Infringement Warning (DAIW)	Indicator: Percentage of ATS units with ground-based safety nets (DAIW) implemented Supporting metric: Number of safety net (DAIW) implemented

8. ASBU B0-102/SNET: Performance Monitoring and Measurement
8B. ASBU B0-102/SNET CAS: Performance Monitoring

Key Performance Areas	Metrics (if not, indicate qualitative benefits)
Access & Equity	N/A
Capacity	N/A
Efficiency	N/A
Environment	N/A
Safety	Significant reduction of the number of major incidents

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-05/CDO
Improved Flexibility and Efficiency in Descent Profiles: Continuous Descent Operations (CDO)

Performance Improvement Area 4: Efficient Flight Path – Through Trajectory-based Operations

3. ASBU B0-05/CDO: Impact on Main Key Performance Areas (KPA)

	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	**N**	**N**	**Y**	**N**	**Y**

4. ASBU B0-05/CDO: Planning Targets and Implementation Progress

5. Elements	6. Targets and Implementation Progress (Ground and Air)
1. CDO implementation	December 2017
2. PBN STARs implementation	December 2017

7. ASBU B0-05/CDO: Implementation Challenges

Elements	Implementation Area			
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals
1. CDO implementation	The ground trajectory calculation function will need to able upgraded	NIL	Coordination procedures between ATSUs and Training	In accordance with applicable requirements
2. PBN STARs implementation	Airspace Design	NIL	Coordination procedures between ATSUs and Training	

8. ASBU B0-05/CDO: Performance Monitoring and Measurement
8A. ASBU B0-05/CDO: Implementation Monitoring

Elements	Performance Indicators / Supporting Metrics
1. CDO implementation	Indicator: Percentage of international aerodromes/TMAs with CDO implemented

	Supporting metric: Number of international aerodromes/TMAs with CDO implemented
2. PBN STARs	Indicator: Percentage of international aerodromes/TMA with PBN STAR implemented Supporting metric: Number of international aerodromes/TMAs with with PBN STAR implemented
8. ASBU B0-05/CDO: Performance Monitoring and Measurement 8B. ASBU B0-05/CDO: Performance Monitoring	
Key Performance Areas	**Metrics (if not , indicate qualitative benefits)**
Access & Equity	N/A
Capacity	Increased Terminal Airspace Capacity
Efficiency	Cost savings through reduced fuel burn. Reduction in the number of required radio transmissions.
Environment	Reduced emissions as a result of reduced fuel burn.
Safety	More consistent flight paths and stabilized approach. Reduction in the incidence of controlled flight into terrain (CFIT)

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-20/CCO Improved Flexibility and Efficiency in Departure Profiles: Continuous Climb Operations (CCO) Performance Improvement Area 4: Efficient Flight Path – Through Trajectory-based Operations					
3. ASBU B0-20/CCO: Improved Flexibility and Efficiency in Departure Profiles (CCO)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	**N**	**Y**	**Y**	**Y**	**Y**

4. ASBU B0-20/CCO: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and Implementation Progress (Ground and Air)**
1. CCO implementation	December 2017
2. PBN SIDs implementation	December 2017

7. ASBU B0-20/CCO: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. CCO implementation	NIL	NIL	Coordination procedures between ATSUs and Training	In accordance with applicable requirements

2. PBN SIDs implementation	Airspace Design	NIL	Coordination procedures between ATSUs and Trainings	Approvals of procedures

8. ASBU B0-20/CCO: Performance Monitoring and Measurement 8A. ASBU B0-20/CCO: Implementation Monitoring	
Elements	**Performance Indicators / Supporting Metrics**
1. CCO implementation	Indicator: Percentage of international aerodromes with CCO implemented Supporting metric: Number of international airports with CCO implemented
2. PBN SIDs implementation	Indicator: Percentage of international aerodromes with PBN SIDs implemented Supporting metric: Number of international airports with PBN SIDs implemented

8. ASBU B0-20/CCO: Performance Monitoring and Measurement 8B. ASBU B0-20/CCO: Performance Monitoring	
Key Performance Areas	**Metrics (if not , indicate qualitative benefits)**
Access & Equity	**…**
Capacity	Increased Terminal Airspace Capacity
Efficiency	Cost savings through reduced fuel burn and efficient aircraft operating profiles. Reduction in the number of required radio transmissions.
Environment	Authorization of operations where noise limitations would otherwise result in operations being curtailed or restricted. Environmental benefits through reduced emissions.
Safety	More consistent flight paths. Reduction in the number of required radio transmissions. Lower pilot and air traffic control workload.

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-40/TBO
Improved Safety and Efficiency through the initial application of Data Link en-Route

Performance Improvement Area 4: Efficient Flight Path – Through Trajectory-based Operations

3. ASBU B0-40/TBO: Impact on Main Key Performance Areas (KPA)

	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	**N**	**Y**	**Y**	**Y**	**Y**

4. ASBU B0-40/TBO: Planning Targets and Implementation Progress

5. Elements	**6. Targets and Implementation Progress (Ground and Air)**
1. ADS-C over oceanic and remote areas	June 2018 – Service provider
2. Continental CPDLC	June 2018 – Service provider

7. ASBU B0-40/TBO: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. ADS-C over oceanic and remote areas	Funding and limited link service provider and infrastructure	Implementation of ADS-C in general aviation pending	NIL	Lack of duly trained inspectors for approval of operations
2. Continental CPDLC	Funding and limited link service provider and infrastructure	Implementation of CPDLC in general aviation pending	NIL	Lack of duly trained inspectors for approval of operations

8. ASBU B0-40/TBO: Performance Monitoring and Measurement 8A. ASBU B0-40/TBO: Implementation Monitoring	
Elements	**Performance Indicators / Supporting Metrics**
1. ADS-C over oceanic and remote areas	Indicator: Percentage of FIRs with ADS-C implemented Supporting metric: Number of ADS-C approved procedures over oceanic and remote areas
2. Continental CPDLC	Indicator: Percentage of CPDLC implemented Supporting metric: Number of CPDLC approved procedures over continental areas

8. ASBU B0-40/TBO: Performance Monitoring and Measurement 8B. ASBU B0-40/TBO: Performance Monitoring	
Key Performance Areas	**Metrics (if not, indicate qualitative benefits)**
Access & Equity	N/A
Capacity	Number of aircrafts in a defined airspace for a period of time
Efficiency	Kilogrammes of fuel saved per flight. Reduction of separation
Environment	Reduced emission as a result of reduced fuel burn
Safety	. Increased situational awareness

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-15/RSEQ Improved Traffic Flow through Runway Sequencing (AMAN/DMAN) Performance Improvement Area 1: Airport Operations					
3. ASBU B0-15/RSEQ: Impact on Main Key Performance Areas (KPA)					
	Access &	**Capacity**	**Efficiency**	**Environment**	**Safety**

	Equity				
Applicable	**N**	**Y**	**Y**	**Y**	**N**

4. ASBU B0-15/RSEQ: Planning Targets and Implementation Progress

5. Elements	**6. Targets and Implementation Progress (Ground and Air)**
1. AMAN and time-based metering	December 2015
2. Departure management	December 2015
3. Movement Area Capacity Optimization	December 2015

7. ASBU B0-15/RSEQ: Implementation Challenges

Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. AMAN and time-based metering	Lack of automation system to support synchronization	NIL	Lack of appropriate training. Lack of STARs PBN. Lack of slots assignment	Lack of procedures and inspectors for operational approvals
2. Departure management	Lack of automation system to support synchronization	NIL	Lack of appropriate training. Lack of SIDs PBN. Lack of slots assignment	Lack of procedures and inspectors for operational approvals
3. Movement Area Capacity Optimization	NIL	NIL	Lack of procedures for RWY, TWY & platform capacity calculation. Guidelines for movement area capacity organization.	Lack of procedures and inspectors for operational approvals

8. ASBU B0-15/RSEQ: Performance Monitoring and Measurement
8A. ASBU B0-86/OPFL: Implementation Monitoring

Elements	**Performance Indicators / Supporting Metrics**
1. AMAN and time-based metering	Indicator: Percentage of international aerodromes with AMAN and time-based metering. Supporting metric: Number of international airports with AMAN and time-based metering.
2. Departure management	Indicator: Percentage of international aerodromes with DMAN. Supporting metric: Number of international airports with DMAN.
3. Movement Area Capacity Optimization	Indicator: Percentage of international aerodromes with Airport-capacity calculated. Supporting metric: Number of international airports with Airport-capacity calculated.

