

INTERNATIONAL CIVIL AVIATION ORGANIZATION



REPORT

OF

THE FIRST MEETING OF AFI SURVEILLANCE TASK FORCE

(Johannesburg, South Africa, 17-18 September 2009)

PREPARED BY THE AFI SURVEILLANCE TASK FORCE

SEPTEMBER 2009

The AFIR Surveillance Task Force is a Task Force of the AFI Planning and Implementation Regional Group (APIRG).

Its Reports are therefore submitted to APIRG through the CNS Sub-Group for review and action.

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

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PART I – HISTORY OF THE MEETING

INTRODUCTION

1.1 The first Meeting of AFI Surveillance Task Force (AFI/S/TF/1) was convened pursuant to APIRG/16 Meeting Decision 16/27 held in Rubavu, Rwanda, 19-23 November 2007. The meeting was held immediately after surveillance workshop whose objective was amongst others to facilitate deliberations of the meeting of the task force.

1.2 The meeting of AFI Surveillance Task Force was opened by Mr Peter Marais, Executive Manager ATM/CNS Planning, Research & Development

1.3 The meeting nominated Mr Carel Gersbach from ATNS, South Africa, as the rapporteur of the Task Force.

2. OFFICERS AND SECRETARIAT

2.1 Mrs. Mary Obeng, Regional Officer, Communications, Navigation and Surveillance (CNS) and Mr. S. Machobane, Regional Officer, ATM from the ICAO ESAF Office, Nairobi, were at the meeting.

3. ATTENDANCE

3.1 The meeting was attended by 21 participants from 8 States, and one (1) International Air Transport Association (IATA). The list of participants is given at **Appendix A** to this report.

4. WORKING LANGUAGE

4.1 The meeting was conducted in the English language.

5. AGENDA

5.1 The following Agenda was adopted:

Agenda Item	Subject
1.	Adoption of Provisional Agenda and Election of Rapporteur for the Task Force
2.	Determination of the Work Programme
3.	Review of the current Surveillance Systems in AFI
4.	Updating of Appendix G of Doc 003 under surveillance
5.	Future Work Programme
6.	Draft Surveillance Plan

LIST OF DRAFT CONCLUSIONS/DECISIONS

Number	Title	Action by	Target date
Dec. 1/1	Establishment of AS/I/TF Working Group		
Dec. 1/2	TMA and Aerodrome Categorization	IATA/ASECNA	
Dec. 1/3	Coordination of Update of Appendix G to AFI CNS/ATM Implementation Plan (Doc 003)	ICAO and Sub-Groups	Draft by APIRG/17
Dec. 1/4	Draft AFI Strategy for Aeronautical Surveillance		
Conc. 1/1	Data Collection for TMA Aerodrome Categorization	STATES	
Conc. 1/2	Amendments to surveillance related elements of AFI CNS/ATM Implementation Plan (doc 003) and Air Navigation Plan (DOC 7474)	ICAO	Draft by APIRG/17
Conc. 1/3	Aeronautical Surveillance Strategy		

PART II: REPORT ON AGENDA ITEMS

REPORT ON AGENDA ITEM 1: ADOPTION OF PROVISIONAL AGENDA AND ELECTION OF RAPPORTEUR FOR THE TASK FORCE

1.1 The meeting elected Mr. Carel Gersbach, from .ATNS, South Africa as the Rapporteur of the APIRG Surveillance Implementation Task Force.

1.2 The meeting reviewed the terms of reference of the AS/I TF as given by APIRG/16 and modified the composition of the Task Force taking into consideration the States with large oceanic FIRs, interface with other ICAO Regions and large continental coverage, as at **Appendix B** to the report on Agenda Item 1.

REPORT ON AGENDA ITEM 2: DETERMINATION OF THE WORK PROGRAMME

2.1 The meeting developed the work programme of the Work Group as at **Appendix C** to the report on agenda item 5.

2.2 The meeting established two Sub Working Groups to develop surveillance requirements for the en-route phase of flight and for the Terminal including approach and aerodrome.

2.3 The meeting agreed on the following States to form the core of the Work Group, noting that all AFI States were eligible to participate.

DRAFT DECISION 1/1: ESTABLISHMENT OF AS/I/TF WORKING GROUP

That to efficiently address the mandate and work programme assigned to the AFI AS/I/TF, two (2) working groups be established for en-route operations and terminal/aerodrome operations, with the terms of reference, work programme and composition shown in Appendix. C to the report on Agenda item 1.

