

APIRG/19 Meeting Report

Appendix 1A

List of Participants

NINETEENTH MEETING OF THE AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP (APIRG/19) (DAKAR, SENEGAL, 28 – 31 OCTOBER 2013)

LIST OF PARTICIPANTS

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
ALGERIA	1.	Mr. Mohamed Lamine Rekkaa	Chef de département Circulation Aérienne, ENNA, Algérie	Etablissement National de la Navigation Aérienne/Algérie 01 avenue de l'Indépendance Alger, Algérie	Tel: +213 21 672 060 Fax: +213 21 671 001	denadca@enna.dz
	2.	Ms. Saadi Bouslimane	Directeur de l'Exploitation de la Navigation Aérienne	Etablissement National de la Navigation Aérienne/Algérie 01 avenue de l'Indépendance Alger, Algérie	Tel: +213 21 672 060 Fax: +213 21 671 001	dena@enna.dz
ANGOLA	3.	Mr. Arquimedes Fontes Antunes Ferreira	Director Air Navigation Department	Instituto Nacional da Aviação Civil Rua Miguel de Melo N°96, 6° Andar, Luanda	Tel: +244 912 406 739 Fax: +244 222 390 529	arquimedesf@gmail.com ; arquimedes.ferreira@inavic.gv.ao
	4.	Mr. Netay Akeito	Director of Airports and Infrastructures	Angola Civil Aviation Authority Rua Miguel de Melo N°96, 6° Andar, Luanda	Tel: +244 923 306 715 Fax: +244 222 390 529	netay9@yahoo.com.br
BURKINA FASO	5.	Mr. Nika Meheza Manzi	Inspecteur Régional en sécurité et certification des Aéroports	01 BP 6159 Ouagadougou, Burkina Faso	Tel: +226 79 20 54 90	meheza@yahoo.fr
	6.	Mr. Moumouni Dieguimde	Ambassador, Permanent Representative of Burkina Faso on the Council of ICAO	999, Rue University Suite 15.30 Montreal, Quebec H3C 5J9	Tel: +514 954 8325 Fax: +514 954 6662	burkinafaso@icao.int ; mdieguimde@icao.int
BURUNDI						

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
CANADA	7.	Mr. Joseph McNally	Regional Sales Manager	IDS Tech. Inc. 155 Terence Matthews Crescent Ottawa, Ontario K2A 2A8, Canada	Tel: +1 613 697 4604 Fax: +1 613 591 0981	jmcnally@idscorporation.ca
	8.	Mr. Sachin Misra	Sales Director	IDS Tech. Inc. 155 Terence Matthews Crescent Ottawa, Ontario K2A 2A8, Canada	Tel: +1 613 791 1053 Fax: 1 613 591 0981	smisra@idscorporation.ca
CAMEROON	9.	Ms. Paule Koki Assoumou	Directeur de la Sécurité Aérienne	Cameroon Civil Aviation Authority BP 6998, Yaoundé	Tel: +237 2230 3090 / 223 03011	courrier.ccaa@ccaa.aero
	10.	Mr. Jean Pierre Kouogueu	Directeur de l'Exploitation Aéronautique	Cameroon Civil Aviation Authority BP 6998, Yaoundé	Tel: +237 2230 3090 / 223 03011	courrier.ccaa@ccaa.aero
	11.	Mr. Raymond Bell Bisse	Chef du Service de la Circulation Aérienne à l'Autorité Aéronautique	Cameroon Civil Aviation Authority BP 6998, Yaoundé	Tel: +237 2230 3090 / 223 03011	courrier.ccaa@ccaa.aero
	12.	Mr. Cyrille Abondo	Chef du Service de la Météorologie Aéronautique	Cameroon Civil Aviation Authority	Tel: +237 2230 3090 / 223 03011	courrier.ccaa@ccaa.aero
CAPE VERDE	13.	Mr. Alberto Silva	ANS Inspector	Civil Aviation Authority, Cabo Verde CP 372 Praia, Cabo Verde	Tel: +238 260 3430 Fax: +238 261 1075	albertos@acivil.gov.cv
	14.	Ms. Baptista Sabino	ANS Inspector	Civil Aviation Authority Cabo Verde CP 372 Praia, Cabo Verde	Tel: +238 260 3430 Fax: +238 261 1075	albertos@acivil.gov.cv
	15.	Mr. Moisés Monteiro	Head of ATS Operation	ASA – Cape Verde Airports & Air Navigation Company Amilcar Cabral International Airport	Tel: +238 241 9200 Fax: +238 241 3336	mduarte@asa.cv

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
				P.O. Box 58 – Ilha do Sal Cape Verde		
	16.	Mr. Domingos Moreira	NAVAIDS Department Chief	ASA – Cape Verde Airports & Air Navigation Company Amilcar Cabral International Airport P.O. Box 58 – Ilha do Sal Cape Verde	Tel: +238 241 9200 Fax: +238 241 3336	dmoreira@asa.cv
	17.	Mr. Teófilo Figueiredo	Air Navigation Director	ASA – Cape Verde Airports & Air Navigation Company Amilcar Cabral International Airport P.O. Box 58 – Ilha do Sal Cape Verde	Tel: +238 241 9200 Fax: +238 241 3337	tfigueiredo@asa.cv
	18.	Mr. Arlindo Neves	Manager of Assessment and Quality Assurance	ASA – Cape Verde Airports & Air Navigation Company Amilcar Cabral International Airport P.O. Box 58 – Ilha do Sal Cape Verde	Tel: +238 241 1468 Fax: +238 241 3336	aneves@asa.cv
	19.	Mr. Carlos Alberto Rocha Fortes	TICA Senior	ASA – Cape Verde Airports & Air Navigation Company Amilcar Cabral International Airport P.O. Box 58 – Ilha do Sal Cape Verde	Tel: +238 241 9200 Fax: +238 241 3337	cfortes@asa.cv
	20.	Mr. João dos Reis Monteiro	PCA	Cabo Verde CAA Av Cidade Lisboa 34 CP 371 Praia – Cabo Verde	Tel: +238 260 3430 Fax: +238 261 7510	Joao.R.Monteiro@acivil.gov.cv
CHAD						
COMOROS	21.	Mr. Hassan Ali Mohamed	Chef Service Exploitation	Agence Nationale de	Tel: +269 337 40 42	mohassanali@hotmail.fr

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
			des Aéronef et Licences & Assistant Coordination USOAP	l'Aviation Civile et de la Météorologie BP 72 Moroni, Comores	Fax: +269 773 09 48	mohassanali@anacm-comores.com
CONGO BRAZAVILLE						
COTE D'IVOIRE						
DRC	22.	Mr. Raphael Ekuka Lembi	Directeur Adjoint de la Navigation Aérienne	Régie des Voies Aériennes République Démocratique du Congo 548, Avenue Aéroport Quartier Ndolo Commune de Barumbu, Kinshasa	Tel: +243 99 995 7023	Ekuka_lembi@yahoo.fr
	23.	Ms. Belly Diabasenga Kusuamina Billy	Chef de Service Circulation Aérienne	Régie des Voies Aériennes République Démocratique du Congo 548, Avenue Aéroport Quartier Ndolo Commune de Barumbu, Kinshasa	Tel: +243 81 815 1745	billydk67@yahoo.fr
	24.	Mr. Augustin Mulumba Difu Diamunda	Assistant du Directeur Technique / Radiocom	Régie des Voies Aériennes République Démocratique du Congo 548, Avenue Aéroport Quartier Ndolo Commune de Barumbu, Kinshasa	Tel: +243 99 990 8872	diamulus@gmail.com
DJIBOUTI	25.	Mr. Mohamed Kamil	Adjoint du Chef de la Division Maintenance	Aéroport International de Djibouti		
	26.	Mr. Ibrahim Moussa Farah	Chef de la Division Normes et Procédures	Aéroport International de Djibouti		
EQUATORIAL						

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
GUINEE						
ERITREA	27.	Mr. Mesfin Berhane	Director of Air Navigation Division	Eritrean Civil Aviation Authority P.O. Box 957 Asmara, Eritrea	Tel: +291 1 181 424 Mob: +291 7 181 062 Fax: +291 1 181 520	Mesfin.berhane6@gmail.com
ETHIOPIA	28.	Mr. Shimeles Kibread Zerufael	Rep/Deputy Director General, Air Navigation Services	Ethiopian Civil Aviation Authority P.O. Box 978 Addis Ababa Ethiopia	Tel: +251 116 650 265 / 251 911 201 267 Fax: +261 116 650 281	caa.airnav@ethionet.et
	29.	Mr. Ghirmai Hailu Abraha	A/Director, CNS Engineering	Ethiopian Civil Aviation Authority P.O. Box 978 Addis Ababa Ethiopia	Tel: +251 116 650 265 / 251 911 254 002 Fax: +261 116 650 281	caa.airnav@ethionet.et
	30.	Mr. Bezuayehu Assefa Tegegn	Director, Air Traffic Services	Ethiopian Civil Aviation Authority P.O. Box 978 Addis Ababa Ethiopia	Tel: +251 116 650 265 / 251 915 553 195 Fax: +261 116 650 281	caa.airnav@ethionet.et
	31.	Mr. Zenebe Tilahun Yigezu	Director, Aeronautical Information Services	Ethiopian Civil Aviation Authority P.O. Box 978 Addis Ababa Ethiopia	Tel: +251 116 650 265 / 251 911 883 333 Fax: +261 116 650 281	caa.airnav@ethionet.et ; zenebe.tilahun@yahoo.com
EGYPT	32.	Mr. Hamdy El-Taweel	NAVISAT, CTO	Cairo Airport Road Ministry of Civil Aviation Building, NAVISAT Company Egypt	Tel: +201 001 724 374 Fax: +202 226 994 56	Hamdy-eltaweel@avit.co..eg
FRANCE	33.	Mr. Michel Arenò	Head Communication	France	Tel: +33 11 580 94 944	michel.arenò@aviation-