8. ASBU B0-15/RSEQ: Performance Monitoring and Measurement
8B. ASBU B0-15/RSEQ: Performance Monitoring

Key Performance Areas	**Metrics (if not , indicate qualitative benefits)**
Access & Equity	N/A
Capacity	Improved airport movement area capacity through optimization
Efficiency	Efficiency is positively impacted as reflected by increased runway throughput and arrival rates
Environment	Reduction of carbon emissions
Safety	N/A

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-65/APTA Optimization of Approach Procedures Including Vertical Guidance Performance Improvement Area 1: Airport Operations					
3. ASBU B0-65/APTA: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	**Y**	**Y**	**Y**	**Y**	**Y**

4. ASBU B0-65/APTA: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and Implementation Progress (Ground and Air)**
1. APV with Baro-VNAV	December 2016 – Service Providers and users
2. APV with SBAS	December 2017 – As per AFI-GNSS Strategy. Not Applicable
3. APV with GBAS	December 2018 – Initial implementation at some States (service providers)

7. ASBU B0-65/APTA: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. APV with Baro-VNAV	NIL	Insufficient number of equipped aircraft	Insufficient appropriate training	Lack of appropriate training
2. APV with SBAS	Network Infrastructure.	Cost of aircraft equipage.	Limited to certain States which have implemented.	Lack of knowledge and appropriate training.
3. APV with GBAS	Lack of cost-benefit analysis. Adverse ionosphere	Insufficient number of equipped aircraft	Insufficient appropriate training	Lack of appropriate training. Evaluation of a real operation requirement

8. ASBU B0-65/APTA: Performance Monitoring and Measurement 8A. ASBU B0-65/APTA: Implementation Monitoring	
Elements	**Performance Indicators / Supporting Metrics**
1. APV with Baro-VNAV	Indicator: Percentage of international aerodromes having instrument runways provided with APV with Baro-VNAV procedure implemented (Where the % is defined) Supporting metric: Number of international airports having approved APV with Baro-VNAV
2. APV with SBAS	Indicator: Percentage of international aerodromes having instrument runways provided with APV with SBAS procedure implemented Supporting metric: Number of international airports having approved APV with SBAS
3. APV with GBAS	Indicator: Percentage of international aerodromes having instrument runways provided with APV with GBAS procedure implemented Supporting metric: Number of international airports having approved APV with GBAS

8. ASBU B0-65/APTA: Performance Monitoring and Measurement 8B. ASBU B0-65/APTA: Performance Monitoring	
Key Performance Areas	**Metrics (if not , indicate qualitative benefits)**
Access & Equity	Increased aerodrome accessibility
Capacity	Increased runway capacity
Efficiency	Reduced fuel burn due to lower minima, fewer diversions, cancellations, delays
Environment	Reduced emissions due to reduced fuel burn
Safety	Increased safety through stabilized approach paths

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-75/SURF Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2) Performance Improvement Area 1: Airport Operations					
3. ASBU B0-75/SURF: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	**Y**	**Y**	**Y**	**Y**	**Y**

4. ASBU B0-75/SURF: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and Implementation Progress (Ground and Air)**
1. Surveillance system for ground surface movement (PSR, SSR, ADS-B or Multilateration	December 2017 Service provider
2. Surveillance system on board (SSR transponder, ADS-B capacity)	December 2017 Service provider
3. Surveillance system for vehicle	December 2017 Service provider
4. Visual aids for navigation	December 2015 Service provider
5. Wildlife strike hazard reduction	December 2015 Aerodrome operator / wildlife committee
6. Display and processing information	December 2017 Service provider

7. ASBU B0-75/SURF: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. Surveillance system for ground surface movement (PSR, SSR, ADS-B or Multilateration)	Lack of adequate financial resources	NIL	Lack of procedures and training.	Lack of inspectors for operational approvals
2. Surveillance system on board (SSR transponder, ADS-B capacity)	NIL	Lack of surveillance system on board (ADS-B capacity) on general aviation and some commercial aircraft	Lack of procedures and training.	Lack of guidance materials for inspectors. Lack of inspectors
3. Surveillance system for vehicle	Lack of adequate financial resources	NIL	Lack of procedures and training.	Lack of guidance materials for inspectors. Lack of inspectors
4. Visual aids for navigation		NIL	NIL	Lack of calibration capacity
5. Wildlife strike hazard reduction		NIL	Lack of Wildlife Hazard Management Committee. Conflict between aviation law and state environment laws. Lack of training. Lack of community support	NIL

8. ASBU B0-75/SURF: Performance Monitoring and Measurement 8A. ASBU B0-75/SURF: Implementation Monitoring	
Elements	**Performance Indicators / Supporting Metrics**
1. Surveillance system for	Indicator: Percentage of international aerodromes with SMR / SSR Mode S /ADS-B Multilateration

ground surface movement (PSR, SSR, ADS-B or Multilateration)	for ground surface movement Supporting metric: Number of international airports with SMR / SSR Mode S /ADS-B Multilateration for ground surface movement.
2. Surveillance system on board (SSR transponder, ADS-B capacity)	Indicator: Percentage of surveillance system on board (SSR transponder, ADS-B capacity). Supporting metric: Number of surveillance system on board (SSR transponder, ADS-B capacity).
3. Surveillance system for vehicle	Indicator: Percentage of international aerodromes with cooperative transponder system on vehicles. Supporting metric: Number of vehicles with transponder system installed.
4. Visual aids for navigation	Indicator: Percentage of international aerodromes complying with visual aid requirements as per Annex 14 Supporting metric: Number of international aerodromes complying with visual aid requirements as per Annex 14
5. Wildlife strike hazard reduction	Indicator: Percentage of reduction of wildlife incursions. Supporting metric: Number of runway incursions due to wildlife strike.
8. ASBU B0-75/SURF: Performance Monitoring and Measurement 8B. ASBU B0-75/SURF: Performance Monitoring	
Key Performance Areas	**Metrics (if not, indicate qualitative benefits)**
Access & Equity	Improves portions of the maneuvering area obscured from view of the control tower for vehicles and aircraft. Ensures equity in ATS handling of surface traffic regardless of the traffic's position on the international aerodrome
Capacity	Sustained level of aerodrome capacity during periods of reduced visibility
Efficiency	Reduced taxi times through diminished requirements for intermediate holdings based on reliance on visual surveillance only. Reduced fuel burn
Environment	Reduced emissions due to reduced fuel burn
Safety	Reduced runway incursions. Improved response to unsafe situations. Improved situational awareness leading to reduced ATC workload

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-80/ACDM Improved Airport Operations through Airport Performance Improvement Area 1: Airport Operations					
3. ASBU B0-80/ACDM: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	**Y**	**Y**	**Y**	**Y**	**Y**

4. ASBU B0-80/ACDM: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and Implementation Progress (Ground and Air)**
1. Airport – CDM	December 2015 – Airport Operator, ANSPs, aircraft operators
2. Aerodrome certification	December 2015 – State CAA
3. Airport planning	December 2017 – Airport Operators
4. Heliport operation	December 2017 – State CAA
5. SMS implementation	December 2014 – Aerodrome Operators
6. Development of regulations and technical guidance material for runway safety	December 2014 – State CAA
7. Development and implementation of runway safety programmes and reduce runway-related accidents and serious incidents to no more than eight per year.	December 2014 – State CAA

7. ASBU B0-80/ACDM: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. Airport – CDM	Interconnection of ground systems of different partners for Airport – CDM	NIL	Lack for coordination procedures. Lack of commitment from all stakeholders	NIL
2. Aerodrome certification	Lack of effective implementation of Annex 14 SARPs	NIL	Lack of procedures. Lack of training	Lack of adequately trained inspectors
3. Airport planning	NIL	NIL	Lack of procedures	Lack of adequately trained

				inspectors
4. Heliport operation	Lack of regulations	NIL	Lack of procedures	Lack of trained inspectors
5. SMS implementation	NIL	NIL	Lack of States regulations. Lack of training	Lack of high level management commitment
6. Development of regulations and technical guidance material for runway safety	NIL	NIL	Lack of States regulations	Lack of high level management commitment
7. Development and implementation of runway safety programmes and reduce runway-related accidents and serious incidents to no more than eight per year.	NIL	NIL	Lack of standards from ICAO. Lack of States regulations. Lack of training.	Lack of high level management commitment

8. ASBU B0-80/ACDM: Performance Monitoring and Measurement **8A. ASBU B0-80/ACDM: Implementation Monitoring**	
Elements	**Performance Indicators / Supporting Metrics**
1. Airport – CDM	Indicator: Percentage of international aerodromes with Airport – CDM Supporting metric: Number of international aerodromes with Airport – CDM
2. Aerodrome certification	Indicator: Percentage of certified international aerodromes Supporting metric: Number of certified international aerodromes
3. Airport planning	Indicator: Percentage of international aerodromes with Master Plans Supporting metric: Number of international aerodromes with Master Plans
4. Heliport operation	Indicator: Percentage of Heliports with operational approval Supporting metric: Number of Heliports with operational approval
5. SMS implementation	Indicator: Percentage of aerodrome operators having implemented SMS
6. Development of regulations and technical guidance material for runway safety	Indicator:
7. Development and implementation of runway safety programmes and reduce runway-related accidents and serious incidents to no more than eight per year.	Indicator: Percentage of aerodromes with local runway safety teams (LRST)
8. ASBU B0-80/ACDM: Performance Monitoring and Measurement **8B. ASBU B0-80/ACDM: Performance Monitoring**	
Key Performance Areas	**Metrics (if not, indicate qualitative benefits)**
Access & Equity	Enhanced equity on the use of aerodrome facilities
Capacity	Enhanced use of existing implementation for gate and stands (unlock latent capacity). Reduced workload, better organization of the activities to manage flights. Enhanced aerodrome capacity according to the demand.
Efficiency	Improved operational efficiency (fleet management); and reduced delay. Reduced fuel burn due to reduced taxi time and lower aircraft engine run time. Improved aerodrome expansion in accordance with Master Plan
Environment	Reduced emissions due to reduced fuel burn
Safety	N/A

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-25/FICE **Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration** **Performance Improvement Area 2: Global Interoperable Systems and Data – Through Globally Interoperable System-Wide Information Management**					
3. ASBU B0-25/FICE: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	**N**	**Y**	**Y**	**Y**	**Y**

4. ASBU B0-25/FICE: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and Implementation Progress (Ground and Air)**
1. Complete AMHS implementation at States still not counting with this system	December 2015 – Services provider
2. AMHS interconnection	December 2015 – Services provider
3. Implement AIDC/OLDI at some States automated centres	June 2014 – Services provider
4. Implement operational AIDC/OLDI between adjacent ACCs	June 2015 – Services provider
5. Implement the AFI Comn regional network	June 2015 – Services provider

7. ASBU B0-25/FICE: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. Complete AMHS implementation at States still not counting with this system	NIL	NIL	NIL	NIL
2. AMHS interconnection	TPDI negotiations between MTAs	NIL	NIL	NIL
3. Implement AIDC/OLDI at some States automated centres	NIL	NIL	NIL	NIL
4. Implement operational AIDC/OLDI between adjacent ACCs	Compatibility between AIDC or OLDI systems from various manufacturers	NIL	NIL	NIL
5. Implement the AFI Comn regional network	NIL	NIL	NIL	NIL