ENROUTE

Seychelles (Team Leader)

South Africa

Nigeria

Ghana

DRC

IATA

Mauritius

Angola

TERMINAL

ASECNA (Team Leader)

Zambia

South Africa

IATA

Tanzania

REPORT ON AGENDA ITEM 3: REVIEW OF THE CURRENT SURVEILLANCE SYSTEMS IN AFI

3.1 The meeting reviewed the existing surveillance systems taking into consideration the PBN implementation strategy and associated operational requirements, in particular separation minimums, and assigned the En-route and Terminal WGs to complete updating of the elements of Doc 003 with respect to surveillance and airborne equipment requirements

REPORT ON AGENDA ITEM 4: UPDATING OF APPENDIX G OF DOC. 003 UNDER SURVEILLANCE

4.1 The meeting reviewed the surveillance elements of Doc 003 Appendix G and Volume 2. However, the meeting noted that it was necessary to carry out a comprehensive updating of Doc 003 taking into consideration latest developments within ICAO including the goals for implementation of PBN.

4.2 The meeting also noted that, in order to clearly identify surveillance requirements for terminal, approach and aerodrome, it was necessary to complete the classification/categorization of the AFI aerodromes as assigned by APIRG 13.

DRAFT DECISION 1/2: TMA AND AERODROME CATEGORIZATION

That the AFI Aeronautical Surveillance Implementation Task Force (AS/I/TF) finalize the categorization of terminal areas (TMAs) and aerodromes based on traffic density and pattern complexity as follows:

1. TMAs

- a) **TMA Type 1: characterized by multiple airports within the single TMA, a complex traffic pattern and a high density traffic;**
- b) **TMA Type 2: characterized by multiple airports within the TMA, a complex traffic pattern and a medium density traffic; and**
- c) **TMA Type 3: low density traffic TMAs.**

Aerodromes

- a) **Aerodrome Type 1: High density traffic;**
- b) **Aerodrome Type 2: Medium density traffic; and**
- c) **Aerodrome Type 3: Low density traffic**

2. DATA COLLECTION FOR TMA AND AERODROME CATEGORISATION

DRAFT CONCLUSION 1/1

That, to facilitate the categorization of AFI TMAs and aerodromes, States provide the ICAO Regional Offices with statistical data on air traffic and their airspace structure and delineation in accordance with APIRG Conclusion 13/77.

The Outcome of this should be ready by 15 February 2010

DRAFT DECISION 1/3: COORDINATION OF UPDATE OF APPENDIX G TO AFI CNS/ATM IMPLEMENTATION PLAN (DOC 003)

That the Secretariat ensures that the updating of Appendix G to AFI CNS/ATM Implementation Plan (Doc 003) is coordinated with the PBN Task Force. Initial

amendments developed by the AS/I Task Force are provided in Appendix F to this report.

**DRAFT CONCLUSION1/2:AMENDMENTS TO SURVEILLANCE RELATED
ELEMENTS OF AFI CNS/ATM
IMPLEMENTATION PLAN (DOC 003) AND AIR
NAVIGATION PLAN (DOC 7474)**

That the AFI AS/I/TF review and amend surveillance related elements of the AFI CNS/ATM Implementation Plan (Doc 003) and Air Navigation Plan (ANP and FASID, Doc 7474) should include (but not limited to) the sections thereof listed in Appendix .D to this report. FASID Tables CNS4A and CNS4B are provided in Appendix .E for reference and guidance.

Consideration of Users Requirements on surveillance technologies and applications

4.3 The meeting acknowledged that when addressing its assigned tasks, the AFI Aeronautical Surveillance Implementation Task Force (AS/I/TF) should give due consideration to the requirements expressed by airspace users on surveillance technologies.

REPORT ON AGENDA ITEM 5: FUTRUE WORK PROGRAMME

5.1 The meeting developed the outline for the strategy for implementation of surveillance systems in the AFI Region, and assigned the Work Group to complete the details of the strategy through the coordination of the Rapporteur of the Task Force, for submission to the PBN Task Force tentatively to be held in February 2010.