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
			Surveillance Infrastructuree Division	50 rue Henry FARMAN 75720 Paris		civile.gouv.fr
	34.	Mr. Manuel Rabaglia	Concepteur de procédures de vol aux instruments	CGX Aero Le Causse, Espace Entreprises 81100 CASTRES France	Tel: +233 6 50 19 44 87 / 33 5 63 37 82 30	manuel.rabaglia@cgxaero.com
	35.	Mr. Stéphane Cabrol	Bid/Project Manager	CGX Aero Le Causse, Espace Entreprises 81100 CASTRES France	Tel: 33 6 25 37 53 38 / 33 5 63 37 82 36	stephane.cabrol@cgxaero.com
	36.	Ms. Sophie Germain	France DGAC	50 rue Henry Farman	Tel: +33 1 58 09 39 77 Fax: +33 1 58 09 40 16	Sophie.germain@aviation-civile.gouv.fr
	37.	Mr. Lionel Dutartre	Director of Air Navigation Services / Indian Ocean – Réunion Island	SNA Océan Indien Aérodrome de la Réunion Roland Garros BP 52 – 97408 Saint Denis Cedex 09 – Reunion Island	Tel: +262 2 62 72 8801 Mobile : +262 6 92 01 5778	lionel.dutartre@aviation-civile.gouv.fr
GABON	38.	Ms. Nadine Nathalie	Chef de Service Navigation Aérienne	ANAC Gabon BP. 2212 Libreville, Gabon	Tel: +241 01 44 54 00 Fax: + 241 01 44 54 01	nadine.anato@anac-gabon.com
GAMBIA						
GHANA	39.	Mr. Albert Taylor	Director Air Traffic Management	Ghana Civil Aviation Authority Private Mail Bag Kotoka International Airport Accra, Ghana	Tel: +233 302 776079 Fax: +233 302 773293	ATaylor@gcaa.com.gh
GUINEA	40.	Mr. Elhadj Dianté Keita	Ingénieur CA / Directeur Nationale de l'Aviation Civile	Direction Nationale de l'Aviation Civile BP 95	Tel: +224 664 201 065	Diante223@yahoo.fr

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
				République de Guinée		
	41.	Mr. Fara Tolno	Ingénieur AGA / Chef Section Navigation et Infrastructure	Direction Nationale de l'Aviation Civile BP 95 République de Guinée	Tel: +224 664 449 889	tolnofara1@yahoo.fr
	42.	Mr. Papa Mambaye Faye	Directeur Général Adjoint de l'Agence de la Navigation Aérienne (ANA)	Agence de la Navigation Aérienne BP 3025 Aéroport International de Conakry République de Guinée	Tel: +224 622 610 100	Tolnofara1@yahoo.fr
	43.	Mr.Kalagban Oulare	Chef du Département	Agence de la Navigation Aérienne BP 3025 Aéroport International de Conakry République de Guinée	Tel: +224 664 449 889	relaou@yahoo.fr
	44.	Mr. Mamadou Moustapha Diallo	Ingénieur Météo / Chargé d'études	Agence de la Navigation Aérienne BP 3025 Aéroport International de Conakry République de Guinée	Tel: +224 664 449 889	
KENYA	45.	Mrs. Truphosa Chocho	Manager ANS/Aerodromes/Meteorolo gy Legislation & Enforcement	Kenya Civil Aviation Authority P.O. Box 30163, 00100 Nairobi, Kenya	Tel: +254 20 827 470 Fax: +254 20 822 300	tchocho@kcaa.or.ke
	46.	Mr. Paul Kigwaini	AIS Lecturer	Kenya Civil Aviation Authority P.O. Box 30163, 00100 Nairobi, Kenya	Tel: +254 20 682 3606 Fax: +254 20 682 3699	pkigwaini@easa.ac.ke
	47.	Eng. Shadrack Wesechere	Manager Engineering	Kenya Civil Aviation	Tel: +254 20 827 470	swechere@kcaa.or.ke

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
			Services	Authority P.O. Box 30163, 00100 Nairobi, Kenya	Fax: +254 20 822 300	
LESOTHO	48.	Mr. Henry Letsoaka Sekonyela	Airport General Manager	Lesotho Department of Civil Aviation P.O. Box 629 Maseru 100 Lesotho	Tel: +266 223 506 92 Fax: +266 223 506 92	sekonyela@yahoo.com
MAURITANIA	49.	Mr. Mohamed Ould Abdellahi	Conseiller Technique du Directeur Général Chargé des aéroports et de la navigation aérienne	ANAC		
	50.	Mr. Mbodj Ndoudory Aliou	Chef de service des aéroports	ANAC		
	51.	Mr. Diop Dramane	Directeur Technique de la Société des Aéroports de Mauritanie	ANAC		
MAURITIUS						
MOROCCO	52.	Mr. Mostafa Mebsout	Chef de Division Formation			
	53.	Mr. Faissale Yoooussi	Chef de Service Conception des routes aériennes			
MOZAMBIQUE	54.	Ms. Célia José Balate	Head AIM	Mozambique Civil Aviation Authority Alameda do Aeroporto Maputo Caixa Posta 227 Mozambique	Tel: +258 8270 28890/ +258 8490 08020 / +258 2165 416 Fax: +258 2146 5415	celia_balate78@yahoo.com.br cbalete@iacm.gov.mz ; celiabalate@gmail.com
	55.	Mr. Dalilo Ahirazamane Amade	ATM Inspector	Instituto de Aviação Civil de Mozambique (IACM) Alameda do Aeroporto Maputo Caixa Posta 227	Tel: + 258 (01) 465 416 Fax: +258 21 46 54 15	damade@iacm.gov.mz dalilo-amade@yahoo.com.br

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
	56.	Mr. Arlindo Soto	AGA Specialist	Mozambique Instituto de Aviação Civil de Mozambique (IACM) Alameda do Aeroporto Maputo Caixa Posta 227 Mozambique	Tel: +258 21 465 416 Fax: +258 21 46 54 15 / +258 21 466 272	arlindosoto@yahoo.com.br
NIGER	57.	Mr. Seydou Yaye Amadou	Directeur Général de l'ANAC	ANAC Niger BP 727 Niamey, Niger	Tel: +20 72 32 67 Fax: +20 73 80 56	anacniger@hotmail.com
	58.	Mr. Moustapha A. Roufaï	Chef Département Navigation Aérienne et Infrastructures Aéroportuaires à l'ANAC	ANAC Niger BP 727 Niamey, Niger	Tel: +20 72 32 67 Fax: +20 73 80 56	anacniger@hotmail.com
	59.	Mr. Salifou Issa Mahaman	Chargé de la Navigation Aérienne et de la Météorologie aux AANN	ANAC Niger BP 727 Niamey, Niger	Tel: +20 72 32 67 Fax: +20 73 80 56	anacniger@hotmail.com
		Mr. Ali Sayabou	Responsable des Opérations à L'ASECNA	ANAC Niger BP 727 Niamey, Niger	Tel: +20 72 32 67 Fax: +20 73 80 56	anacniger@hotmail.com
RWANDA	60.	Mr. Emmanuel Sabiti	Head of CNS	Rwanda Civil Aviation Authority B.P. 1122 Kigali, Rwanda	Tel: +250 788 508 271 Fax: +250 252 582 609	esabiti@caa.gov.rw
	61.	Mr. Eustache Karagire	Director ANS	Rwanda Civil Aviation Authority B.P. 1122 Kigali, Rwanda	Tel: +250 788 516 068 Fax: +250 252 582 609	ekaragire@caa.gov.rw
SENEGAL	62.	Mr. Magueye Marame Ndao	Directeur Général de l'ANACIM	ANACIM BP 8184 Dakar, Sénégal	Tel: +221 33 869 53 35 Fax: +221 33 820 32 59	anacim@anacim.sn
	63.	Mr. Mamina Kamara	Secrétaire Général de	ANACIM	Tel: +221 33 869 53 35	anacim@anacim.sn