8. ASBU B0-25/FICE: Performance Monitoring and Measurement 8A. ASBU B0-25/FICE: Implementation Monitoring	
Elements	**Performance Indicators / Supporting Metrics**
1. Complete AMHS implementation at States still not counting with this item	Indicator: Percentage of States with AMHS implemented Supporting metric: Number of AMHS installed
2. AMHS interconnection	Indicator: Percentage of States with AMHS interconnected with other AMHS Supporting metric: Number of AMHS interconnections implemented
3. Implement AIDC/OLDI at some States automated centres	Indicator: Percentage of ATS units with AIDC/OLDI Supporting metric: Number of AIDC or OLDI systems installed
4. Implement operational AIDC/OLDI between adjacent ACCs	Indicator: Percentage of ACCs with AIDC or OLDI systems interconnections implemented Supporting metric: Number of AIDC interconnections implemented
5. Implement the AFI Comn regional network	Indicator: Percentage of phases completed for the implementation of the AFI digital network Supporting metric: Number of phases implemented

8. ASBU B0-25/FICE: Performance Monitoring and Measurement 8B. ASBU B0-25/FICE: Performance Monitoring	
Key Performance Areas	**Metrics (if not, indicate qualitative benefits)**
Access & Equity	NIL
Capacity	Reduced controller workload and increased data integrity supporting reduced separations, translating directly to cross-sector or boundary-capacity flow increases
Efficiency	The reduced separation can also be used to more frequently offer aircraft flight levels closer to the optimum; in certain cases, this also translates into reduced en-route holding.
Environment	NIL
Safety	Better knowledge of more accurate flight plan information

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-105/AMET Meteorological Information Supporting Enhanced Operational Efficiency and Safety Performance Improvement Area 2: Global Interoperable Systems and Data – Through Globally Interoperable System-Wide Information Management					
3. ASBU B0-105/AMET: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	**N**	**YY**	**Y**	**Y**	**Y**

4. ASBU B0-105/AMET: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and Implementation Progress (Ground and Air)**
1. WAFS	In process of implementation
2. IAVW	In process of implementation

3. Tropical cyclone watch	In process of implementation
4. Aerodrome warnings	In process of implementation
5. Wind shear warnings and alerts	50% by December 2014
6. SIGMET	80% by December 2014
7. QMS/MET	75% by December 2014
8. 8. Other OPMET Information (METAR, SPECI, TAF)	In process of improvement

7. ASBU B0-105/AMET: Implementation Challenges

Elements	Implementation Area			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. WAFS	Connection to the AFS satellite and public internet distribution systems	NIL	Prepare a contingency plan in case of public internet failure	N/A
2. IAVW	Connection to the AFS satellite and public internet distribution systems	NIL	Prepare a contingency plan in case of public internet failure	N/A
3. Tropical cyclone watch	Connection to the AFS satellite and public internet distribution systems	NIL	Prepare a contingency plan in case of public internet failure	N/A
4. Aerodrome warnings	Connection to the AFTN	NIL	Local arrangements for provision of aerodrome warnings	N/A
5. Wind shear warnings and alerts	Connection to the AFTN	NIL	Local arrangements for provision of wind and shear warning and alerts	N/A
6. SIGMET	Connection to the AFTN	NIL	Prepare a contingency plan in case of AFTN systems failure	N/A
7. QMS/MET	NIL		Appropriate arrangements for establishment and implementation of QMS	Commitment of top management
8. 8. Other OPMET Information (METAR, SPECI, TAF)	Connection to the AFTN	NIL	Prepare a contingency plan in case of AFTN systems failure	N/A

8. ASBU B0-105/AMET: Performance Monitoring and Measurement
8A. ASBU B0-105/AMET: Implementation Monitoring

Elements	Performance Indicators / Supporting Metrics
1. WAFS	Indicator: States implementation of SADIS 2G/secure SADIS FTP Supporting metric: Number of States implementation of SADIS 2G/secure SADIS FTP
2. IAVW	Indicator: States implementation of SADIS 2G/secure SADIS FTP Supporting metric: Number of States implementation of SADIS 2G/secure SADIS FTPd
3. Tropical cyclone watch	Indicator: Percentage of international aerodromes/MWOs with Tropical cyclone watch procedures implemented Supporting metric: Number of international aerodromes/MWOs with Tropical cyclone watch procedures implemented
4. Aerodrome warnings	Indicator: Percentage of international aerodromes/AMOs with Aerodrome warnings procedures implemented Supporting metric: Number of international aerodromes/AMOs with Aerodrome warnings implemented
5. Wind shear warnings and alerts	Indicator: Percentage of international aerodromes/AMOs with wind shear warnings procedures implementedSupporting metric: Number of international aerodromes/AMOs with wind shear warnings and alerts implemented
6. SIGMET	Indicator: Percentage of international aerodromes/MWOs with SIGMET procedures implemented

	Supporting metric: Number of international aerodromes/MWOs with SIGMET procedures implemented
7. QMS/MET	Indicator: Percentage of MET Provider States with QMS/MET implemented Supporting metric: Number of MET Provider States with QMS/MET certificated
8. Other OPMET Information (METAR, SPECI, TAF)	Indicator: Percentage of OPMET available at international aerodrome AMOs/MWOs Supporting metric: Number of international aerodromes/MWOs issuing required OPMET information
8. ASBU B0-105/AMET: Performance Monitoring and Measurement 8B. ASBU B0-105/AMET: Performance Monitoring	
Key Performance Areas	**Metrics (if not, indicate qualitative benefits)**
Access & Equity	N/A
Capacity	Optimized usage of airspace and aerodrome capacity due to MET support
Efficiency	Reduced arrival/departure holding time, thus reduced fuel burn due to MET support
Environment	Reduced emission due to reduced fuel burn due to MET support
Safety	Reduced incidents/accidents in flight and at international aerodromes due to MET support

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-30/DATM

Service Improvement through Digital Aeronautical Information Management

Performance Improvement Area 2: Global Interoperable Systems and Data

– Through Globally Interoperable System-Wide Information Management

3. ASBU B0-30/DATM: Impact on Main Key Performance Areas (KPA)

	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	**N**	**N**	**Y**	**Y**	**Y**

4. ASBU B0-30/DATM: Planning Targets and Implementation Progress

5. Elements	6. Targets and Implementation Progress (Ground and Air)
1. QMS for AIM	December 2014
2. e-TOD implementation	December 2016
3. WGS-84 implementation	Implemented
4. AIXM implementation	December 2018
5. e-AIP implementation	December 2015
6. Digital NOTAM	December 2018

7. ASBU B0-30/DATM: Implementation Challenges

Elements	Implementation Area			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. QMS for AIM	Lack of electronic database. Lack of electronic access based on internet protocol services	NIL	Lack of procedures to allow airlines provide digital AIS data to on-board devices, in particular electronic flight bags (EFBs). Lack of training for AIS/AIM personnel.	NIL
2. e-TOD implementation				
3. WGS-84 implementation				
4. AIXM implementation				
5. e-AIP implementation				
6. Digital NOTAM				

8. ASBU B0-30/DATM: Performance Monitoring and Measurement

8A. ASBU B0-30/DATM: Implementation Monitoring

Elements	Performance Indicators / Supporting Metrics
1. QMS for AIM	Indicator: Percentage of States QMS certified Supporting metric: Number of States withQMS certification
2. e-TOD implementation	Indicator: Percentage of States e-TOD implemented Supporting metric: Number of States with e-TOD implemented
3. WGS-84 implementation	Indicator: Percentage of WGS-84 implemented Supporting metric: Number of States with WGS-84 implemented
4. AIXM implementation	Indicator: Percentage of States with AXIM implemented Supporting metric: Number of States with AXIM implemented
5. e-AIP implementation	Indicator: Percentage of States with e-AIP implemented Supporting metric: Number of States with e-AIP implemented
6. Digital NOTAM	Indicator: Percentage of States with Digital NOTAM implemented Supporting metric: Number of States with Digital NOTAM implemented
8. ASBU B0-30/DATM: Performance Monitoring and Measurement **8B. ASBU B0-30/DATM: Performance Monitoring**	
Key Performance Areas	**Metrics (if not, indicate qualitative benefits)**
Access & Equity	N/A
Capacity	N/A
Efficiency	Support Instrument procedure design implementation; Support aeronautical chart production and on-board databases; Support the implementation of PBN
Environment	Reduced amount of paper for promulgation of information
Safety	Reduction in the number of possible inconsistencies Timely dissemination of information

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-10/FRTO Improved Operations through Enhanced En-route Trajectories Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM					
3. ASBU B0-10/FRTO: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	**Y**	**Y**	**Y**	**Y**	**N**

4. ASBU B0-10/FRTO: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and Implementation Progress (Ground and Air)**
1. Airspace planning	December 2018
2. Flexible use of airspace	December 2016
3. Flexible routing	December 2018

7. ASBU B0-10/FRTO: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. Airspace planning	Lack of organized and managed airspace prior to the time of flight. Lack of AIDC WGS-84 Survey	NIL	Lack of Procedures	
2. Flexible use of airspace	NIL	NIL	Lack of implementation FUA Guidance and coordination agreements	
3. Flexible routing	ADS-C/CPDLC	Insufficient number of equipped aircraft / Lack of FANS 1/A. lack of ACARS	Lack of LOAs and procedures	Poor percentage of fleet approvals

8. ASBU B0-10/FRTO: Performance Monitoring and Measurement 8A. ASBU B0-10/FRTO: Implementation Monitoring	
Elements	**Performance Indicators / Supporting Metrics**
1. Airspace planning	Not assigned Indicator and metrics
2. Flexible use of airspace	Indicator: Percentage of time segregated airspaces are available for civil operations in the State Supporting metric: Reduction of delays in time of civil flights
3. Flexible routing	Indicator: Percentage of PBN routes implemented Supporting metric: KG of Fuel savings Supporting metric: Tons of CO2 reduction