REPORT ON AGENDA ITEM 6: DRAFT SURVEILLANCE STRATEGY PLAN

6.1 The meeting discussed the AFI Strategy for Aeronautical surveillance alignment and the following conclusion was formulated:

DRAFT CONCLUSION 1/3: AERONAUTICAL SURVEILLANCE STRATEGY

That the AFI Strategy for Aeronautical Surveillance be aligned with:

- a) **the global strategy outlined in the ICAO Global Air Navigation Plan (Doc 9750) under Global Plan Initiative GPI-9 (Situational Awareness) shown in Appendix xx; and**
- b) **the Regional Performance – Based Navigation (PBN) Plan and agreed performance objectives.**

DRAFT DECISION 1/4: DRAFT AFI STRATEGY FOR AERONAUTICAL SURVEILLANCE

That the AS/I Task Force finalize draft AFI Strategy for Aeronautical Surveillance provided in Appendix xx, for consideration by the next meetings of the APIRG and its PBN Task Force, CNS Sub-group and ATS Sub-group.

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APPENDIX B**TERMS OF REFERENCE****AFI SURVEILLANCE IMPLEMENTATION TASK FORCE (AS/I/TF)
(AS GIVEN BY APIRG/16)**

1. Determine the operational performance requirements for aeronautical surveillance in the AFI Region, en-route, terminal areas (TMAs) and aerodromes operations.
2. Identify and quantify near term and long term benefits of relevant candidate surveillance systems.
3. Develop a draft AFI Surveillance plan including recommended target dates of implementation, taking into account:
 - Availability of SARPs,
 - Readiness of airspace users and air navigation service providers
 - Relevant RAN and APIRG recommendations, conclusion and decisions pertaining to aeronautical surveillance.
 - Work done by ICAO Surveillance Panel with the view to avoiding any duplication

Note *The Task Force should report to the next APIRG meeting with preliminary report to the ATS/AIS/SAR and CNS sub groups.*

Composition: *Core members: ATNS (South Africa), ASECNA, IATA, Algeria, Ghana, Kenya, Nigeria, Rwanda, Tanzania and IFALPA. States with large oceanic FIRs interface with other ICAO Regions and large continental coverage to be added to the composition as core members. (Democratic Republic of Congo, Mauritius and Seychelles)*

1.3 The meeting established two Sub Working Groups to develop surveillance requirements for the en-route phase of flight and for Terminal including approach and aerodrome.

1.4 The meeting agreed on the following States to form the core of the Work Groups, noting that all AFI States were eligible to participate. The meeting took into consideration the PBN workgroups in order to minimize coordination and duplication of resources. It was further agreed that the TF Rapporteur should coordinate the work of these workgroups. The following workgroups were established, including core members:

ENROUTE

Seychelles (Team Leader)
 South Africa
 Nigeria
 Ghana
 DRC
 IATA
 Mauritius
 Angola

TERMINAL

ASECNA (Team Leader)
 Zambia
 South Africa
 IATA
 Tanzania

Note: ASECNA was not represented at the meeting. The Secretariat will confirm ASECNA's availability to lead the Terminal WG. South Africa was nominated as an alternative Team Leader should ASECNA not be available.

1.5 The meeting agreed that, while working material of the Work Group would be circulated to all AFI States, giving them an opportunity to comment. The core members were obliged to contribute and to respond to all communication from Rapporteur and inform other core members of the Work Group through the facilitation of the Rapporteur.

1.6 The meeting was presented with the provisional Agenda for the AFI Surveillance Task Force. The provisional Agenda was adopted by the meeting.