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
			l'ANACIM	BP 8184 Dakar, Sénégal	Fax:+221 33 820 32 59	
	64.	Mr. Papa Dibocor Sène	Directeur de la Navigation Aérienne et des Aéroports, à l'ANACIM	ANACIM BP 8184 Dakar, Sénégal	Tel: +221 33 869 53 35 Fax:+221 33 820 32 59	anacim@anacim.sn
	65.	Mr. Chérif Diop	Directeur de l'Exploitation et de la Météorologie à l'ANACIM	ANACIM BP 8184 Dakar, Sénégal	Tel: +221 33 869 53 35 Fax:+221 33 820 32 59	anacim@anacim.sn
	66.	Ms. Thioune Ndoumbé Niang	Chef du Département Navigation Aérienne à l'ANACIM	ANACIM BP 8184 Dakar, Sénégal	Tel: +221 33 869 53 35 Fax:+221 33 820 32 59	anacim@anacim.sn
	67.	Mr. Badara Diop	Chef du Service Sécurité Communications, Navigation et Surveillance à l'ANACIM	ANACIM BP 8184 Dakar, Sénégal	Tel: +221 33 869 53 35 Fax:+221 33 820 32 59	anacim@anacim.sn
	68.	Mr. Souleymane Fall	Chef du Bureau Communications, Navigation et Surveillance à l'ANACIM	ANACIM BP 8184 Dakar, Sénégal	Tel: +221 33 869 53 35 Fax:+221 33 820 32 59	anacim@anacim.sn
	69.	Mr. Sana Ndir	Cadre Technique à l' ANACIM	ANACIM BP 8184 Dakar, Sénégal	Tel: +221 33 869 53 35 Fax:+221 33 820 32 59	anacim@anacim.sn
	70.	Ms. Mame Yacine Kébé	Chef Pôle SMS/SMQ à l'Agence des Aéroports du Sénégal (ADS)	ANACIM BP 8184 Dakar, Sénégal	Tel: +221 33 869 53 35 Fax:+221 33 820 32 59	anacim@anacim.sn
	71.	Mr. Mamadou Gningue	Chef Pôle Opérations Aéroportuaires à l'ADS	ANACIM BP 8184 Dakar, Sénégal	Tel: +221 33 869 53 35 Fax:+221 33 820 32 59	anacim@anacim.sn
	72.	Mr. Waly Soumare	Chef Pôle Opérations Aéroportuaires à l'ADS	ANACIM BP 8184 Dakar, Sénégal	Tel: +221 33 869 53 35 Fax:+221 33 820 32 59	anacim@anacim.sn
	73.	Mr. El Oualed Diongue	Commandant Aéroport de	ANACIM	Tel: +221 33 869 53 35	anacim@anacim.sn

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
			Saint Louis à l'ADS	BP 8184 Dakar, Sénégal	Fax:+221 33 820 32 59	
	74.	Mr. Ibrahima Wane	Chef, Unité Sécurité à l'ADS	ANACIM BP 8184 Dakar, Sénégal	Tel: +221 33 869 53 35 Fax:+221 33 820 32 59	anacim@anacim.sn
	75.	Mr. David Mendy	Commandant Aéroport de Ziguinchor à l'ADS	ANACIM BP 8184 Dakar, Sénégal	Tel: +221 33 869 53 35 Fax:+221 33 820 32 59	anacim@anacim.sn
	76.	Mr. Malamine Sonko	Chargé des Services Météorologiques à la Représentation de l'ASECNA au Sénégal	ANACIM BP 8184 Dakar, Sénégal	Tel: +221 33 869 53 35 Fax:+221 33 820 32 59	anacim@anacim.sn
	77.	Mr. Seydou Ba	Chargé Maintenance Infrastructure Radioélectrique à la Rep. de l'ASECNA	ANACIM BP 8184 Dakar, Sénégal	Tel: +221 33 869 53 35 Fax:+221 33 820 32 59	anacim@anacim.sn
	78.	Mr. Mamadou Mbodji	Chef du Contrôle en Route à la Rep. de l'ASECNA	ANACIM BP 8184 Dakar, Sénégal	Tel: +221 33 869 53 35 Fax:+221 33 820 32 59	anacim@anacim.sn
	79.	Mr. Ali Sarr	Chargé Unité AIM à la Rep. de l'ASECNA	ANACIM BP 8184 Dakar, Sénégal	Tel: +221 33 869 53 35 Fax:+221 33 820 32 59	anacim@anacim.sn
	80.	Mr. Mesfin Fikru Wolderyohannes	Director Safety and Technical Services	African Civil Aviation Commission	Tel: + 221 33 859 8812 Fax: +221 33 820 7018	mfikru@afcac.org
SEYCHELLES	81.	Ms. Elizabeth Pitter	Manager CNS/Telecommunication	Seychelles International Airport Mahe, Seychelles	Tel: +248 438 4202 Fax: +248 438 4179	pelizabeth@scaa.sc
	82.	Mr. Samson Esmee	General Manager (Air Navigation Services)	Seychelles International Airport Mahe, Seychelles	Tel : +248 434 4180 Fax : +248 438 4179	esamson@scaa.sc

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
	83.	Ms. Elizabeth Pitter	Manager CNS/Telecommunication	Seychelles International Airport Mahe, Seychelles	Tel: +248 438 4202 Fax: +248 438 4179	pelizabeth@scaa.sc
SOUTH AFRICA	84.	Mr. Zakhele Gilbert Thwala	Deputy Director-General, Civil Aviation	South Africa/National 159 Forum Building, CNR Bosman & Strubern Private Bag X193 Pretoria 0001	Tel: +27 12 309 3285 / 083 628 4680 Fax:	ThwalaZ@dot.gov.za
	85.	Mr. Johann Bierman	Director, Aviation Airports & Airspace	South Africa / National Department of Transport 159 Forum Building, CNR Bosman & Strubern Private Bag X193 Pretoria 0001	Tel: +27 12 309 3531	BiernamJ@dot.gov.za
	86.	Mr. James Chiumya	Director, Aviation Safety & Security	Department of Transport 159 Forum Building, CNR Bosman & Strubern Private Bag X193 Pretoria 0001	Tel: +27 12 309 3655 Fax: +27 12 309 3529	ChiumyaJ@dot.gov.za
	87.	Mr. Francois Coetzee	Senior Manager, Aeronautical Information	South Africa/ATNS Private Bag X1 Bonaero Park 1622	Tel: +27 11 607 1258	Francois@atns.co.za
	88.	Mr. Jeffrey Matshoba	Senior Manager, Air Traffic Management Planning	South Africa/ATNS Private Bag X1 Bonaero Park 1622	Tel: +27 11 607 1303	Jeffrey@atns.co.za

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
	89.	Mr. Carl Gersbach	Senior Manager Communication, Navigation and Surveillance Planning	South Africa/ATNS Private Bag X1 Bonaero Park 1622	Tel: +27 11 607 1120	CarelG@atns.co.za
	90.	Mr. Nkabiti Nelson Motlagoliwe	Senior Manager Aerodromes and Facilities	Department of Transport Private Bag X193 Pretoria 0001		
	91.	Ms. Siphokazi May	Manager, Air Traffic Services	Private BAG X73 Halfway House 1685	Tel: + 27 11 545 1065	mays@caa.co.za
	92.	Mr. Maphanga Sandile	Central Airspace Management Unit	ATNS Private Bag x 1 Bonaero Park South Africa 1622	Tel: +27 11 928 6433 Fax: +27 11 928 6565	Sandilema@atns.co.za
	93.	Mr. Kevin Ewels		ARMA Private Bag x 1 Bonaero Park South Africa 1622	Tel: +27 11 9286506 Fax: +27 11 928 6506	afirma@atns.co.za
		Mr. Johan Smit	Manager Air Traffic Services: Johannesburg	ATNS Private Bag x1 Bonaero Park South Africa 1622	Tel: +27 11 928 6526 Fax: +27 11 395 1045	JohnnyS@atns.co.za
SOUTH SUDAN	94.	Mr. Stephen Tako Rombe	Director Aviation Safety & Ops	South Sudan Civil Aviation Authority Republic of South Sudan		
	95.	Mr. Subek David Dada	Director Aviation Security	South Sudan Civil Aviation Authority Republic of South Sudan		