8. ASBU B0-10/FRTO: Performance Monitoring and Measurement 8B. ASBU B0-10/FRTO: Performance Monitoring	
Key Performance Areas	**Metrics (if not , indicate qualitative benefits)**
Access & Equity	Better access to airspace by a reduction of the permanently segregated volumes of airspace
Capacity	Flexible routing reduces potential congestion on trunk routes and at busy crossing points. The flexible use of airspace gives greater possibilities to separate flights horizontally. PBN helps to reduce route spacing and aircraft separations.
Efficiency	In particular the module will reduce flight length and related fuel burn and emissions. The module will reduce the number r of flight diversions and cancellations. It will also better allow avoiding noise-sensitive areas.
Environment	Fuel burn and emissions will be reduced
Safety	N/A

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-35/NOPS
Improved Flow Performance through Planning based on a Network-Wide view

Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM

3. ASBU B0-35/NOPS: Impact on Main Key Performance Areas (KPA)

	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	**Y**	**Y**	**Y**	**Y**	**Y**

4. ASBU B0-35/NOPS: Planning Targets and Implementation Progress

5. Elements	6. Targets and Implementation Progress (Ground and Air)
1. Air Traffic Flow Management	December 2015

7. ASBU B0-35/NOPS: Implementation Challenges

Elements	Implementation Area			
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals
1. Air Traffic Flow Management	Lack for system software for ATFM. Lack of ATFM units implemented. Funding	NIL	Lack of ATFM and CDM procedures. Lack of training	….

8. ASBU B0-35/NOPS: Performance Monitoring and Measurement
8A. ASBU B0-35/NOPS: Implementation Monitoring

Elements	Performance Indicators / Supporting Metrics
1. Air Traffic Flow Management	Indicator: Percentage of implemented FMUs Supporting metric: Number of States with ATFM units implemented

8. ASBU B0-35/NOPS: Performance Monitoring and Measurement
8B. ASBU B0-35/NOPS: Performance Monitoring

Key Performance Areas	Metrics (if not, indicate qualitative benefits)
Access & Equity	Improved access and equity in the use of airspace or aerodrome by avoiding disruption of air traffic. ATFM processes take care of equitable distribution of delays
Capacity	Better utilization of available capacity, ability to anticipate difficult situations and mitigate them in advance. Number of aircrafts in a defined volume or airspace for a period of time.
Efficiency	Reduced fuel burn due to better anticipation of flow issues; Reduced block times and times with engines on
Environment	Reduced fuel burn as delays are absorbed on the ground, with shut engines; or at optimum flight levels through speed or route management. Reduced CO2 emissions per flight
Safety	Reduced occurrences of undesired sector overloads

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-101/ACAS ACAS Improvements **Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM**					
3. ASBU B0-101/ACAS: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	**N**	**N**	**Y**	**N**	**Y**

4. ASBU B0-101/ACAS: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and Implementation Progress (Ground and Air)**
1. ACAS II (TCAS Version 7.1)	2013-2018

7. ASBU B0-101/ACAS: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. ACAS II (TCAS Version 7.1)	NIL	Equipage	NIL	NIL

8. ASBU B0-101/ACAS: Performance Monitoring and Measurement **8A. ASBU B0-101/ACAS: Implementation Monitoring**	
Elements	**Performance Indicators / Supporting Metrics**
1. ACAS II (TCAS Version 7.1)	Indicator: Percentage of aircrafts that are equipped Supporting metric: Reduction in number of RA incidents

8. ASBU B0-101/ACAS: Performance Monitoring and Measurement **8B. ASBU B0-101/ACAS: Performance Monitoring**	
Key Performance Areas	**Metrics (if not, indicate qualitative benefits)**
Access & Equity	N/A
Capacity	ACAS improvement will reduce unnecessary resolution advisory (RA) and then reduce trajectory deviations
Efficiency	N/A
Environment	N/A
Safety	Reduced number of potential AIR-PROX. ACAS increases safety in the case of breakdown of separation

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-84/ASUR Improved Flow Performance through Planning based on a Network-Wide view Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM					
3. ASBU B0-84/ASUR: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	**N**	**Y**	**N**	**N**	**Y**

4. ASBU B0-84/ASUR: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and Implementation Progress (Ground and Air)**
1. Implementation of ADS-B	June 2018 – Users and service provider
2. Implementation of Multilateration	June 2018 – Users and service provider
3. Automation system (Presentation)	June 2017 – Users and service provider

7. ASBU B0-84/ASUR: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. Implementation of ADS-B	Lack of ADS-B systems implementation due to recent implementation of conventional surveillance systems	Lack of ADS-B implementation in general aviation, and old commercial fleet	Lack of procedures	Lack of inspector s with appropriate capability
2. Implementation of Multilateration	Facilities of remote stations. Establishment of communications networks	NIL	NIL	Lack of inspector s with appropriate capability
3. Automation system (Presentation)	Lack of any automation functionality	NIL	NIL	NIL

8. ASBU B0-84/ASUR: Performance Monitoring and Measurement 8A. ASBU B0-84/ASUR: Implementation Monitoring	
Elements	**Performance Indicators / Supporting Metrics**

1. Implementation of ADS-B	Indicator: Percentage of international aerodromes with ADS-B implemented Supporting metric: Number of ADS-B implemented
2. Implementation of Multilateration	Indicator: Percentage of Multilateration system implemented Supporting metric: Number of Multilateration system implemented
3. Automation system (Presentation)	Indicator: Percentage of ATS units with automation system implemented Supporting metric: Number of automation system implemented in ATS units
8. ASBU B0-84/ASUR: Performance Monitoring and Measurement 8B. ASBU B0-84/ASUR: Performance Monitoring	
Key Performance Areas	**Metrics (if not, indicate qualitative benefits)**
Access & Equity	N/A
Capacity	Typical separation minima are 3 NM or 5 NM enabling an increase in traffic density compared to procedural minima. TMA surveillance performance improvements are achieved through high accuracy, better velocity vector and improved coverage.
Efficiency	N/A
Environment	N/A
Safety	Reduction of the number of major incidents. Support to search and rescue

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-102/SNET
Increased Effectiveness of Ground-based Safety Nets

Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM

3. ASBU B0-102/SNET: Impact on Main Key Performance Areas (KPA)

	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	**N**	**N**	**NN**	**N**	**Y**

4. ASBU B0-102/SNET: Planning Targets and Implementation Progress

5. Elements	6. Targets and Implementation Progress (Ground and Air)
1. Short Term Conflict Alert (STCA)	June 2014 / Service provider 2013-2018
2. Area Proximity Warning (APW)	June 2014 / Service provider 2013-2018
3. Minimum Safe Altitude Warning (MSAW)	June 2014
4. Dangerous Area Infringement Warning (DAIW)	2013-2018

7. ASBU B0-102/SNET: Implementation Challenges

Elements	Implementation Area			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. Short Term Conflict Alert (STCA)	NIL Funding	NIL	NIL	NIL
2. Area Proximity Warning (APW)	NIL Funding	NIL	NIL	NIL
3. Minimum Safe Altitude Warning (MSAW)	NIL Funding	NIL	NIL	NIL
4. Dangerous Area Infringement Warning	Funding			

(DAIW)				

8. ASBU B0-102/SNET: Performance Monitoring and Measurement 8A. ASBU B0-102/SNET: Implementation Monitoring	
Elements	**Performance Indicators / Supporting Metrics**
1. Short Term Conflict Alert (STCA)	Indicator: Percentage of ATS units with ground-based safety nets (STCA) implemented Supporting metric: Number of safety net (STCA) implemented
2. Area Proximity Warning (APW)	Indicator: Percentage of ATS units with ground-based safety nets (APW)implemented Supporting metric: Number of safety net (APW)implemented
3. Minimum Safe Altitude Warning (MSAW)	Indicator: Percentage of ATS units with ground-based safety nets (MSAW) implemented Supporting metric: Number of safety net (MSAW) implemented
4. Dangerous Area Infringement Warning (DAIW)	Indicator: Percentage of ATS units with ground-based safety nets (DAIW) implemented Supporting metric: Number of safety net (DAIW) implemented

8. ASBU B0-102/SNET: Performance Monitoring and Measurement 8B. ASBU B0-102/SNET CAS: Performance Monitoring	
Key Performance Areas	**Metrics (if not, indicate qualitative benefits)**
Access & Equity	N/A
Capacity	N/A
Efficiency	N/A
Environment	N/A
Safety	Significant reduction of the number of major incidents

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-05/CDO Improved Flexibility and Efficiency in Descent Profiles: Continuous Descent Operations (CDO) Performance Improvement Area 4: Efficient Flight Path – Through Trajectory-based Operations					
3. ASBU B0-05/CDO: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	**N**	**N**	**Y**	**N**	**NY**

4. ASBU B0-05/CDO: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and Implementation Progress (Ground and Air)**
1. CDO implementation	December 2017
2. PBN STARs implementation	December 2017

7. ASBU B0-05/CDO: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. CDO implementation	The ground trajectory calculation function will	CDO Function	LOAs and Training	In accordance with applicable requirements

	need to able upgraded			
2. PBN STARs implementation	Airspace Design	NIL	LOAs and Training	

8. ASBU B0-05/CDO: Performance Monitoring and Measurement 8A. ASBU B0-05/CDO: Implementation Monitoring	
Elements	**Performance Indicators / Supporting Metrics**
1. CDO implementation	Indicator: Percentage of international aerodromes/TMAs with CDO implemented Supporting metric: Number of international aerodromes/TMAs with CDO implemented
2. PBN STARs implementation	Indicator: Percentage of international aerodromes with PBN STARs implementation Supporting metric: Number of international airport with PBN STARs implementation

