TEMPLATE APPROVED BY THE COUNCIL
on 18 June 2014

AFRICA-INDIAN OCEAN (AFI) AIR NAVIGATION PLAN

VOLUME I

AFRICA-INDIAN OCEAN (AFI) AIR NAVIGATION PLAN

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 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 and Recommended Practices (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 regional requirements related to aerodrome and air navigation facilities and services to be implemented by States in accordance with regional air navigation agreements involving the relevant PIRG. 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 amendment of Volume III would not require approval by the Council (approval of Part II is under the responsibility of the relevant PIRG).

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 AFI 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 Africa-Indian Ocean 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 Offices 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 NAVIGATION FACILITY/SERVICE

7.1 The operation of multinational air navigation services is well established within the Africa-Indian Ocean 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 multinational 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 uploaded 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 it remains unresolved. 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 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.

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 (involving the relevant PIRG) 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 it remains unresolved. 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 7.4 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 organisations 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 corresponding 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 Africa-Indian Ocean 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.

1.2 A number of States within the ICAO Africa-Indian Ocean Region are members of one or more sub-regional groupings which have development plans to improve air navigation services; such plans contribute to the regional implementation of the ICAO *Global Air Navigation Plan* (GANP) (Doc 9750).

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 Africa-Indian Ocean Region. More details of the FIRs and UIRs within the Africa-Indian Ocean 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 (KPAs), 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

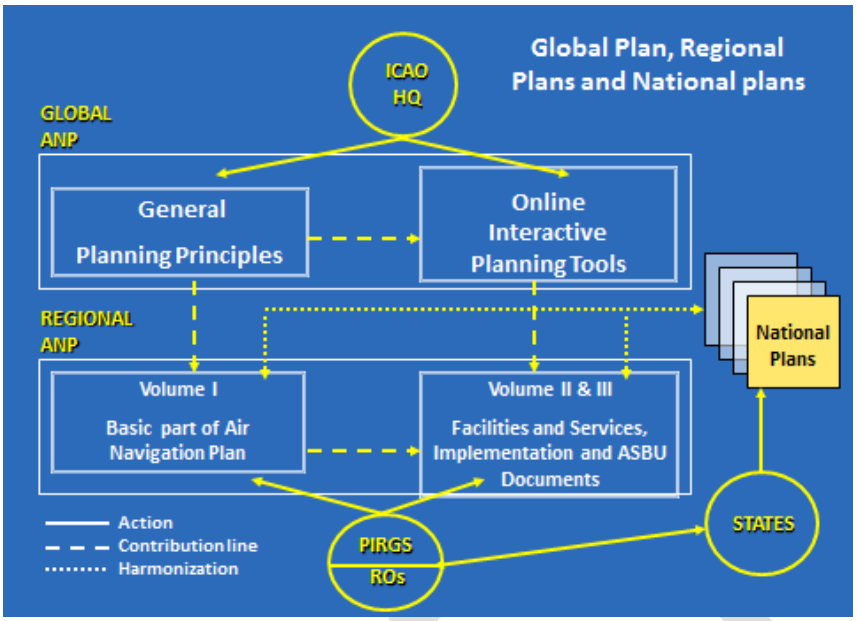


Figure 1. Relationship between global, regional and national plans.

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 guide 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."*[1]

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.

[1] Defined by the UK Institute of Personnel and Development

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; and

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 (English/French).

7.5 Adherence to the ICAO 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 the ICAO SARPs within their national regulations. States should also ensure that any differences to the 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.

DRAFT

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) IN THE AFI REGION

EXPLANATION OF TABLE

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

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STATE	FIR/UIR
1	**2**
Sierra Leone	Roberts
Somalia	Mogadishu
South Africa	Cape Town
	Johannesburg
	Johannesburg Oceanic
South Sudan	Khartoum
Swaziland	Johannesburg
Togo	Accra
Uganda	Entebbe
United Republic of Tanzania	Dar es Salaam
Zambia	Lusaka
Zimbabwe	Harare

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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 Africa-Indian Ocean Region and complements the provisions of ICAO SARPs and PANS 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 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 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 and Recommended Practices and Procedures for Air Navigation Services

1.4 The SARPs and PANS 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);

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 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

3.1 None.

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

Location Indicator	Name of City/Aerodrome	Designation
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

Location Indicator	Name of City/Aerodrome	Designation
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

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Location Indicator	Name of City/Aerodrome	Designation
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

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Location Indicator	Name of City/Aerodrome	Designation
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

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Location Indicator	Name of City/Aerodrome	Designation
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