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
	96.	Mr. Peter Lemi Abdalla	Senior Air Traffic Controller	South Sudan Civil Aviation Authority Republic of South Sudan		
	97.	Mr. Patrick Aiteng	Chief Executive Officer	South Sudan Civil Aviation Authority Republic of South Sudan	Tel: +211 9550 34177	Aiteng54@yahoo.com
SUDAN	98.	Mr. Hussain Elmahi	Deputy Director Air Navigation Regulation	Sudan Civil Aviation Authority P.O. Box 430 Khartoum, Sudan	Tel: +249 1234 99 247 Fax: +249 183 527 422	Hnaile60@yahoo.com
	99.	Mr. Yousif Ahmed	Deputy Director General	Sudan Civil Aviation Authority P.O. Box 430 Khartoum, Sudan	Tel: +249 123 07 252 Fax: +249 183 52 7422	yousibra15@gmail.com ; yousibra@hotmail.com
	100.	Mr. Mahmoud Elhassan Mohamed Salih	Director Safety and Standards Policies – NCMC	Sudan Civil Aviation Authority P.O. Box 430 Khartoum, Sudan	Tel: +249 9 128 55 290 Fax: +249 183 527 422	malhassan@scaa.gov.sd ; assgad2007@gmail.com
TANZANIA	101.	Mr. Saidi Abdullah Onga	Chief Air Traffic Management	Tanzania Civil Aviation Authority P.O. Box 2819 Dar es salaam, Tanzania	Tel: +255 22 2198 100 Fax: +255 22 2844 300	songa@tcaa.go.tz
	102.	Mr. Valentina Norbert Kayombo	Chief Air Navigation Engineer	Tanzania Civil Aviation Authority P.O. Box 2819 Dar es salaam, Tanzania	Tel: +255 22 2198 100 Fax: +255 22 284 4300/ 284 4304	ykayombo@tcaa.go.tz
	103.	Mr. Aspedito Mfugale	Chief Aeronautical Information Management	Tanzania Civil Aviation Authority P.O. Box 2819 Dar es salaam, Tanzania	Tel: +255 22 2198 100 Fax: +255 22 284 4300/ 284 4304	amfugale@tcaa.go.tz

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
	104.	Mr. Mohamed Besta	Principal Aerodrome Inspector	Tanzania Civil Aviation Authority P.O. Box 2819 Dar es salaam, Tanzania	Tel: +255 22 2198 100 Fax: +255 22 2844 300	mbesta@tcaa.go.tz ; mohdbesta@gmail.com
	105.	Ms. Clara Mpili	Principal CNS Inspector	Tanzania Civil Aviation Authority P.O. Box 2819 Dar es salaam, Tanzania	Tel: +255 754 272 098 Fax: +255 222 844 304	cmpili@tcaa.go.tz
TOGO	106.	Mr. Magnourewa Pelenguei	Ingenieur Aeronautique / Inspecteur Principal Navigation Aerienne et Aerodrome	Agence Nationale de l'Aviation Civile du Togo (ANAC-TOGO) ANAC-TOGO Boulevard de la Paix BP 2699 Lome, Togo	Tel: +228 222 63 740 Fax: +228 222 60 860	pelengueimagnourewa@gmail.com
UGANDA	107.	Ms. Irene Lawoko Atto	Principal ANS Inspector	Uganda Civil Aviation Authority P.O. Box 150 Entebbe, Uganda	Tel: +256 757 830 766 Fax: +256 414 320 375	iatto@caa.co.ug
	108.	Mr. Geoffrey Okot	Manager Air Traffic Management	Uganda Civil Aviation Authority P.O. Box 5536 Kampala, Uganda	Tel: +256 772 686 721 Fax: +256 414 320 964	gokot@caa.co.ug
	109.	Mr. Moses Kaniike	Ag. Manager AIM	Uganda Civil Aviation Authority P.O. Box 5536 Kampala, Uganda	Tel: +256 752 813 789 Fax: +256 414 320 964	mkaniike@caa.co.ug
	110.	Mr. Richard Ruhesi	Director Air Navigation Services	Uganda Civil Aviation Authority P.O. Box 5536 Kampala, Uganda	Tel: +256 752 643 073 Fax: +256 414 320 964	rruhesi@caa.co.ug
	111.	Mr. David Clay Amoni	Ag. Manager SMS/QA	Uganda Civil Aviation	Tel: +256 752 613 119	damoni@caa.co.ug

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
				Authority P.O. Box 5536 Kampala, Uganda	Fax: +256 414 320 964	
	112.	Mr. Ronny Barongo	Manager Communications, Navigation and Surveillance	Uganda Civil Aviation Authority P.O. Box 5536 Kampala, Uganda	Tel: +256 712 804 364 Fax: +256 414 320 964	rbarongo@caa.co.ug
	113.	Mr. Henry Luwemba Kitaka	Ag. Manager Flight Safety Standards	Uganda Civil Aviation Authority P.O. Box 5536 Kampala, Uganda	Tel: +256 755 094 929 Fax: +256 757 830 766	dat@caa.co.ug
ZAMBIA	114.	Mr. Harrison Banda	Chief Telecommunications Officer	Department of Civil Aviation P.O. Box 50137 Lusaka, Zambia	Tel: +260 9558 806 99 Fax: +260 2112 518 41	harryban16@hotmail.com
	115.	Mr. Mbanga Stewart Yeta	Acting Director	Department of Civil Aviation P.O. Box 50137 Lusaka, Zambia	Tel: +260 211 254 097 Fax: +260 211 251 841	mbanga.yeta@gmail.com
ZIMBABWE	116.	Mr. Marko Kurewa	CNS Inspector	Civil Aviation Authority of Zimbabwe P.O. Box 7716 Causeway, Harare	Tel: +263 4 585 073 87 Fax: +263 585 090	mkurewa@caaz.co.zw
INTERNATIONAL ORGANIZATIONS						
ASECNA	117.	Ms. Claire-Josette Obame- Edou				
	118.	Ms. Claire Aimée Andriamalaza	Chef de Bureau Normalisation		Tel: +221 33 869 57 04	andriamalazacla@asecna.org
	119.	Ms. Téne Issabre Sanogo née				
	120.	Ms. Adama Nouhou Tinni				
	121.	Ms. Aminata Sall née Diop				
	122.	Ms. Adama Nouhou Tinni				

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
	123.	Ms. Sophie Sarr				
	124.	Mr. Wodiaba Samake				
	125.	Mr. Sidi Kone				
	126.	Mr. Hugues Cumbi Ayina Akilotan				
	127.	Mr. Rejera Allamdoungaye				
	128.	Mr. Bissa Sougue				
	129.	Mr. Athanase Ahouangan				
	130.	Mr. Amadou Gueye Malal				
	131.	Mr. Simon Kabore				
	132.	Mr. Eric Damiba				
	133.	Mr. Kadjibaye Yoguelim				
	134.	Mr. Ange Madangui	ICAO AFI-FPP Team	ASECNA	Tel: +221 77 668 2294 Fax: +221 33 823 4654	madanguiang@asecna.org
	135.	Mr. Alassane Maiga				
	136.	Mr. Bakary Tioro				
	137.	Mr. Harouna Hama				
	138.	Mr. Joseph Mbolidi				
	139.	Mr. Alain Ngoma-Mby				
	140.	Mr. Dieudonné Ngouka				
	141.	Mr. Patrick Rakotomahefa				
	142.	Mr. Omar Wele				
	143.	Mr. Aladjou Mingo Sibitang				
	144.	Mr. Batchassiwe Abouleka				
	145.	Mr. Théodore Tchisseu				
	146.	Mr. Alexandre Damiba	ICAO AFI-FPP Team	ASECNA	Tel: +221 33 869 5776 Fax: +221 33 823 4654	damibaale@asecna.org
	147.	Mr. Dieudonné Kassa				

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
		Kassa				
	148.	Mr. Ndiogou Assane Diop				
	149.	Mr. Roland Kameni				
	150.	Mr. Essoh Anade Adabi				
	151.	Mr. Abdel Nasser San'anna				
	152.	Mr. Amadou Yoro Diallo				
	153.	Mr. Josiah Ulrich Backobi				
	154.	Mr. Ludovic Tassembledo				
	155.	Mr. Théodore Ndong				
	156.	Mr. Ngbakouasse Besse				
	157.	Mr. Oumarou Moumouni				
	158.	Mr. Jean Patrick Randrianasolo				
	159.	Mr. Rokia Sogoba				
	160.	Mr. Assoumane Aboubacar				
	161.	Oumar Ben Khatab Sy				
	162.	Mr. Salif Diallo	Directeur Général Adjoint de l'ANAC	Agence Nationale de l'Aviation Civile BP 227 République du Mali	Tel: + 223 20 20 55 24 Fax: +223 20 20 61 75	
	163.	Mr. Oumar Mamadou Ba	Directeur de la Sécurité Aérienne à l'ANAC	Agence Nationale de l'Aviation Civile BP 227 République du Mali	Tel: + 223 20 20 55 24 Fax: +223 20 20 61 75	
	164.	Mr. Issiaka Konake	Chef Service Navigation Aérienne et Aérodrome à l'ANAC	Agence Nationale de l'Aviation Civile BP 227	Tel: + 223 20 20 55 24 Fax: +223 20 20 61 75	