8. ASBU B0-05/CDO: Performance Monitoring and Measurement 8B. ASBU B0-05/CDO: Performance Monitoring	
Key Performance Areas	**Metrics (if not , indicate qualitative benefits)**
Access & Equity	N/A
Capacity	Increased Terminal Airspace Capacity N/A
Efficiency	Cost savings through reduced fuel burn. Reduction in the number of required radio transmissions.
Environment	Reduced emissions as a result of reduced fuel burn.
Safety	More consistent flight paths and stabilized approach. Reduction in the number of incidence of controlled flight into terrain (CFIT)

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-20/CCO Improved Flexibility and Efficiency in Departure Profiles: Continuous Climb Operations (CCO) Performance Improvement Area 4: Efficient Flight Path – Through Trajectory-based Operations					
3. ASBU B0-20/CCO: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	**Y**	**NY**	**Y**	**NY**	**NY**
4. ASBU B0-20/CCO: Planning Targets and Implementation Progress					
5. Elements	**6. Targets and Implementation Progress (Ground and Air)**				

1. CCO implementation	December 2017
2. PBN SIDs implementation	December 2017

7. ASBU B0-20/CCO: Implementation Challenges

Elements	Implementation Area			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. CCO implementation	NIL	NIL		In accordance with applicable requirements
2. PBN SIDs implementation	Airspace Design	NIL		Approvals of procedures

8. ASBU B0-20/CCO: Performance Monitoring and Measurement
8A. ASBU B0-20/CCO: Implementation Monitoring

Elements	Performance Indicators / Supporting Metrics
1. CCO implementation	Indicator: Percentage of international aerodromes with CCO implemented Supporting metric: Number of international airports with CCO implemented
2. PBN SIDs implementation	Indicator: Percentage of international aerodromes with PBN SIDs implemented Supporting metric: Number of international airports with PBN SIDs implemented

8. ASBU B0-20/CCO: Performance Monitoring and Measurement
8B. ASBU B0-20/CCO: Performance Monitoring

Key Performance Areas	Metrics (if not , indicate qualitative benefits)
Access & Equity	…
Capacity	Increased Terminal Airspace Capacity
Efficiency	Cost savings through reduced fuel burn and efficient aircraft operating profiles. Reduction in the number of required radio transmissions.
Environment	Authorization of operations where noise limitations would otherwise result in operations being curtailed or restricted. Environmental benefits through reduced emissions.
Safety	More consistent flight paths. Reduction in the number of required radio transmissions. Lower pilot and air traffic control workload.

2. REGIONAL /NATIONAL PEROFRMANCE OBJECTIVE – B0-40/TBO
Improved Safety and Efficiency through the initial application of Data Link en-Route

Performance Improvement Area 4: Efficient Flight Path – Through Trajectory-based Operations

3. ASBU B0-40/TBO: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	**Capacity**	**Efficiency**	**Environment**	**Safety**
Applicable	**N**	**Y**	**Y**	**Y**	**Y**

4. ASBU B0-40/TBO: Planning Targets and Implementation Progress	
5. Elements	**6. Targets and Implementation Progress (Ground and Air)**
1. ADS-C over oceanic and remote areas	June 2018 – Service provider
2. Continental CPDLC	June 2018 – Service provider

7. ASBU B0-40/TBO: Implementation Challenges				
Elements	**Implementation Area**			
	Ground System Implementation	**Avionics Implementation**	**Procedures Availability**	**Operational Approvals**
1. ADS-C over oceanic and remote areas	Funding and limited link service provider and infrastructure	Implementation of ADS-C in general aviation pending	Implementation of GOLD procedures pending	Lack of duly trained inspectors for approval of operations
2. Continental CPDLC	Funding and limited link service provider and infrastructure	Implementation of CPDLC in general aviation pending	Implementation of GOLD procedures pending	Lack of duly trained inspectors for approval of operations

8. ASBU B0-40/TBO: Performance Monitoring and Measurement 8A. ASBU B0-40/TBO: Implementation Monitoring	
Elements	**Performance Indicators / Supporting Metrics**
1. ADS-C over oceanic and remote areas	Indicator: Percentage of FIRs with ADS-C implemented Supporting metric: Number of ADS-C approved procedures over oceanic and remote areas
2. Continental CPDLC	Indicator: Percentage of CPDLC implemented Supporting metric: Number of CPDLC approved procedures over continental? areas

8. ASBU B0-40/TBO: Performance Monitoring and Measurement 8B. ASBU B0-40/TBO: Performance Monitoring	
Key Performance Areas	**Metrics (if not, indicate qualitative benefits)**
Access & Equity	N/A
Capacity	Number of aircrafts in a defined airspace for a period of time
Efficiency	Kilogrammes of fuel saved per flight. Reduction of separation
Environment	Reduced emission as a result of reduced fuel burn
Safety	ADS-C based safety nets supports cleared level adherence monitoring, route adherence monitoring, danger area infringement warning and improved search and rescue. Reduced occurrences of misunderstandings; solution to stuck microphone situations. Increased situational awareness

Appendix B - Main Planning Table Template

	Objectives					Priorities and targets			Reference
Block	ASBU modules and elements Enablers	Performance Improvement Area	Applicable or not in AFI Yes/No)	Regional planning elements	Enablers	Priority allocated in AFI	Target(s) in AFI	Indicator(s) / Metric(s)	Supporting Planning Document (ANRF, other)

AFI ANP VOLUME III

PART II – AIR NAVIGATION SYSTEM IMPLEMENTATION

1. INTRODUCTION

1.1 The planning and implementation of the ICAO Aviation System Block Upgrades (ASBUs) should be undertaken within the framework of the AFI Planning and Implementation Regional Group (APIRG) with the participation and support of all stakeholders, including regulatory personnel.

1.2 The ASBU Blocks and Modules adopted by the Africa-Indian Ocean Region (AFI Region) should be followed in accordance with the specific ASBU requirements to ensure global interoperability and harmonization of air traffic management. The APIRG should determine the ASBU Block Upgrade Modules, which best provide the needed operational improvements in the ICAO AFI Region.

2. ICAO AFI AIR NAVIGATION OBJECTIVES, PRIORITIES AND TARGETS

2.1 In accordance with Recommendation 6/1 of the Twelfth Air Navigation Conference (AN-Conf/12), PIRGs are requested to establish priorities and targets for air navigation, in line with the ASBU methodology.

2.2 The achievement of the intended benefits along each routing or within each area of affinity is entirely dependent on the coordinated implementation of the required elements by all provider and user stakeholders concerned.

2.3 Considering that some of the block upgrade modules contained in the GANP are specialized packages that may be applied where specific operational requirements or corresponding benefits exist, States and PIRGs should clarify how each Block Upgrade module would fit into the national and regional plans.

2.4 As Block 0 modules in many cases provide the foundation for future development, all Block 0 modules should be assessed, as appropriate, for early implementation by States in accordance with their operational needs.

2.5 In establishing and updating the AFI Region air navigation plan, the APIRG and States should give due consideration to the safety priorities set out in the Global Aviation Safety Plan (GASP) and AFI Region safety strategy.

2.6 States in the AFI Region through the APIRG should establish their own air navigation objectives, priorities and targets to meet their individual needs and circumstances in line with the global and regional air navigation objectives, priorities and targets.

3. MONITORING OF ASBU MODULES IMPLEMENTATION

3.1 The monitoring of air navigation performance and its enhancement should be carried out through identification of relevant air navigation Metrics and Indicators as well as the adoption and attainment of air navigation system Targets.

3.2 The monitoring of the regional implementation progress and performance metrics/indicators should be done for all elements planned by APIRG. The monitoring should allow global correlation of status and expectations, appreciation of benefits achieved for the airspace users, as well as corrective actions to be taken by the PIRG on implementation plans.

3.3 The APIRG should determine appropriate mechanisms and tools for the monitoring and the collection of necessary data at national and regional levels.

3.4 On the basis of operational requirements and taking into consideration the associated benefits, AFI Region has prioritized the implementation of Block '0' Modules as reflected in the Table below and will also monitor and support implementation.

APPENDIX
B0 – DATM: Service Improvement through Digital Aeronautical Information Management

Description and purpose

The initial introduction of digital processing and management of information, through aeronautical information service (AIS)/aeronautical information management (AIM) implementation, use of aeronautical information exchange model (AIXM), migration to electronic aeronautical information publication (AIP) and better quality and availability of data.

Applicability

Applicable at State level, to all States

Scope

The Global Air Traffic Management Operational Concept presented in ICAO Doc 9854 depends upon a System Wide Information Management (SWIM). The management, utilization and transmission of data and information are vital to the proper functioning of the ATM system and are at the core of air navigation services.

As part of SWIM, AIM is required to support evolving requirements for, inter alia, collaborative decision making (CDM), performance-based navigation (PBN), ATM system interoperability, network-centred information exchange, and to take advantage of improved aircraft capabilities.

In the short- to medium-term, the focus is on the continuing transition of the services provided by aeronautical information services (AIS) from a product-centred, paper-based and manually transacted focus to a digitally-enabled, network-centred and service-oriented aeronautical information management (AIM) focus. AIM envisages a migration to a data centric environment where aeronautical data will be provided in a digital form and in a managed way. This can be regarded as the first step of SWIM implementation, which is based on common data models and data exchange formats. The next (long-term) SWIM step implies the re-thinking of the data services in terms of a "network" perspective.
The transition to AIM requires that all aeronautical information, including that currently held in AIP be stored as individual digital standardized data sets to be accessed by user applications. The distribution of these data sets will both enhance the quality of output and ultimately provide a platform for new applications. This will constitute the future integrated aeronautical information package that will contain the minimum regulatory requirement to ensure the flow of information necessary for the safety, regularity and efficiency of international air navigation.