APPENDIX C

FUTURE WORK PROGRAMME FOR THE SURVEILLANCE TASK FORS

No.	Activity	Detailed requirements	Target dates
ENROUTE WORK GROUP			
1.	En-route surveillance requirement	Review the draft en-route strategy	CNS SG4, ATS/AIS/SAR SG
2.		<ul style="list-style-type: none"> • Complete table (app) • Secretariat will align IATA Working paper • Draft data distribution format • Draft data exchange agreement, incl. System details, data format, etc. • Draft Regulatory requirements (technical) 	Feedback and input into February 2010 PBN Meeting
3.		Review and align with new ICAO Standards and guidance when development	On-going
4.		Finalize the surveillance data distribution format	CNS SG4
5.		Develop agreement template to be used for inter-stat data exchange	First draft at CNS SG4
6.		Draft implementation Plan	Task Force to report to APIRG/17
7.		Update Doc. 003 and CNS Table 4A&B in FASID	On-going
TERMINAL SURVEILLANCE WORK GROUP			
1.	Terminal surveillance requirement	Review the draft terminals strategy	CNS SG4, ATS/AIS/SAR SG
		<ul style="list-style-type: none"> • Complete table (app). • Secretariat will align IATA WP • Draft data distribution format • Draft data exchange agreement, incl. System details, data format, etc. • Draft Regulatory Requirements (Technical) 	Feedback and input into February 2010 PBN Meeting
2.		Review and align with new ICAO Standards and guidance when developed	On-going
3.		Update Doc. 003	On-going
4.		Finalize the surveillance data distribution format	CNS SG4
		Develop agreement template to be used for inter-state data exchange	First draft at CNS SG4
5.		Task Force to report to APIRG on progress: Draft implementation plan	APIRG/17
6.		Update Doc. 003 and CNS table 4A & B in FASID	On-going

APPENDIX D**LIST OF AFI DOC 003 AND BANP/FASID SECTIONS TO BE REVIEWED/AMENDED)****AFI Doc 003**

Section 2.1.2 (General principles: Caution for ADS prototypes)

Section 2.14 (Planning targets for SSR in selected TMA – criteria TBD - and ADS)

Section 2.2.2 (System configuration)

Section 2.2.1.7 (Positive surveillance requirement to support lower separation minima < 10 min)

Section 2.2.1.13 (Appendix G relating to ATM operational requirements in an RNP/RNAV environment - CNS requirements). (See Appendix C to this working paper).

Section 2.2.2 (Surveillance in selected TMAs – criteria TBD - and en-route operations)

Section 2.2.4..3.5 /7 (Data link surveillance services)

Section 3.2.2 (Terminal airspace and Aerodromes)

Section 3.2.2.1 (Three types of terminal airspaces based on the traffic density and the complexity of the traffic pattern:

- a) TMA Type 1: characterized by multiple airports within the single TMA, a complex traffic pattern and a high density traffic;
- b) TMA Type 2: characterized by multiple airports within the TMA, a complex traffic pattern and a medium density traffic; and
- c) TMA Type 3: low density traffic TMAs.)

Section 3.2.2.2 (Three types of aerodromes based on traffic density (high, medium and low)).

Section 3.2.2.3 (TMAs and aerodromes of the AFI Region to be type-designated by the AFI Planning and Implementation Regional Group (APIRG) based on the proposals by provider and user States and organizations concerned.)

Section 3.3.2.2 (AFI CNS/ATM implementation plan (SSR, ADS)

Section 3.3.2.3 Appendix B (en-route surveillance)

Section 3.3.3.4 (Voice position reports, SSR and ADS)

Section 3.3.3.5 (Appendix C - TMA and aerodrome surveillance)

Section 3.3.3.5 (Appendix D : List of TMAs and aerodromes – not categorised)

Appendix F (AFI CNS/ATM Implementation Plan Programme of Activities – Implementation Worksheets on SSR/and ADS)

Doc 7474 (BANP & FASID)

BANP Part 0 (Introduction – CNS/ATM system evolution - surveillance)

BANP Part I E 10 (BORPC)

BANP Part IV E 5

FASID Table CNS4 A and B

APPENDIX. E**Table CNS 4A — Tableau CNS 4A — Tabla CNS 4A****SURVEILLANCE SYSTEMS
SYSTÈMES DE SURVEILLANCE
SISTEMAS DE VIGILANCIA**

EXPLANATION OF THE TABLE

Column

1	Name of State/Territory and location of radar head facility or FIR
2	Area of routing
3	Air traffic services unit served by the facility or FIR
4	Primary surveillance radar
5	Coverage of primary surveillance radar in nautical miles
6	Secondary surveillance radar and modes, namely Modes A, C or S
7	Coverage of secondary surveillance radar in nautical miles
8	Automatic dependent surveillance broadcast (under development)
9	Automatic dependent surveillance contract
10	Remarks

Note.— The following codes are used in columns 4, 6, 8, 9 and 10:

I — Required and implemented

Column 6

I — implementation using conventional SSR

MI — implementation using monopulse SSR

X — Required but implementation status not determined

N — Required but not implemented

A — Existing facility provided to supplement or substitute the requirement

F — Future plan

<-Year — Planned commissioning year to be used as appropriate in conjunction with “F” and “N”