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
				République du Mali		
	165.	Mr. Khalilou Bougounno Sanogho	Représentant de l'ASECNA, Mali			
	166.	Mr. Serge Moufouma	Responsable des Opérations à l'ASECNA			
	167.	Mr. Saliou Goro	Charge de l'exploitation NA et MTO à la Délégation aux Activités Aéronautiques Nationales du Mali			
	168.	Mr. Gackou Abdel Kader	Responsable Opérations	ASECNA - Mauritanie		
	169.	Mr. Julien Lapie	Technical Advisor	ASECNA 32-38 Avenue Jean-Jaures P.O. Box 3144 Dakar, Senegal	Tel: +221 33 869 56 64 Fax: +221 33 820 7495	lapiejul@asecna.org
CANSO	170.	Ms. Patricia Boni Dibate	CANSO Director : Africa Affairs	Eastgate Office Park Block C South Boulevard, Bruma Johannesburg, 2198 South Africa	Tel: +27 11 607 1357 Fax: +27 11 607 1541	Boni.Dibate@CANSO.org
COSCAP-UEMOA	171.	Mr. Jacques Douka	Inspecteur Regional en Licences du Personnel	COSCAP-UEMOA 01 BP: 6159 Ouagadougou Burkina Faso	Tel: +226 75 88 07 24	Jacques.douka@gmail.com
	172.	Mr. Laurent Christophe Kielwasser	Inspecteur Opérations /Team Leader du Projet COSCAP-UEMOA	COSCAP-UEMOA 01 BP: 6159 Ouagadougou Burkina Faso	Tel: +226 50 49 06 08	cjkilwasser@yahoo.com
	173.	Mr. Nika Meheza Manzi	Inspecteur Regional en Sécurité et Certification des Aerodromes	COSCAP-UEMOA 01 BP: 6159 Ouagadougou Burkina Faso	Tel: +226 79 20 54 90	meheza@yahoo.fr
	174.	Ms. Irène Gnassou Seka	Coordonnateur Régional	ICAO – Project COSCAP-UEMOA 01 BP 6159 Ouagadougou Burkina Faso	Tel: +226 76 01 64 02	igseka@uemoa.int

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
EAC - SECRETRIAT	175.	Eng. Ladislaus Matindi	Principal Civil Aviation Officer	P.O. Box 1096 Arusha, Tanzania	Tel: +255 27 2504 253/8 Fax: +255 27 2504 255/250 4481	
ICAO	176.	Mr. Frederic Legrand	ICAO AFI-FPP Manager	ICAO WACAF Office LSS Airport P.O. Box 38050 Dakar, Senegal	Tel: +221 776 397 853	flegrand@icao.int
	177.	Mr. Meshesha Belayneh	Regional Director	ICAO ESAF P.O. Box 46294 00100 Nairobi	Tel: +254 20 762 2395	MBelayneh@icao.int
	178.	Mr. Lambert Ndiwaita	Regional Officer, AGA	ICAO ESAF P.O. Box 46294 00100 Nairobi	Tel: +254 20 762 2371	LNdiwaita@icao.int
	179.	Mr. Prosper Zo'o Minto'o	Regional Officer, CNS	ICAO ESAF P.O. Box 46294 00100 Nairobi	Tel: +254 20 762 2367	PZoomintoo@icao.int
	180.	Mr. Seboseso Machobane	Regional Officer, ATM	ICAO ESAF P.O. Box 46294 00100 Nairobi	Tel: +254 20 762 2372	SMachobane@icao.int
	181.	Ms. Consolata Ong'ong'a	Secretary to Head of Office	ICAO ESAF P.O. Box 46294 00100 Nairobi	Tel: +254 20 762 2395	COngonga@icao.int
	182.	Ms. Mildred Owiti	Team Assistant	ICAO ESAF P.O. Box 46294 00100 Nairobi	Tel: +254 20 762 2026	MOwiti@icao.int
IFALPA	183.	SFO Carl Bollweg	Regional Vice President AFI/South Region	P.O. Box 2159 Honeydew 2040 Johannesburg, South Africa	Tel: +27 83 260 7521	carlbollweg@gmail.com
IFATCA	184.	Ms. Keziah Ogutu	Executive Vice President	P.O. Box 56819	Tel: +254 722 386 001	keogutu@yahoo.com

APIRG/19 Meeting Report

Appendix 1A

List of Participants

STATE/ ORGANIZATION	NO.	NAME	OFFICIAL TITLE	ADDRESS	TELEPHONE & FAX	E-MAIL
				00501 Nairobi Kenya	Fax: +254 20 208 271 0202	
IATA	185.	Ms. Tanja Grobrotek	Regional Director – Safety, Operations & Infrastructure (AFI)	IATA Pvt Bag X9 PostNet Suite 970 Benmore 2010 South Africa	Tel: +27 11 523 2714 Fax: +27 11 523 2701	GrobrotekT@iata.org
SITA	186.	Mr. Emnet Meheret Gebru	Air Traffic Management Business Development Manager	18 Eglin Road Sunninghill 2191 Johannesburg, South Africa	Tel: +277 8800 4635	Emnet.meheret@sitaaero
US FEDERAL AVIATION ADMINISTRATION	187.	Ms. Catherine Lang	FAA Director for Europe, Africa and Middle-East	US Federal Aviation Administration FAA Office in Africa s/c American Embassy in Senegal Route des Almadies – BP 049 Dakar – Senegal	Tel: +221 33 879 48 35 Fax:+221 33 879 41 00	Mo.keane@faa.gov
	188.	Ms. Moira Keane	FAA Senior Representative in Africa	US Federal Aviation Administration FAA Office in Africa s/c American Embassy in Senegal Route des Almadies – BP 049 Dakar – Senegal	Tel: +221 33 879 48 35 Fax:+221 33 879 41 00	Mo.keane@faa.gov
	189.	Ms. Oumou Bengeloune	Civil Aviation Specialist	US Federal Aviation Administration FAA Office in Africa s/c American Embassy in Senegal Route des Almadies – BP 049 Dakar – Senegal	Tel: +221 33 879 48 35 Fax:+221 33 879 41 00	Mo.keane@faa.gov

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Decision 19/01:	Consolidation of Conclusions and Decisions from previous meetings	That the ICAO Secretariat should a) finalize the review of the Conclusions and Decisions from APIRG previous meetings, which require further consideration within the Secretariat; and b) reflect the consolidation of the Conclusions and Decisions that are still valid in the action plan to be derived from the report of APIRG/19 Meeting.	APIRG Secretariat	Adequate management of Conclusions and Decisions		31 December 2013	
Conclusion 19/02:	Follow-up to AN-Conf/12 Recommendations by States and International Organizations	That the States and International Organizations take follow-up action as appropriate on the applicable recommendations of the AN-Conf/12.	States & International Organizations	Implementation of AN-Conf/12 Recommendations		APIRG/20	
Decision 19/03:	Follow-up to AN-Conf/12 Recommendations by APIRG	That the sub-groups of the APIRG examine the recommendations of the AN-Conf/12, initiate the follow- up action and submit the report to the APIRG/20 Meeting.	APIRG Secretariat	Follow up on implementation of AN-Conf/12 Recommendations		APIRG/20	

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/04:	Regional priorities and targets for Air navigation	That: a) States establish, consistent with Recommendation 6/1 of the Twelfth Air Navigation Conference, priorities and targets for air navigation by May 2014; b) States share successful initiatives among each other; c) PIRGs utilize specific interface groups, where required, for addressing the harmonization of air navigation plans in adjacent regions; and d) The Secretariat develop a coordination mechanism between the APIRG and the RASG-AFI to ensure consistency of action and avoid overlap.	States States APIRG APIRG and RASG-AFI Secretaries	National air navigation plans with priorities Sharing of experience Interregional coordination Consistent air navigation and safety programmes		31 May 2014 APIRG/20 APIRG/20 30 June 2014	

[illegible]

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/06:	Adoption of AFI Regional Air Navigation System Implementation Action Plan Aligned with the ICAO Aviation System Block Upgrades (ASBUs)	That: a) AFI States adopt the Regional Air Navigation System Implementation Plan aligned with the 18 Block 0 Modules of the ICAO Aviation System Block Upgrades (ASBU) Methodology, as provided at Appendix 3.0A to this report; b) That AFI States implement the adopted modules based on their operational needs, the categorization and the prioritization defined in the Action Plan; c) The Secretariat finalize the implementation targets set for the adopted ASBU Block 0 Modules, and ensure that these targets are aligned with existing regional programmes aimed at enhancing air navigation capacity and efficiency and aviation safety; d) The APIRG and the ICAO Regional Offices coordinate the implementation of the ASBU Block 0 Modules related to Safety Key Performance Area with regional aviation safety mechanisms (RASG-AFI, AFI Plan) and other relevant safety initiatives for the AFI Region; e) ICAO continually provide capacity building through workshops and seminars to AFI States and regional stakeholders as the needs arise in the different levels of ASBUs; and f) The African Civil Aviation Commission (AFCAC),	States States APIRG APIRG and RASG-AFI Secretaries ICAO AFCAC RECs	National air navigation plans with priorities Sharing of experience Interregional coordination Consistent air navigation and safety programmes Workshops and Seminars held on ASBUs Implementation of	31 May 2014 APIRG/ 20 APIRG/ 20 30 June 2014 APIRG/ 20 APIRG/		

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/07:	Integration of the AFI Traffic Forecasting Group in the APIRG	a) the activities of the AFI Traffic Forecasting Group should be integrated in the APIRG, and aligned with the ICAO Aviation Data and Analysis Panel (ADAP); b) the forecasts developed by the AFI TFG should cover the major traffic flows and the routing areas in the AFI Region, as well as other planning requirements of the region; c) ICAO should implement an improved Form L (En-Route Services Traffic Statistics) to accommodate specific regional needs for traffic analyses in a changing environment; and d) States should fully participate in the ICAO Statistics Programme and provide the relevant FIR data identified by the AFI TFG to enable the development of reliable forecasts for traffic flows.	ICAO APIRG APIRG TFG ICAO States	Traffic Forecast activities integrated in APIRG and aligned with Global activities Relevant Traffic Forecast data En-route Service Statistics available Reliable forecasts for traffic flows		30 June 2014 APIRG/20 31 December 2014 APIRG/20	