The transition from AIS to AIM will have to, inter-alia:

a) support or facilitate the generation and distribution of aeronautical information which serves to improve the safe and cost-effective accessibility of air traffic services in the world;
b) provide a foundation for measuring performance and outcomes linked to the distribution of quality assured aeronautical information and a better understanding of the determinants of ATM, safety and effectiveness not related to the distribution of the information; and
c) ensure, to the greatest extent possible, that solutions are internationally harmonized and integrated and do not unnecessarily impose multiple equipment carriage requirements for aircraft or multiple systems on the ground.

AIM requires all aeronautical information to be stored as datasets that can be accessed by user applications. The establishment and maintenance of an Integrated Aeronautical Information Database where datasets are integrated

and used to produce current and future AIS/AIM products and services is a fundamental step in the transition to AIM.

Expected performance benefits

Access/Equity : N/A

Capacity : N/A

Efficiency : Reduced costs in terms of data inputs and checks, paper and post, especially when considering the overall data chain, from originators, through AIS to the end users

Environment : Reducing the time necessary to promulgate information concerning airspace status will allow for more effective airspace utilization and allow improvements in trajectory management

Safety: Reduction in the number of possible inconsistencies. Module allows reducing the number of manual entries and ensures consistency among data through automatic data checking based on commonly agreed business rules.

B0-DATM Implementation Roadblocks/Issues/Challenges

- Lack of electronic Database.
- Lack of electronic access based on Internet protocol services.
- Lack of procedures to allow airlines provide digital AIS data to on-board devices, in particular electronic flight bags (EFBs).
- Lack of training for AIS/AIM personnel

(List from ASBU Document, to be reviewed/customized by the Regions)

B0-DATM Elements/KPIs/Metrics

B0 – DATM: Service Improvement through Digital Aeronautical Information Management		
Element	**Key Performance Indicators**	**Supporting Metrics**
1-AIXM	% of States that have implemented an AIXM-based Integrated Aeronautical Information Database (IAID)	Number of States that have implemented an AIXM-based Integrated Aeronautical Information Database (IAID)
2-eAIP	% of States that have implemented an IAID driven AIP Production (eAIP)	Number of States that have implemented an IAID driven AIP Production (eAIP)
3-QMS	% of States that have implemented QMS for AIS/AIM	Number of States that have implemented QMS for AIS/AIM
4-WGS-84	% of States that have implemented WGS-84 as horizontal reference system	Number of States that have implemented WGS-84 as horizontal reference system
	% of States that have published the WGS-84 Geoid Undulation, in accordance with Annex 4 and Annex 15 provisions	Number of States that have published the WGS-84 Geoid Undulation, in accordance with Annex 4 and Annex 15 provisions
5-eTOD	% of States that have implemented	Number of States that have

	required Terrain datasets	implemented required Terrain datasets
	% of States that have implemented required Obstacle datasets	Number of States that have implemented required Obstacle datasets
6-Digital NOTAM*	Plan for the implementation of Digital NOTAM	

B0-DATM Enablers/Tables

In order to assist States in the planning for the transition from AIS to AIM in an expeditious manner, the following Tables, which provide more details than the standard ANRF, should be used:

1- **Table B0-DATM 3-1** sets out the requirements for the Provision of AIS/AIM products and services based on the Integrated Aeronautical Information Database (IAID). It reflects the transition from the current product centric AIS to data centric AIM. For the future digital environment it is important that the authoritative databases are clearly designated and such designation must be published for the users. This is achieved with the concept of the Integrated Aeronautical Information Database (IAID), a single access point for one or more authoritative databases (AIS, Terrain, Obstacles, AMDB, etc) for which the State is responsible. This Table will be used for the monitoring of the Key Performance Indicators (KPIs) related to elements Nr. 1 and 2 of the Module B0-DATM.

2- **Table B0-DATM 3-2** sets out the requirements for aeronautical data quality. It will be used for the monitoring of the Key Performance Indicators (KPIs) related to the element Nr. 3 of the Module B0-DATM.

3- **Table B0-DATM 3-3** sets out the requirements for the implementation of the World Geodetic System – 1984 (WGS-84).The requirement to use a common geodetic system remains essential to facilitate the exchange of data between different systems. The expression of all coordinates in the AIP and charts using WGS-84 is an important first step for the transition to AIM. This Table will be used for the monitoring of the Key Performance Indicators (KPIs) related to the element Nr. 4 of the Module B0-DATM.

4- **Table B0-DATM 3-4-1** sets out the requirements for the provision of Terrain and Obstacle data sets for Area 1 and Area 4. It will be used for the monitoring of the Key Performance Indicators (KPIs) related to the element Nr. 5 of the Module B0-DATM.

5- **Table B0-DATM 3-4-2** sets out the requirements for the provision of Terrain and Obstacle data sets for Area 2. It will be used for the monitoring of the Key Performance Indicators (KPIs) related to the element Nr. 5 of the Module B0-DATM.

6- **Table B0-DATM 3-4-3** sets out the requirements for the provision of Terrain and Obstacle data sets for Area 3 and implementation of Airport Mapping Databases (AMDB). It will be used for the monitoring of the Key Performance Indicators (KPIs) related to the element Nr. 5 of the Module B0-DATM.

Table B0-DATM 3-1

Provision of AIS/AIM products and services based on the Integrated Aeronautical Information Database (IAID)

EXPLANATION OF THE TABLE

Column:

8 Name of the State or territory for which the provision of AIS/AIM products and services based on the IAID is required.

9 Requirement for the implementation and designation of the authoritative IAID, shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not Implemented

Note 1 — The IAID of a State is a single access point for one or more databases (AIS, Terrain, Obstacles, AMDB, etc). The minimum set of databases which should be integrated is defined in Annex 15.

Note 2 — Information providing detail of "PI" should be given in the Remarks column (the implemented components of the IAID).

Note 3 — The information related to the designation of the authoritative IAID should be published in the AIP (GEN 3.1)

10 Requirement for an IAID driven AIP production, shown by:
- FC – Fully compliant (eAIP: Text, Tables and Charts)
- PC – Partially compliant
- NC – Not compliant

Note 4 — AIP production includes, production of AIP, AIP Amendments and AIP Supplements

11 Requirement for an IAID driven NOTAM production, shown by:
- FC – Fully Compliant
- NC – Not compliant

12 Requirement for an IAID driven SNOWTAM production, shown by:
- FC – Fully Compliant
- NC – Not compliant

13 Requirement for an IAID driven PIB production, shown by:
- FC – Fully compliant
- NC – Not compliant

14 Requirement for Charting systems to be interoperable with the IAID, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

15 Requirement for Procedure design systems to be interoperable with the IAID, shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not Implemented

Note 5 — full implementation includes the use of the IAID for the design of the procedures and for the storage of the encoded procedures in the IAID

16 Requirement for ATS systems to be interoperable with the IAID, shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not Implemented

17 Action Plan — short description of the State's Action Plan with regard to the provision of AIM products and services based on the IAID, especially for items with a "PC", "PI", "NC" or "NI" status, including planned date(s) of full compliance, as appropriate.

18 Remarks — additional information, including detail of "PC", "NC", "PI" and "NI", as appropriate.

TABLE B0-DATM-3-1

Provision of AIS/AIM products and services based on the Integrated Aeronautical Information Database (IAID)

	IAID	AIP	NOTAM	SNOWTAM	PIB	Charting	Procedure Design	ATS	Action Plan	Remarks
1	**2**	**3**	**4**	**5**	**6**	7	8	9	10	11
Angola										
Benin	PI	FC	FC	-	FC	FC	FI	FI	FC	By ASECNA
Burkina Faso	PI	FC	FC	-	FC	FC	FI	FI	FC	By ASECNA
Botswana										
Burundi										
Cameroon	PI	FC	FC	-	FC	FC	FI	FI	FC	By ASECNA
Cape Verde										
Central African Republic	PI	FC	FC	-	FC	FC	FI	FI	FC	By ASECNA
Chad	PI	FC	FC	-	FC	FC	FI	FI	FC	By ASECNA
Comoros	PI	FC	FC	-	FC	FC	FI	FI	FC	By ASECNA
Congo	PI	FC	FC	-	FC	FC	FI	FI	FC	By ASECNA
Cote d'Ivoire	PI	FC	FC	-	FC	FC	FI	FI	FC	By ASECNA
Democratic Republic of Congo										
Djibouti										
Equatorial Guinea	PI	FC	FC	-	FC	FC	FI	FI	FC	By ASECNA
Eritrea										
Ethiopia										
Gabon	PI	FC	FC	-	FC	FC	FI	FI	FC	By ASECNA
Gambia										
Ghana										
Guinea										
Guinea Bissau	PI	FC	FC	-	FC	FC	FI	FI	FC	By ASECNA
Kenya										
Liberia										
Lesotho										
Madagascar	PI	FC	FC	-	FC	FC	FI	FI	FC	By ASECNA
Malawi										

Mali	PI	FC	FC	-	FC	FC	FI	FI	FC	By ASECNA
Mauritania	PI	FC	FC	-	FC	FC	FI	FI	FC	By ASECNA
Mauritius										
Mozambique										
Namibia										
Niger	PI	FC	FC	-	FC	FC	FI	FI	FC	By ASECNA
Nigeria										
Rwanda										
Sao Tome and Principe										
Senegal	PI	FC	FC	-	FC	FC	FI	FI	FC	By ASECNA
Seychelles										
Sierra Leone										
Somalia										
South Africa										
South Sudan										
Sudan										
Swaziland										
Togo	PI	FC	FC	-	FC	FC	FI	FI	FC	By ASECNA
Uganda										
United Republic of Tanzania										
Zambia										
Zimbabwe										

Table B0-DATM-3-2

Aeronautical Data Quality

EXPLANATION OF THE TABLE

Column:

1 Name of the State or territory.

2 Compliance with the requirement for implementation of QMS for Aeronautical Information Services including safety and security objectives, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

3 Compliance with the requirement for the establishment of formal arrangements with approved data originators concerning aeronautical data quality, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

4 Implementation of digital data exchange with originators, shown by:
- FI – Implemented
- PI – Partially Implemented
- NI – Not implemented

Note 1 — Information providing detail of "PI" and "NI" should be given in the Remarks column (percentage of implementation).