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Location Indicator	Name of City/Aerodrome	Designation
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	CAPE TOWN/Cape Town	RS
FALE	DURBAN/King Shaka	RS
FAJS	JOHANNESBURG/O.R. Tambo	RS
FALA	LANSERIA/Lanseria	RS
FAMM	MAFIKENG/Mafikeng	AS
FANS	NELSPRUIT/Kruger Mpumalanga	RS

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Location Indicator	Name of City/Aerodrome	Designation
FAPP	POLOKWANE/Gateway	AS
FAPE	PORT ELIZABETH/Port Elizabeth	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

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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 Africa-Indian Ocean Region and complements the provisions of ICAO SARPs and PANS 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 Africa-Indian Ocean 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 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 and Recommended Practices and Procedures for Air Navigation Services

1.5 The SARPs and PANS 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);

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), supplemented, as necessary, by regional recommendations and technical criteria developed for this purpose.

3. SPECIFIC REGIONAL REQUIREMENTS

3.1 None.

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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 Africa-Indian Ocean region and complements the provisions of the ICAO SARPs and PANS 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 Africa-Indian Ocean 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 and the 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 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 and Recommended Practices and Procedures for Air Navigation Services

1.4 The SARPs and PANS 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** and **ATM I-2**, 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. Where applicable, details of the ATS routes within the Region 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 Offices 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 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

3.1 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 DGAC	**FIR/UIR ACCRA** *To be incorporated*	
ADDIS ABABA HAAA	**FIR/UIR ADDIS ABABA** *To be incorporated*	
ANTANANARIVO FMMM	**FIR/UIR ANTANANARIVO** *To be incorporated*	
ASMARA HHAA	**FIR/UIR ASMARA** *To be incorporated*	
BEIRA FQBE	**FIR/UIR BEIRA** *To be incorporated*	
BRAZZAVILLE FCCC	**FIR/UIR BRAZZAVILLE** *To be incorporated*	
BUJUMBURA HBBA	**FIR BUJUMBURA** *To be incorporated*	
CAPE TOWN FACA	**FIR/UIR CAPE TOWN** *To be incorporated*	
DAKAR GOOO	**FIR/UIR DAKAR** *To be incorporated*	

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FIR/UIR Location Indicator	Lateral limits coordinates	Remarks
1	2	3
DAR ES SALAAM HTDC	**FIR/UIR DAR ES SALAAM** *To be incorporated*	
ENTEBBE HUEC	**FIR/UIR ENTEBBE** *To be incorporated*	
GABORONE FBGR	**FIR/UIR GABORONE** *To be incorporated*	
HARARE FVHF	**FIR/UIR HARARE** *To be incorporated*	
JOHANNESBURG FAJA	**FIR/UIR JOHANNESBURG** *To be incorporated*	
JOHANNESBURG OCEANIC FAJO	**FIR/UIR JOHANNESBURG OCEANIC** *To be incorporated*	
KANO DNKK	**FIR/UIR KANO** *To be incorporated*	
KHARTOUM HSSS	**FIR/UIR KHARTOUM** *To be incorporated*	
KIGALI HRYR	**FIR KIGALI** *To be incorporated*	
KINSHASA FZAZ	**FIR/UIR KINSHASA** *To be incorporated*	
LILONGWE FWLL	**FIR/UIR LILONGWE** *To be incorporated*	
LUANDA FNLU	**FIR/UIR LUANDA** *To be incorporated*	
LUSAKA FLFI	**FIR/UIR LUSAKA** *To be incorporated*	
MAURITIUS FIMM	**FIR/UIR MAURITIUS** *To be incorporated*	
MOGADISHU HCSM	**FIR/UIR MOGADISHU** *To be incorporated*	

FIR/UIR Location Indicator	Lateral limits coordinates	Remarks
1	2	3
NAIROBI HKNA	**FIR/UIR NAIROBI** *To be incorporated*	
N'DJAMENA FTTT	**FIR/UIR N'DJAMENA** *To be incorporated*	
NIAMEY DRRR	**FIR/UIR NIAMEY** *To be incorporated*	
ROBERTS GLRB	**FIR/UIR ROBERTS** *To be incorporated*	
SAL OCEANIC GVSC	**FIR/UIR SAL** *To be incorporated*	
SEYCHELLES FSSS	**FIR/UIR SEYCHELLES** *To be incorporated*	
WINDHOEK FYWW	**FIR/UIR WINDHOEK** *To be incorporated*	

CHART ATM I-1 — FLIGHT INFORMATION REGIONS (FIR) IN THE AFI REGION

To be developed

DRAFT

CHART ATM I-2 — UPPER FLIGHT INFORMATION REGIONS (UIR) IN THE AFI REGION

To be developed

DRAFT

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 Africa-Indian Ocean Region and complements the provisions of the ICAO SARPs and PANS 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 Africa-Indian Ocean 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 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 and Recommended Practices and Procedures for Air Navigation Services

1.4 The SARPs and PANS and related guidance material applicable to the provision of MET are contained in:

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

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 Africa-Indian Ocean 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 Africa-Indian Ocean Region is detailed in Volume III.