[illegible]

APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B

Conclusions/Decisions of APIRG/19

Follow-up Action Plan

[illegible]

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/11:	Runway Safety Programmes	That: a) States, which have not yet done so, establish Runway Safety Teams (RSTs) at all international aerodromes; and b) The RSTs established should be appropriately mandated to monitor the runway incursion and excursion incidents and accidents and propose mitigation measures proactively.	States States	Establishment of Runway Safety Teams Monitoring of Runway incursions and excursions		APIRG/20 APIRG/20	

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/12:	ICAO-ACI APEX Programme	That States: a) Support the use of the APEX in Safety Programme at aerodromes in the AFI region; b) Encourage airport operators to approach ACI for assistance through the APEX in Safety Programme; and to recommend aerodrome operators in the AFI region to participate in the APEX Safety Reviews Programme and share relevant information on safety; c) In the framework of APEX Programme, encourage the pooling of experts of States to carry out aerodrome certification audits, given the lack of human resource capacity at the national level; d) Encourage the participation of these Organizations in the ICAO/ACI APEX Programme.	States	Effective implementation of APEX Programme		APIRG/20	

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/13:	Implementation of Air Traffic Control Service	That, by 26 June 2014, AFI States that have not already done so, establish Class A airspace in accordance with Section 2.6 of Annex 11 to the Chicago Convention, and implement air traffic control service in the lower airspace as follows: a) establish Class A airspace above FL145 for all ATS routes referred to in Table ATS 1 of the AFI Air Navigation Plan (Doc 7474) as amended; b) establish Class A airspace above Flight Level 195 elsewhere within the FIR; and c) Implement effective and sustained air traffic control service in all terminal control areas (TMA) and control zones (CTR).	States	Effective ATC service for en-route, terminal and aerodrome operations		30 June 2014	
Decision 19/14:	Establishment of the AFI SSR Code Allocation and Assignment Working Group	That, the AFI SSR Code Allocation and Assignment Working Group (ASCAA WG) be established with the terms of reference as at Appendix 3.2B to this report, to review and update the AFI SSR Code Allotment Plan and code assignment principles.	APIRG	Review and update of SSR Code Allotment Plan		APIRG/20	

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/15:	AFI ATS Route Catalogue (AARC)	That, in order to facilitate the review and implementation of user ATS route requirements: a) the AARC Template is revised as at Appendix 3.2D to this report; and b) AFI States and concerned international organizations be urged to review the Catalogue every six (6) months (January and July), note developments, and take action as applicable.	APIRG States	AARC Template amended AARC kept current		Done APIRG/20	

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Decision 19/16:	Reactivation and Review of the Terms of Reference of CNS/ATM Implementation Coordination Groups (ICGs)	That, in order to facilitate coordination in the planning and implementation of CNS systems for ATM, as well as the harmonized implementation of ATM performance improvements: a) the Implementation Coordination Groups (ICGs) as established in the AFI CNS/ATM Implementation Plan (Doc 003) be reactivated; b) the activities of the ICGs be expanded to include ATM coordination tasks that had been carried out in informal ATM Coordination Meetings; c) the number and alignment of the ICGs take into consideration the added tasks, in particular those that are sub-regional in nature; and d) the terms of reference of the ICGs be revised as at Appendix 3.2E to this report.	APIRG	Functional Implementation Coordination Groups Coordinated implementation of ATM performance improvements ICGs Revised terms of reference		Done APIRG/20 for b) and c) Done	

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/17:	AFI Flight Procedure Programme (AFI-FPP)	That: a) AFI States be invited to: i). indicate their needs for PBN procedure design to the AFI FPP as soon as possible, noting that the deadline in the State Letter Ref.: AN 11/45.2.1-13/18 dated 28 February 2013 from the Secretary General of ICAO has long elapsed; and ii). participate actively in the AFI-FPP activities by providing financial and/or in-kind support; and	States	Determination of PBN needs Support to AFI FPP		2014 2014	
		b) the Secretariat follows up on State responses relating to State Letter Ref.: AN 11/45.2.1-13/18 dated 28 February 2013.	APIRG Secretariat	Level of participation in the AFI FPP		30 March 2014	

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Decision 19/18:	Establishment of the ATS Competencies Study Group	That, the ATSCSG be established with the Terms of Reference as at Appendix 3.2G to this report, in order to: a) study the shortcomings in ATC training including States' (and ANSPs) training programmes and plans; and b) establish and provide recommendations that would address issues relating to lack of competency of ATS personnel.	APIRG	ATS Proficiency		APIRG/20	
Conclusion 19/19:	Integration of the Volcanic Ash Contingency Plan to the Air Traffic Management Contingency Plan	That, the AFI Volcanic Ash Contingency Plan at Appendix 3.2J to this report be integrated as an Appendix to the AFI ATM Contingency Plan.	APIRG	Volcanic Ash Contingency Plan integrated in the AFI ATS Contingency Plan		30 April 2014	
Decision 19/20:	Revised ATM/MET Task Force Terms of Reference	That, the Terms of Reference of the ATM/MET Task Force be updated as at Appendix 3.2I to this report.	APIRG	ATM/MET Task Force Terms of Reference amended		Done	

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/21:	SAR Data Collection and Development and Management of an AFI SAR Web Page	That: a) AFI States provide SAR implementation information reflected in the questionnaire at Appendix 3.2K to this report , not later than 31 December 2013, to the ICAO ESAF and WACAF Regional Offices; b) ICAO develop and manage a webpage under ESAF and WACAF websites, to post information from AFI States on SAR implementation and activities; and c) AFI States forward to the ICAO Regional Offices regular information on their SAR activities, for posting on the website.	States ICAO States	SAR implementation information available AFI SAR Web Page Updated information on SAR activities		31 January 2014 30 June 2014 APIRG/20	

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/22:	Establishment of a Team of SAR Experts	That, in order to support the implementation of SAR services in AFI States a) ICAO establish a SAR Team of Experts that could, at the request of a State, be called upon to assist the State in the establishment of SAR systems including legislation frameworks and operational documentation; and b) AFCAC be requested to establish a SAR Support Project that will take over from the SAR Team of Experts to provide structured support to States.	ICAO ICAO AFCAC	SAR Team of Experts SAR Support Project		30 June 2014 APIRG/20	

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/23:	Resolution of the issue of Missing Flight Plans	That, in order to support the effective implementation of international standards relating to flight plan: a) operators and ANSPs should, take necessary measures to ensure that, prior to departure, flight plans are correctly filed and accepted; b) AFI States and Air Navigation Service Providers be urged to ensure that international flights are not released for departure without correctly filed flight plans; c) in the event of routine or repetitive non-receipt of standard flight plans, the appropriate ATS authority assess the risk and as necessary, arrange for the non-acceptance of subsequent, related operations over the territory of the State concerned. The operator(s) and adjacent ATS units will be informed in advance of this action being taken; and d) AFI States regulatory bodies take necessary action to ensure effective implementation.	States Air Operators ANSPs States ANSPs States States	Submission and acceptance of correct flight plans Correct flight plans Mitigation of missing flight plans Enforcement of flight plan requirements		APIRG/20 APIRG/20 APIRG/20 APIRG/20	

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Decision 19/24:	Dissolution of the AFI Flight Plan Transition (FPLT) Task Force	That: a) the AFI Flight Plan Transition Task Force is hereby dissolved; and b) the ATM/AIM/SAR and CNS Sub-Groups should take necessary action to follow up on the post- implementation issues of the NEW ICAO Flight Plan format.	APIRG APIRG	Dissolution of AFI FPLT Task Force Follow-up of NEW ICAO Flight Plan issues		Done APIRG/20	
Conclusion 19/25:	Implementation of Voice over IP for ATS/DS	That: AFI States implement Voice over IP (VoIP) as an evolution of the current point-to-point ATS/DS system, and conduct coordinated trials on VoIP prior to operational use.	States	VoIP trials for ATS/DS		APIRG/20	

[illegible]

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/28:	Assessment and Mitigation of GNSS Vulnerabilities	That States providing GNSS services should: a) Assess and report GNSS vulnerabilities in their airspace, including: (i) unintentional and intentional interference (ii) ionospheric scintillation in equatorial regions; (iii) other vulnerabilities as may be identified; and b) Implement appropriate mitigation measures depending on: (i) the airspace in question; and (ii) the operations that must be supported.	States States	Assessment of GNSS vulnerabilities Mitigation of identified GNSS vulnerabilities		APIRG/20 APIRG/20	
Conclusion 19/29:	Impact analysis of the Implementation of GNSS/SBAS in the AFI Region	That: in order to enable States to make informed decision and to facilitate dialogue among stakeholders, concerning the implementation of GNSS satellite-based augmentation system (SBAS) in the AFI Region, the ICAO Regional Offices should facilitate the search for the funding of an impact analysis related to SBAS, that covers operational, technical, environmental and economic aspects of this GNSS augmentation system.	ICAO ROs	Impact analysis of AFI SBAS implementation		APIRG/20	