5 Compliance with the requirement for metadata, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

6 Compliance with the requirements related to aeronautical data quality monitoring (accuracy, resolution, timeliness, completeness), shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

7 Compliance with the requirements related to aeronautical data integrity monitoring, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

8 Compliance with the requirements related to the AIRAC adherence, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

9 Action Plan — short description of the State's Action Plan with regard to aeronautical data quality requirements implementation, especially for items with a "PC", "PI", "NC" or "NI" status, including planned date(s) of full compliance, as appropriate.

10 Remarks — additional information, including detail of "PC", "NC", "PI" and "NI", as appropriate.

TABLE B0-DATM-3-2
Aeronautical Data Quality

State	QMS	Establishment of formal agreements	Digital data exchange with originators	Metadata	Data quality monitoring	Data integrity monitoring	AIRAC adherence	Action Plan	Remarks
1	**2**	**3**	**4**	**5**	**6**	7	8	9	10
Angola									
Benin	**FC**	**PC**	**NI**	**FC**	**FC**	FC	FC	FC	By ASECNA
Burkina Faso	**FC**	**PC**	**NI**	**FC**	**FC**	FC	FC	FC	By ASECNA
Botswana									
Burundi									
Cameroon	**FC**	**PC**	**NI**	**FC**	**FC**	FC	FC	FC	By ASECNA
Cape Verde									
Central African Republic	**FC**	**PC**	**NI**	**FC**	**FC**	FC	FC	FC	By ASECNA
Chad	**FC**	**PC**	**NI**	**FC**	**FC**	FC	FC	FC	By ASECNA
Comoros	**FC**	**PC**	**NI**	**FC**	**FC**	FC	FC	FC	By ASECNA
Congo	**FC**	**PC**	**NI**	**FC**	**FC**	FC	FC	FC	By ASECNA
Cote d'Ivoire	**FC**	**PC**	**NI**	**FC**	**FC**	FC	FC	FC	By ASECNA
Democratic Republic of Congo									
Djibouti									
Equatorial Guinea	**FC**	**PC**	**NI**	**FC**	**FC**	FC	FC	FC	By ASECNA
Eritrea									
Ethiopia									
Gabon	**FC**	**PC**	**NI**	**FC**	**FC**	FC	FC	FC	By ASECNA
Gambia									
Ghana									
Guinea									
Guinea Bissau	**FC**	**PC**	**NI**	**FC**	**FC**	FC	FC	FC	By ASECNA
Kenya									
Liberia									
Lesotho									

State	QMS	Establishment of formal agreements	Digital data exchange with originators	Metadata	Data quality monitoring	Data integrity monitoring	AIRAC adherence	Action Plan	Remarks
Madagascar	**FC**	**PC**	**NI**	**FC**	**FC**	FC	FC	FC	By ASECNA
Malawi									
Mali	**FC**	**PC**	**NI**	**FC**	**FC**	FC	FC	FC	By ASECNA
Mauritania	**FC**	**PC**	**NI**	**FC**	**FC**	FC	FC	FC	By ASECNA
Mauritius									
Mozambique									
Namibia									
Niger	**FC**	**PC**	**NI**	**FC**	**FC**	FC	FC	FC	By ASECNA
Nigeria									
Rwanda									
Sao Tome and Principe									
Senegal	**FC**	**PC**	**NI**	**FC**	**FC**	FC	FC	FC	By ASECNA
Seychelles									
Sierra Leone									
Somalia									
South Africa									
South Sudan									
Sudan									
Swaziland									
Togo	**FC**	**PC**	**NI**	**FC**	**FC**	FC	FC	FC	By ASECNA
Uganda									
United Republic of Tanzania									
Zambia									
Zimbabwe									

Table B0-DATM-3-3

World Geodetic System-1984 (WGS-84)

EXPLANATION OF THE TABLE

Column:

1 Name of the State or territory for which implementation of WGS-84 is required.

2 Compliance with the requirements for implementation of WGS-84 for FIR and Enroute points, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

3 Compliance with the requirements for implementation of WGS-84 for Terminal Areas (arrival, departure and instrument approach procedures), shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

4 Compliance with the requirements for implementation of WGS-84 for Aerodrome, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

5 Compliance with the requirements for implementation of Geoid Undulation, shown by:
- FC – Fully compliant
- PC – Partially compliant
- NC – Not compliant

6 Action Plan — short description of the State's Action Plan with regard to WGS-84 implementation, especially for items with a "PC", "PI", "NC" or "NI" status, including planned date(s) of full compliance, as appropriate.

7 Remarks — additional information, including detail of "PC" and "NC", as appropriate.

TABLE B0-DATM-3-3
World Geodetic System-1984 (WGS-84)

State	FIR/ENR	Terminal	AD	GUND	Chapter 1 Action Plan	Chapter 2 Remarks
1	2	3	4	5	Chapter 3 6	Chapter 4 7
Angola						
Benin	**FC**	**FC**	**FC**	**FC**	**FC**	By ASECNA
Burkina Faso	**FC**	**FC**	**FC**	**FC**	**FC**	**FC**
Botswana						
Burundi						
Cameroon	**FC**	**FC**	**FC**	**FC**	**FC**	**FC**
Cape Verde						
Central African Republic	**FC**	**FC**	**FC**	**FC**	**FC**	**FC**
Chad	**FC**	**FC**	**FC**	**FC**	**FC**	**FC**
Comoros	**FC**	**FC**	**FC**	**FC**	**FC**	**FC**
Congo	**FC**	**FC**	**FC**	**FC**	**FC**	**FC**
Cote d'Ivoire	**FC**	**FC**	**FC**	**FC**	**FC**	**FC**
Democratic Republic of Congo						
Djibouti						
Equatorial Guinea	**FC**	**FC**	**FC**	**FC**	**FC**	**FC**
Eritrea						
Ethiopia						
Gabon	**FC**	**FC**	**FC**	**FC**	**FC**	**FC**
Gambia						
Ghana						
Guinea						
Guinea Bissau	**FC**	**FC**	**FC**	**FC**	**FC**	**FC**
Kenya						
Liberia						
Lesotho						
Madagascar	**FC**	**FC**	**FC**	**FC**	**FC**	**FC**
Malawi						

State	FIR/ENR	Terminal	AD	GUND	Chapter 1 Action Plan	Chapter 2 Remarks
1	2	3	4	5	Chapter 3 6	Chapter 4 7
Mali	FC	FC	FC	FC	FC	FC
Mauritania	FC	FC	FC	FC	FC	FC
Mauritius						
Mozambique						
Namibia						
Niger	FC	FC	FC	FC	FC	FC
Nigeria						
Rwanda						
Sao Tome and Principe						
Senegal	FC	FC	FC	FC	FC	FC
Seychelles						
Sierra Leone						
Somalia						
South Africa						
South Sudan						
Sudan						
Swaziland						
Togo	FC	FC	FC	FC	FC	FC
Uganda						
United Republic of Tanzania						
Zambia						
Zimbabwe						

Table B0-DATM-3-4-1
Provision of Terrain and Obstacle data sets for Areas 1 and 4

EXPLANATION OF THE TABLE

Column

1 Name of the State or territory for which Terrain and Obstacle data sets for Areas 1 and 4 are required.

2 Compliance with requirement for the provision of Terrain data sets for Area 1, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant

3 Compliance with requirement for the provision of Terrain data sets for Area 4, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant

4 Compliance with requirement for the provision of Obstacle data sets for Area 1, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant

5 Compliance with requirement for the provision of Obstacle data sets for Area 4, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant

6 Action plan — short description of the State's Action Plan with regard to compliance with the requirements for provision of Terrain and Obstacle data sets for Areas 1 and 4, especially for items with a "PC" or "NC" status, including planned date(s) of full compliance, as appropriate.

7 Remarks— additional information, including detail of "PC" and "NC", as appropriate.

TABLE B0-DATM-3-4-1
Provision of Terrain and Obstacle data sets for Areas 1 and 4

State	Terrain data sets		Obstacle data sets		Action Plan	Remarks
	Area 1	Area 4	Area 1	Area 4		
1	2	3	4	5	6	7
Angola						
Benin	NC	NC	NC	NC	FC	ASECNA PLAN FOR 2015/2017
Burkina Faso	NC	NC	NC	NC	FC	ASECNA PLAN FOR 2015/2017
Botswana						
Burundi						
Cameroon	NC	NC	NC	NC	FC	ASECNA PLAN FOR 2015/2017
Cape Verde						
Central African Republic	NC	NC	NC	NC	FC	ASECNA PLAN FOR 2015/2017
Chad	NC	NC	NC	NC	FC	ASECNA PLAN FOR 2015/2017
Comoros	NC	NC	NC	NC	FC	ASECNA PLAN FOR 2015/2017
Congo	NC	NC	NC	NC	FC	ASECNA PLAN FOR 2015/2017
Cote d'Ivoire	NC	NC	NC	NC	FC	ASECNA PLAN FOR 2015/2017
Democratic Republic of Congo						
Djibouti						
Equatorial Guinea	NC	NC	NC	NC	FC	ASECNA PLAN FOR 2015/2017
Eritrea						
Ethiopia						
Gabon	NC	NC	NC	NC	FC	ASECNA PLAN FOR 2015/2017
Gambia						
Ghana						
Guinea						
Guinea Bissau	NC	NC	NC	NC	FC	ASECNA PLAN FOR 2015/2017
Kenya						
Liberia						
Lesotho						
Madagascar	NC	NC	NC	NC	FC	ASECNA PLAN FOR 2015/2017