>-Year — Planned commissioning year to be used as appropriate in conjunction with “A” and “I”

EXPLICATION DU TABLEAU

Colonne

1	Nom de l'État/territoire et emplacement de la tête radar ou FIR
2	Zone d'acheminement
3	Organisme des services de la circulation aérienne ou FIR desservi par l'installation
4	Radar primaire de surveillance
5	Couverture du radar primaire de surveillance, en milles marins
6	Radar secondaire de surveillance et modes, à savoir A, C ou S
7	Couverture du radar secondaire de surveillance, en milles marins
8	Surveillance dépendante automatique en mode diffusion (en cours de mise au point)
9	Surveillance dépendante automatique en mode contrat
10	Remarques

Note.— Les codes ci-après sont utilisés dans les colonnes 4, 6, 8, 9 et 10:

I — Nécessaire et mis en œuvre

Colonne 6

I — Mis en œuvre au moyen d'un SSR classique

MI — Mis en œuvre au moyen d'un SSR monopulse

X — Nécessaire mais état de mise en œuvre non déterminé

N — Nécessaire mais non mis en œuvre

A — Installation actuelle fournie en supplément ou en remplacement de l'installation requise

F — Plan futur

< - Année — Année prévue de mise en service, avec le code «F» ou le code «N», selon ce qui convient

> - Année — Année prévue de mise en service, avec le code «A» ou le code «I», selon ce qui convient

EXPLICACIÓN DE LA TABLA

Columna

1	Nombre del Estado/territorio y ubicación de la instalación principal radar o FIR
2	Zona de encaminamiento
3	Dependencia de los servicios de tránsito aéreo servida por la instalación o el FIR
4	Radar primario de vigilancia

- 5 Cobertura del radar primario de vigilancia en millas marinas
- 6 Radar secundario de vigilancia y modos, a saber: modos A, C o S
- 7 Cobertura del radar secundario de vigilancia en millas marinas
- 8 Vigilancia dependiente automática por difusión (en preparación)
- 9 Vigilancia dependiente automática por contrato
- 10 Observaciones

Nota.— En las columnas 4, 6, 8, 9 y 10 se utilizan las siguientes claves:

I — Requerido e implantado.

Columna 6

I — implantación utilizando SSR convencional

MI — implantación utilizando SSR de monoimpulso

X — Requerido, pero no se ha determinado el estado de implantación

N — Requerido pero no implantado

A — Instalación existente suministrada para complementar o sustituir la requerida

F — Plan futuro

< - Año — año previsto para la puesta en servicio, que debe usarse, según corresponda, conjuntamente con “F” y “N”

> - Año — año previsto para la puesta en servicio, que debe usarse, según corresponda, conjuntamente con “A” e “I”

State/Territory and location État/Territoire et emplacement Estado/Territorio) y bicación	AR	ATS unit served Organisme ATS desservi Dependencia ATS servida	Data source Source des données Fuente de datos	RDPS	FDPS	MSAW	ADS	CPDLC	AIDC	PA/ RDPS (NM) ²	NPOS	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10	11	12	13
			Eldoret Poror Wajir Mombasa	I	I	N	N	N	N			
LIBYAN ARAB JAMAHIRIYA	AR-3											
Tripoli	AR-4 AR-7	Tripoli ACC			N		N	N	N			
MADAGASCAR	AR--3											
Antananarivo	AR-10	Antananarivo ACC			I-2001		I-2001	I-2001	N			
MALAWI	AR-8											
Lilongwe		Lilongwe ACC					N	N	N			
MAURITIUS	AR-3											
Mauritius	AR-10	Mauritius ACC			N		N<- 2001	N<- 2001	N			
MOROCCO	AR-1											
Casablanca	AR-6	Mohamed V Radar	Casablanc a	I	I	I				11310 ²	1	
Rabat	AR-7	Casablanca Radar	Agadir Ifrane Safi	I	I	I	N	N	N	375330 ²	5	
MOZAMBIQUE	AR-8											
Beira		Beira ACC			N		N	N	N			
NAMIBIA	AR-4											
Windhoek	AR-8	Windhoek ACC			N		N	N	N			
NIGER	AR-4											
Niamey	AR-9				F<-2004		F<-2004	F<-2004	N			
NIGERIA	AR-4											
Kano	AR-5	Kano ACC		N	N	N	N	N	N			
Lagos	AR-9	Lagos ACC		N	N	N	N	N	N			
SENEGAL	AR-1											
Dakar	AR-9	Dakar ACC			F<-2002		F<-2002	F<-2002	N			
SEYCHELLES	AR-3											
Seychelles	AR-10	Seychelles ACC			N		N	N	N			
SOMALIA	AR-3											
Mogadishu		Mogadishu ACC			N		N	N	N			
SOUTH AFRICA	AR-2											
Cape Town	AR-4	Cape Town ACC		I	I	N	N	N	N			
Johannesburg	AR-8 AR-10	Johannesburg ACC		I	I	N	I	I	N			
SUDAN	AR-3											
Khartoum	AR-9	Khartoum ACC			F<-2001		N	N	N			
TUNISIA	AR-4	Tunis ACC		I	I	I	N	N	N		4	