2.2 In the Africa-Indian Ocean 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 centres (VAACs) **Toulouse** has been designated to prepare volcanic ash advisory information for the Africa-Indian Ocean 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 Africa-Indian Ocean 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 Africa-Indian Ocean Region, as indicated below. The status of implementation of tropical cyclone advisory information is detailed in Volume III.

AFI TCAC: La Reunion TCAC

3. SPECIFIC REGIONAL REQUIREMENTS

3.1 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	Institut de recherches géologiques et minières de Yaoundé
Cape Verde	Serviço Nacional de Meteorología e Geofísica, P.O. Box 76, Ilha do Sal
Comoros	Observatoire Volcanologique du Karthala, 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(Réunion)	Observatoire volcanologique du Piton de la Fournaise
Kenya	Geology Department, University of Nairobi

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 Africa-Indian Ocean region and complements the provisions of the ICAO SARPs 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 Africa-Indian Ocean 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 and Recommended Practices and Procedures for Air Navigation Services

1.3 The SARPs and PANS 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

3.1 None.

TABLE SAR I-1 – SEARCH AND RESCUE REGIONS (SRR) IN 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** *To be incorporated*	
ADDIS ABABA	**ADDIS ABABA SRR** *To be incorporated*	
ANTANANARIVO	**ANTANANARIVO SRR** *To be incorporated*	
ASMARA	**ASMARA SRR** *To be incorporated*	
BEIRA	**BEIRA SRR** *To be incorporated*	
BRAZZAVILLE	**BRAZZAVILLE SRR** *To be incorporated*	
BUJUMBURA	**BUJUMBURA SRR** *To be incorporated*	
DAKAR	**DAKAR SRR** *To be incorporated*	
DAR ES SALAAM	**DAR ES SALAAM SRR** *To be incorporated*	
ENTEBBE	**ENTEBBE SRR** *To be incorporated*	
GABORONE	**GABORONE SRR** *To be incorporated*	
HARARE	**HARARE SRR** *To be incorporated*	

SRR	Lateral limits coordinates	Remarks
1	2	3
KANO	**KANO SRR** *To be incorporated*	
KHARTOUM	**KHARTOUM SRR** *To be incorporated*	
KIGALI	**KIGALI SRR** *To be incorporated*	
KINSHASA	**KINSHASA SRR** *To be incorporated*	
LILONGWE	**LILONGWE SRR** *To be incorporated*	
LUANDA	**LUANDA SRR** *To be incorporated*	
LUSAKA	**LUSAKA SRR** *To be incorporated*	
MAURITIUS	**MAURITIUS SRR** *To be incorporated*	
MOGADISHU	**MOGADISHU SRR** *To be incorporated*	
NAIROBI	**NAIROBI SRR** *To be incorporated*	
N'DJAMENA	**N'DJAMENA SRR** *To be incorporated*	
NIAMEY	**NIAMEY SRR** *To be incorporated*	
ROBERTS	**ROBERTS SRR** *To be incorporated*	
SAL	**SAL SRR** *To be incorporated*	
SEYCHELLES	**SEYCHELLES SRR** *To be incorporated*	

DRAFT

SRR	Lateral limits coordinates	Remarks
1	**2**	**3**
SOUTH AFRICA	**SOUTH AFRICA SRR** *To be incorporated*	
WINDHOEK	**WINDHOEK SRR** *To be incorporated*	

CHART SAR I-1 — SEARCH AND RESCUE REGIONS IN THE AFI REGION

To be developed

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 Africa-Indian Ocean region and complements the provisions of the 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 Africa-Indian Ocean 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 and 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:

a) Annex 4 — *Aeronautical Charts*;

b) Annex 15 — *Aeronautical Information Services*;

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

d) *Aeronautical Information Services Provided by States* (Doc 7383);

e) *Location Indicators* (Doc 7910);

f) *Aeronautical Information Services Manual* (Doc 8126);

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

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

i) *Aeronautical Charts Manual* (Doc 8697);

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

k) *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 Africa-Indian Ocean Region is reflected in the Volume II.

3. SPECIFIC REGIONAL REQUIREMENTS

3.1 None.