State	Terrain data sets		Obstacle data sets		Action Plan	Remarks
	Area 1	Area 4	Area 1	Area 4		
1	2	3	4	5	6	7
Malawi						
Mali	NC	NC	NC	NC	FC	ASECNA PLAN FOR 2015/2017
Mauritania	NC	NC	NC	NC	FC	ASECNA PLAN FOR 2015/2017
Mauritius						
Mozambique						
Namibia						
Niger	NC	NC	NC	NC	FC	ASECNA PLAN FOR 2015/2017
Nigeria						
Rwanda						
Sao Tome and Principe						
Senegal	NC	NC	NC	NC	FC	ASECNA PLAN FOR 2015/2017
Seychelles						
Sierra Leone						
Somalia						
South Africa						
South Sudan						
Sudan						
Swaziland						
Togo	NC	NC	NC	NC	FC	ASECNA PLAN FOR 2015/2017
Uganda						
United Republic of Tanzania						
Zambia						
Zimbabwe						

Table B0-DATM-3-4-2
Provision of Terrain and Obstacle data sets for Area 2

EXPLANATION OF THE TABLE

Column

1 Name of the State or territory for which Terrain and Obstacle data sets for Area 2 are required.

2 Compliance with requirement for the provision of Terrain data sets for Area 2a, shown by:
- FC – Fully Compliant
- PC – Partially Compliant
- NC – Not Compliant

3 Compliance with requirement for the provision of Terrain data sets for Area 2b, shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not implemented
- N/A – Not Applicable

4 Compliance with requirement for the provision of Terrain data sets for Area 2c, shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not Implemented
- N/A – Not Applicable

5 Compliance with requirement for the provision of Terrain data sets for Area 2d, shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not Implemented
- N/A – Not Applicable

6 Compliance with requirement for the provision of Obstacle data sets for Area 2a, shown by:
- FC – Fully Compliant
- PC – Partially Compliant
- NC – Not Compliant

7 Compliance with requirement for the provision of Obstacle data sets for Area 2b, shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not implemented
- N/A – Not Applicable

8 Compliance with requirement for the provision of Obstacle data sets for Area 2c, shown by:
- FI – Fully Implemented
- PI – Partially Implemented
- NI – Not Implemented
- N/A – Not Applicable

9 Compliance with requirement for the provision of Obstacle data sets for Area 2d, shown by:

FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

10 Action plan — short description of the State's Action Plan with regard to compliance with the requirements for provision of Terrain and Obstacle data sets for Area 2, especially for items with a "PC", "PI", "NC" or "NI" status.

11 Remarks— additional information, including detail of "PC", "PI" and "NC", "NI", as appropriate.

TABLE B0-DATM-3-4-2
Provision of Terrain and Obstacle data sets for Area 2

State	Terrain data sets				Obstacle data sets				Action Plan	Remarks
	Area 2a	Area 2b	Area 2c	Area 2d	Area 2a	Area 2b	Area 2c	Area 2d		
1	2	3	4	5	6	7	8	9	10	11
Angola										
Benin	***NC***	NI	NI	NI	NC	NI	NI	NI	FC	ASECNA PLAN FOR 2015/2017
Burkina Faso	***NC***	NI	NI	NI	NC	NI	NI	NI	FC	ASECNA PLAN FOR 2015/2017
Botswana										
Burundi										
Cameroon	***NC***	NI	NI	NI	NC	NI	NI	NI	FC	ASECNA PLAN FOR 2015/2017
Cape Verde										
Central African Republic	***NC***	NI	NI	NI	NC	NI	NI	NI	FC	ASECNA PLAN FOR 2015/2017
Chad	***NC***	NI	NI	NI	NC	NI	NI	NI	FC	ASECNA PLAN FOR 2015/2017
Comoros	***NC***	NI	NI	NI	NC	NI	NI	NI	FC	ASECNA PLAN FOR 2015/2017
Congo	***NC***	NI	NI	NI	NC	NI	NI	NI	FC	ASECNA PLAN FOR 2015/2017
Cote d'Ivoire	***NC***	NI	NI	NI	NC	NI	NI	NI	FC	ASECNA PLAN FOR 2015/2017
Democratic Republic of Congo										
Djibouti										
Equatorial Guinea	***NC***	NI	NI	NI	NC	NI	NI	NI	FC	ASECNA PLAN FOR 2015/2017
Eritrea										
Ethiopia										
Gabon	***NC***	NI	NI	NI	NC	NI	NI	NI	FC	ASECNA PLAN FOR 2015/2017

State	Terrain data sets				Obstacle data sets				Action Plan	Remarks
	Area 2a	Area 2b	Area 2c	Area 2d	Area 2a	Area 2b	Area 2c	Area 2d		
1	2	3	4	5	6	7	8	9	10	11
Gambia										
Ghana										
Guinea										
Guinea Bissau	***NC***	NI	NI	NI	NC	NI	NI	NI	FC	ASECNA PLAN FOR 2015/2017
Kenya										
Liberia										
Lesotho										
Madagascar	***NC***	NI	NI	NI	NC	NI	NI	NI	FC	ASECNA PLAN FOR 2015/2017
Malawi										
Mali	***NC***	NI	NI	NI	NC	NI	NI	NI	FC	ASECNA PLAN FOR 2015/2017
Mauritania	***NC***	NI	NI	NI	NC	NI	NI	NI	FC	ASECNA PLAN FOR 2015/2017
Mauritius										
Mozambique										
Namibia										
Niger	***NC***	NI	NI	NI	NC	NI	NI	NI	FC	ASECNA PLAN FOR 2015/2017
Nigeria										
Rwanda										
Sao Tome and Principe										
Senegal	***NC***	NI	NI	NI	NC	NI	NI	NI	FC	ASECNA PLAN FOR 2015/2017
Seychelles										
Sierra Leone										
Somalia										
South Africa										
South Sudan										
Sudan										
Swaziland										
Togo	***NC***	NI	NI	NI	NC	NI	NI	NI	FC	ASECNA PLAN FOR

State	Terrain data sets				Obstacle data sets				Action Plan	Remarks
	Area 2a	Area 2b	Area 2c	Area 2d	Area 2a	Area 2b	Area 2c	Area 2d		
1	2	3	4	5	6	7	8	9	10	11
										2015/2017
Uganda										
United Republic of Tanzania										
Zambia										
Zimbabwe										

Table B0-DATM-3-4-3
Provision of Terrain and Obstacle data sets for Area 3 and Airport Mapping Databases (AMDB)

EXPLANATION OF THE TABLE

Column

1 Name of the State or territory for which Terrain and Obstacle data sets for Area 3 and AMDB are required.

2 Compliance with requirement for the provision of Terrain data sets for Area 3, shown by:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

3 Compliance with requirement for the provision of Obstacle data sets for Area 3, shown by:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

4 Implementation of AMDB, shown by:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

5 Action plan — short description of the State's Action Plan with regard to compliance with the requirements for provision of Terrain and Obstacle data sets for Area 3 and AMDB implementation, especially for items with a "PC", "PI", "NC" or "NI" status.

6 Remarks— additional information, including detail of "PI" and "NI", as appropriate.

TABLE B0-DATM-3-4-3

Provision of Terrain and Obstacle data sets for Area 3 and Airport Mapping Databases (AMDB)

State	Terrain data sets (Area 3)	Obstacle data sets (Area 3)	AMDB	Action Plan	Remarks
1	2	3	4	5	6
Angola					
Benin	NI	NI	NI	FC	ASECNA PLAN FOR 2015/207
Burkina Faso	NI	NI	NI	FC	ASECNA PLAN FOR 2015/207
Botswana					
Burundi					
Cameroon	NI	NI	NI	FC	ASECNA PLAN FOR 2015/207
Cape Verde					
Central African Republic	NI	NI	NI	FC	ASECNA PLAN FOR 2015/207
Chad	NI	NI	NI	FC	ASECNA PLAN FOR 2015/207
Comoros	NI	NI	NI	FC	ASECNA PLAN FOR 2015/207
Congo	NI	NI	NI	FC	ASECNA PLAN FOR 2015/207
Cote d'Ivoire	NI	NI	NI	FC	ASECNA PLAN FOR 2015/207
Democratic Republic of Congo					
Djibouti					
Equatorial Guinea	NI	NI	NI	FC	ASECNA PLAN FOR 2015/207
Eritrea					
Ethiopia					
Gabon	NI	NI	NI	FC	ASECNA PLAN FOR 2015/207
Gambia					
Ghana					
Guinea					
Guinea Bissau	NI	NI	NI	FC	ASECNA PLAN FOR 2015/207
Kenya					
Liberia					
Lesotho					
Madagascar	NI	NI	NI	FC	ASECNA PLAN FOR 2015/207
Malawi					
Mali	NI	NI	NI	FC	ASECNA PLAN FOR 2015/207
Mauritania	NI	NI	NI	FC	ASECNA PLAN FOR 2015/207
Mauritius					
Mozambique					
Namibia					

State	Terrain data sets (Area 3)	Obstacle data sets (Area 3)	AMDB	Action Plan	Remarks
1	2	3	4	5	6
Niger	NI	NI	NI	FC	ASECNA PLAN FOR 2015/207
Nigeria					
Rwanda					
Sao Tome and Principe					
Senegal	NI	NI	NI	FC	ASECNA PLAN FOR 2015/207
Seychelles					
Sierra Leone					
Somalia					
South Africa					
South Sudan					
Sudan					
Swaziland					
Togo	NI	NI	NI	FC	ASECNA PLAN FOR 2015/207
Uganda					
United Republic of Tanzania					
Zambia					
Zimbabwe					