State/Territory and location État/Territoire et emplacement Estado/Territorio) y bicación	AR	ATS unit served Organisme ATS desservi Dependencia ATS servida	Data source Source des données Fuente de datos	RDPS	FDPS	MSAW	ADS	CPDLC	AIDC	PA/ RDPS (NM) ²	NPOS	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10	11	12	13
Tunis	AR-7										3 3	
UGANDA Entebbe	AR-3	Entebbe ACC			N		N	N	N			
UNITED REPUBLIC OF TANZANIA Dar-Es-Salaam	AR-3 AR-8	Dar-Es-Salaam ACC			N		N	N	N			
ZAMBIA Lusaka	AR-4 AR-8	Lusaka ACC			N		N	N	N			
ZIMBABWE Harare	AR-4 AR-8	Harare ACC		I	I	N	N	N	N			

State/Territory and location État/Territoire et emplacement Estado/Territorio) y bicación	AR	ATS unit served Organisme ATS desservi Dependencia ATS servida	Data source Source des données Fuente de datos	RDPS	FDPS	MSAW	ADS	CPDLC	AIDC	PA/ RDPS (NM) ²	NPOS	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10	11	12	13
			Eldoret Poror Wajir Mombasa	I	I	N	N	N	N			
LIBYAN ARAB JAMAHIRIYA	AR-3											
Tripoli	AR-4 AR-7	Tripoli ACC			N		N	N	N			
MADAGASCAR	AR--3											
Antananarivo	AR-10	Antananarivo ACC			I-2001		I-2001	I-2001	N			
MALAWI	AR-8											
Lilongwe		Lilongwe ACC					N	N	N			
MAURITIUS	AR-3											
Mauritius	AR-10	Mauritius ACC			N		N<- 2001	N<- 2001	N			
MOROCCO	AR-1											
Casablanca	AR-6	Mohamed V Radar	Casablanc a	I	I	I				11310 ²	1	
Rabat	AR-7	Casablanca Radar	Agadir Ifrane Safi	I	I	I	N	N	N	375330 ²	5	
MOZAMBIQUE	AR-8											
Beira		Beira ACC			N		N	N	N			
NAMIBIA	AR-4											
Windhoek	AR-8	Windhoek ACC			N		N	N	N			
NIGER	AR-4											
Niamey	AR-9				F<-2004		F<-2004	F<-2004	N			
NIGERIA	AR-4											
Kano	AR-5	Kano ACC		N	N	N	N	N	N			
Lagos	AR-9	Lagos ACC		N	N	N	N	N	N			
SENEGAL	AR-1											
Dakar	AR-9	Dakar ACC			F<-2002		F<-2002	F<-2002	N			
SEYCHELLES	AR-3											
Seychelles	AR-10	Seychelles ACC			N		N	N	N			
SOMALIA	AR-3											
Mogadishu		Mogadishu ACC			N		N	N	N			
SOUTH AFRICA	AR-2											
Cape Town	AR-4	Cape Town ACC		I	I	N	N	N	N			
Johannesburg	AR-8 AR-10	Johannesburg ACC		I	I	N	I	I	N			
SUDAN	AR-3											
Khartoum	AR-9	Khartoum ACC			F<-2001		N	N	N			
TUNISIA	AR-4	Tunis ACC		I	I	I	N	N	N		4	