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/30:	Establishment of a Data Link Central Monitoring And Reporting Agency (DL/CMRA)	That: The ICAO Regional Offices explore with States and relevant organizations the available options for the establishment of a Data Link Central Monitoring and Reporting Agency (DL/CMRA) to ensure effective operation, monitoring and reporting of ATS data link applications in the AFI Region.	ICAO ROs	Establishment of an AFI Data Link Central Monitoring Agency		APIRG/20	
Conclusion 19/31:	Interoperability of AFI Aeronautical Surveillance Systems	That, in order to enable seamless ATM operation within the AFI Region: a) States and service providers take the necessary steps to ensure interoperability of the existing aeronautical surveillance systems and facilitate surveillance data sharing; b) AFCAC be requested to support the continuous provision of aeronautical surveillance services along the areas of routing identified by the APIRG through an integrated surveillance system; and c) ICAO continue to assist AFI States' initiatives towards the implementation of an integrated aeronautical surveillance system, through seminars, workshops and technical coordination meetings	States	Interoperability of surveillance systems		APIRG/20	

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/32:	Coordination between CAAs and National Telecommunication Regulatory Authorities	That: States establish a coordination framework and procedures between national Civil Aviation Authorities and Telecommunications Authorities with the assistance of the ICAO Regional Offices as required, in order to facilitate efficient provision, operation and protection of aeronautical frequency spectrum.	States	Coordination process between CAAs and Telecommunication Authorities		APIRG/20	
Conclusion 19/33:	Monitoring and Reporting of Cases of Interference to Aeronautical Spectrum	That: States support the studies called for under ITU WRC-12 Resolution 154 by: a) ensuring that their operated aeronautical frequencies are duly registered in the ITU Master International Frequency Register through Telecommunications Authorities and notified to the ICAO Regional Offices for inclusion in the global and regional frequency databases; and b) monitoring and reporting to ITU all cases of interference caused to aeronautical frequencies, such as interference from International Mobile Telecommunications (IMTs) in the frequency band 3.4 – 4.2 GHz (C-Band) used by aeronautical VSATs, for consideration by ITU WRC Working Parties.	States States	Registration of aeronautical frequencies Protection of aeronautical VSAT frequency band		APIRG/20 APIRG/20	

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/34:	Support to ICAO Position for WRC-15	That: States support the ICAO position for ITU WRC-15 by: a) incorporating the ICAO position in the national position to WRC-15; b) coordinating this position with all aviation stakeholders (CAAs, ANSPs, Air Operators, Airport Operators, etc.); and c) Ensuring regular and active participation of Civil Aviation Representatives dealing with aeronautical spectrum issues (such as AFI FMG focal points) in WRC-15 preparatory activities at regional/global level and during the Conference.	States	Support to ICAO Position for WRC- 15		APIRG/20	
Decision 19/35:	Implementation of Performance Data Collection Forms for AFS	That the best practices adopted by APIRG for Aeronautical Fixed Services (AFS) be amended to include the Performance Data Collection Forms (PDCFes) shown at Appendix 3.4A to this report.	States	Harmonization of AFS performance measurement		Done	

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/36:	Harmonization of the collection of the statistics on the performance of the VSAT Networks	That as from 1 January 2014, in order to harmonize the monitoring, collection and Reporting of technical and operational data on Aeronautical Fixed Services (AFS) characteristics and performance, States should: a) Apply the four-level assessment model including space segment, radiofrequency equipment, modulators/demodulators, end-user equipment; and b) use the software tools available in their processing systems to increase accuracy of the reported data, and facilitate comparative analysis of these data.	States	Uniform AFS performance monitoring and report		January 2014	
Decision 19/37:	Terms of Reference, Future Work Programme and Composition of the IRTI Task Force	That: a) the activities related to the development of an integrated regional telecommunication infrastructure should be pursued based on the Action Plan shown at Appendix 3.4E to this report; and b) the terms of reference, future work Programme and composition of the IRTI Task Force be amended as proposed in Appendix 3.4F to this report.	APIRG APIRG	Integrated Regional Telecommunication Infrastructure IRTI Task Force terms of reference amended		APIRG/20 Done	

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Decision 19/38:	Planning and Implementation of ATN applications	That the CNS Sub-Group should address all aspects of the planning and implementation of the Aeronautical Telecommunication Network (ATN) applications including ATS ground-ground and air-ground data link applications, in order to ensure systems interoperability through a coordinated and harmonized framework.	APIRG	Coordinated /Harmonized implementation of ATN		APIRG/20	
Conclusion 19/39:	Development of integrated programmes based on major ATM routing areas and air traffic flows	That: a) The ICAO Regional Offices should coordinate with States the identification and development of integrated programmes for the CNS infrastructure, aligned with the ASBU methodology, and based on major ATM routing areas and air traffic flows in the AFI region; and b) ICAO, AFCAC and other relevant regional economic and financial institutions should facilitate the funding arrangements for such integrated programmes.	ICAO ROs States ICAO AFCAC RECs	Integrated programmes for CNS infrastructure Effective implementation of integrated CNS programmes		APIRG/20 APIRG/20	

[illegible]

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/41:	AIM/SWIM Seminar for the AFI Region	That, in order to support States with regard to the planning and implementation related to the transition from AIS/AIM to Information Management/SWIM, and expedites the harmonized implementation of the AIM/SWIM requirements; the ICAO ESAF and WACAF Regional Offices organize an AIM/SWIM Seminar in 2014/2015.	ICAO	AIM/SWIM Seminar		APIRG/20	
Conclusion 19/42:	Procedure for AFI OPMET Data Monitoring	That, a) Dakar and Pretoria RODBs: i). conduct within their respective areas of responsibilities, the monitoring of OPMET received from AFI BCCs; ii). analyze the monitoring results and identify shortcomings and deficiencies; iii). develop and forward to the concerned BCCs on a quarterly basis, the monitoring results and the recommendations to be implemented; iv). collaborate directly with the concerned States to assist addressing the shortcomings which can be resolved quickly; and v). issue on a semester basis, a report on the above four actions to be forwarded to ICAO Dakar and Nairobi regional Offices.	Senegal South Africa	Monitoring of SIGMET from AFI BCCs and periodic reports to ICAO ROs		APIRG/20	

[illegible]

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/43:	Implementation of AFI RODB Back Up Procedures	a) Dakar and Pretoria RODBs implement i). and maintain an identical OPMET bulletins catalogue; ii). the AFI Interface Control Document (ICD); iii). the same data validation criteria; and iv). conduct monitoring activities in order to ensure that the databanks contain required OPMET data at all times. b) the bulletin compiling centres (BCCs) disseminate OPMET data to both Dakar and Pretoria RODBs using appropriate AFTN addresses; and c) the MTF include AFTN addresses of both RODBs in the AFI ICD.	Senegal South Africa States APIRG	OPMET Bulletin Catalogues kept current AFI Interface Control Document Reliable RODBs Dissemination of OPMET data to RODBs RODBs AFTN addresses included in the AFI ICD		APIRG/20 APIRG/20 APIRG/20 APIRG/20 APIRG/20	

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/44:	Development of Capabilities of Handling OPMET Information in Digital Format	That both Pretoria and Dakar RODBs Provider States be invited to: a) start developing capability of handling OPMET data in digital format as soon as possible, after November 2013; b) test the codes based on OPMET data in digital format (XML/GML) for METAR/SPECI, TAF and SIGMET with a view to fine tuning over the first year (2014); and c) take a leading role over the transition aspect to XML/GML and provide technical assistance as required to other AFI States in implementing OPMET data in digital format.	Senegal South Africa	Capacity Building for Digital OPMET Handling		APIRG/20	
Conclusion 19/45:	Inclusion of state of runway reports in METAR/SPECI issued in the AFI Region	That, the AFI Air Navigation Plan (Doc 7474) be amended to include in METAR/SPECI, the report on observations of the State of the runway in terms of depth of water deposit measurements on the runway as provided by the appropriate Airport Authority.	ICAO ROs	Report on state of runway included in METAR/ SPECI information		APIRG/20	
Decision 19/46:	Future Work Programme of the MET/SG	That, the updated work Programme of the MET/SG given in Appendix 3.6F this report, be endorsed.	APIRG	MET/SG Future Work Programme amended		Done	

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Conclusion 19/47:	Need for consultation with users prior to major changes to the Air Navigation System	That: a) States should: i). ensure the aviation stakeholders adhere to the ICAO Policies on Taxation in the Field of International Air Transport (Doc 8632), ICAO Policies on Charges for Airports and Air Navigation Services (Doc 9082/9) and ICAO Manual on Air Navigation Services Economics (Doc 9161) when considering the introduction of major changes to the air navigation system;	States	Collaborative decision-making		APIRG/20	
		ii). establish effective economic regulations for the provision of air navigation services (ANS) that include collaboration with users; and b) the Secretariat include adherence to the above ICAO policies when conducting State missions.					