State/Territory and location État/Territoire et emplacement Estado/Territorio) y bicación	AR	ATS unit served Organisme ATS desservi Dependencia ATS servida	Data source Source des données Fuente de datos	RDPS	FDPS	MSAW	ADS	CPDLC	AIDC	PA/ RDPS (NM) ²	NPOS	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10	11	12	13
Tunis	AR-7										3 3	
UGANDA Entebbe	AR-3	Entebbe ACC			N		N	N	N			
UNITED REPUBLIC OF TANZANIA Dar-Es-Salaam	AR-3 AR-8	Dar-Es-Salaam ACC			N		N	N	N			
ZAMBIA Lusaka	AR-4 AR-8	Lusaka ACC			N		N	N	N			
ZIMBABWE Harare	AR-4 AR-8	Harare ACC		I	I	N	N	N	N			

APPENDIX F**Draft AFI Strategy for Aeronautical Surveillance**

Airspace		PBN Navigation Specifications	Short-term (2008-2012)	Mid-term (2013-2016)	Long – term (2017 and beyond)
• En-Route Oceanic		<ul style="list-style-type: none"> RNAV-10/RNP-10 RNP-4 	<ul style="list-style-type: none"> ADS-C ADS-C 	<ul style="list-style-type: none"> ADS-C ADS-C 	<ul style="list-style-type: none"> ADS-C ADS-C
• En-Route Remote Continental		<ul style="list-style-type: none"> RNAV-10/RNP-10 RNP-4 	<ul style="list-style-type: none"> ADS-C ADS-C 	<ul style="list-style-type: none"> ADS-C ADS-C 	<ul style="list-style-type: none"> ADS-C ADS-C
• En-Route Continental		<ul style="list-style-type: none"> RNAV-5 RNAV-1 	<ul style="list-style-type: none"> ADS-C ADS-B (trials) MLAT (trials) ADS-C ADS-B (trials) MLAT (trials) 	<ul style="list-style-type: none"> ADS-C ADS-B (gradually) MLAT (gradually) ADS-C ADS-B (raduallys) MLAT (gradually) 	<ul style="list-style-type: none"> ADS-C, ADS-B (primary) MLAT (supplemental) ADS-B, ADS-B (primary) MLAT (supplemental)
• TMA Arrival/Departure	• TMA Type 3	• RNAV-1 in a surveillance environment	<ul style="list-style-type: none"> PSR (where justified) SSR (where implemented) ADS-B (trials) MLAT (trials) 	<ul style="list-style-type: none"> PSR (where justified) SSR (where implemented) ADS-B (gradually) MLAT (gradually) 	<ul style="list-style-type: none"> ADS-B (primary) MLAT (supplemental)
	• TMA Type 2	• RNAV-1 in a surveillance environment	<ul style="list-style-type: none"> PSR (where justified) SSR (where implemented) ADS-B (trials) MLAT (trials) 	<ul style="list-style-type: none"> PSR (where justified) SSR (where implemented) ADS-B (gradually) MLAT (gradually) 	<ul style="list-style-type: none"> ADS-B (primary) MLAT (supplemental)
	• TMA Type 1	• Basic RNP-1 in non-surveillance environment	• Voice reporting	• Voice reporting	• Voice reporting
• Approach	• Aerodrome Type 3	<ul style="list-style-type: none"> RNP APCH with Baro-VNAV or RNP AR APCH if required 	<ul style="list-style-type: none"> PSR (where justified) SSR (where implemented) ADS-B (trials) MLAT (trials) 	<ul style="list-style-type: none"> PSR (where justified) SSR (where implemented) ADS-B (gradually) MLAT (gradually) 	<ul style="list-style-type: none"> ADS-B (primary) MLAT (supplemental)
	• Aerodrome Type 2		<ul style="list-style-type: none"> PSR (where justified) SSR (where implemented) 	<ul style="list-style-type: none"> PSR (where justified) SSR (where implemented) 	<ul style="list-style-type: none"> ADS-B (primary) MLAT (supplemental)

Airspace		PBN Navigation Specifications	Short-term (2008- 2012)	Mid-term (2013- 2016)	Long – term (2017 and beyond)
			<ul style="list-style-type: none"> • ADS-B (trials) • MLAT (trials) 	<ul style="list-style-type: none"> • ADS-B (gradually) • MLAT (gradually) 	
	<ul style="list-style-type: none"> • Aerodrome Type 1 		<ul style="list-style-type: none"> • Voice reporting 	<ul style="list-style-type: none"> • Voice reporting 	<ul style="list-style-type: none"> • Voice reporting