**APIRG/19 Meeting Report
Report on Agenda Item 1
Appendix 1B**

**Conclusions/Decisions of APIRG/19
Follow-up Action Plan**

Conclusion/ Decision no.	Title of Conclusion/Decision	Text of Conclusion/Decision	Responsibility	Deliverable	Action agreed by ANC	Report/ Completion date	Status
1	2	3	4	5	6	7	8
Decision 19/48:	Re-Organization of APIRG	That: a) The APIRG review its working methods and organization using project management principles and other methodologies as and when necessary, and consider making adjustments to better support the ICAO performance framework in its planning and implementation activities aligned with the Aviation System Block Upgrades (ASBUs); and b) The Secretariat: i). develop a revised structure of the APIRG taking due account of best practices/benchmarking, established regional targets and priorities, and the need for synergies between similar or complementary activities; and ii). Accordingly call for an APIRG extraordinary meeting on this issue in 2014.	APIRG	Revised APIRG Structure		30 September 2014	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.0A
Draft AFI Air Navigation System Implementation Action Plan
for the Africa-Indian Ocean (AFI) Region**

INTERNATIONAL CIVIL AVIATION ORGANIZATION



**DRAFT
AFI AIR NAVIGATION
SYSTEM IMPLEMENTATION
ACTION PLAN FOR THE
AFRICA-INDIAN OCEAN
(AFI) REGION**

(as presented to APIRG/19 Meeting)

Version 1.0

October 2013

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.0A
Draft AFI Air Navigation System Implementation Action Plan
for the Africa-Indian Ocean (AFI) Region**

**TABLE OF
CONTENTS**

Chapter	Page No.
1. Introduction.....	04
2. Aviation System Block Upgrades (ASBUs).....	05
3. Categorization of ASBU Block 0 Modules for the AFI Region.....	09
4. Prioritization of ASBU Block 0 Modules for the AFI Region.....	12
5. Air Navigation Report Forms (ANRFs).....	13
6. Performance – Based Planning Framework in the AFI Region.....	47

APPENDICES TO THE DOCUMENT

Appendix A -	A i r navigation report forms (ANRFs)	16
Appendix B -	A F I Performance Framework Forms (PFFs).....	48
Appendix C -	Relationship between AFI Performance Framework Forms and Air Navigation Reporting Forms.....	68
Appendix D -	Description of ASBU Modules considered for the AFI Region.....	70
Appendix E -	Glossary of Acronyms.....	87

[illegible]

1. INTRODUCTION

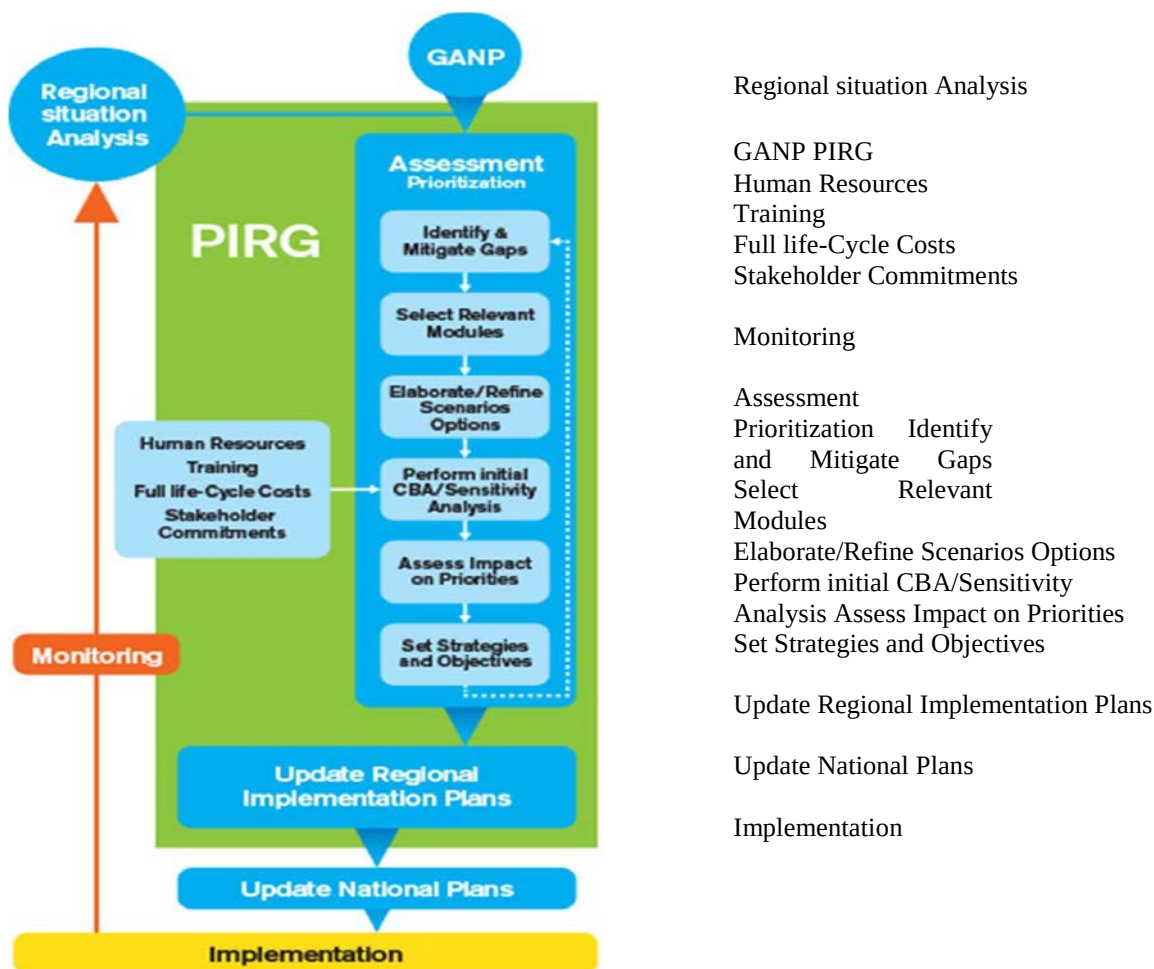
Presentation of the ICAO Global Air Navigation Plan

- 1.1. The ICAO Global Air Navigation Plan (GANP) (Doc 9750) is an overarching framework that includes key civil aviation policy principles to assist ICAO Regions, sub-regions and States with the preparation of their Regional and State air navigation plans.
- 1.2. The objective of the GANP is to increase capacity and improve efficiency of the global civil aviation system whilst improving or at least maintaining safety. The GANP also includes strategies for addressing the other ICAO Strategic Objectives.
- 1.3. The GANP includes the Aviation System Block Upgrade (ASBU) framework, its modules and its associated technology roadmaps covering inter alia communications, surveillance, navigation, information management and avionics.
- 1.4. The ASBUs are designed to be used by the Regions, sub-regions and States when they wish to adopt the relevant Blocks or individual Modules to help achieve harmonization and interoperability by their consistent application across the Regions and the world.
- 1.5. The GANP, along with other high-level ICAO plans, will help ICAO Regions, sub-regions and States establish their air navigation priorities for the next 15 years.
- 1.6. The GANP outlines ICAO's 10 key civil aviation policy principles guiding global, regional and State air navigation planning.

From the GANP to Regional Planning

- 1.7. Although the GANP has a global perspective, it is not intended that all ASBU modules are implemented at all facilities and in all aircraft. Nevertheless, coordination of deployment actions by the different stakeholders, within a State, and within or across regions are expected to deliver more benefits than implementations conducted on an ad hoc or isolated basis. Furthermore, an overall integrated deployment of a set of modules from several threads at an early stage could generate additional benefits downstream.
- 1.8. Guided by the GANP, the Regional planning process as well as National planning should be aligned and used to identify those modules which best provide solutions to the operational needs identified. Depending on implementation parameters such as the complexity of the operating environment, the constraints and the resources available, regional and national implementation plans will be developed in alignment with the GANP. This planning requires interaction between stakeholders including regulators, users of the aviation system, the Air Navigation Service Providers (ANSP's) and Aerodrome operators in order to obtain commitments to implementation.
- 1.9. Accordingly, deployments on a global, regional and sub-regional basis and ultimately at State level should be considered as an integral part of the global and regional planning process through the planning and implementation regional groups (PIRGs). In this way, deployment arrangements including applicability dates can be agreed and collectively applied by all stakeholders involved.

- 1.10. For some modules worldwide applicability will be essential; they may, therefore, eventually become the subject of ICAO Standards with mandated implementation dates.
- 1.11. In the same way, some modules are well suited for regional or sub-regional deployment and the regional planning processes under the PIRG are designed to consider which modules to implement regionally, under which circumstances and according to agreed timeframes.
- 1.12. For other modules, implementation should follow common methodologies defined either as Recommended Practices or Standards in order to leave flexibility in the deployment process but ensure global interoperability at a high level.

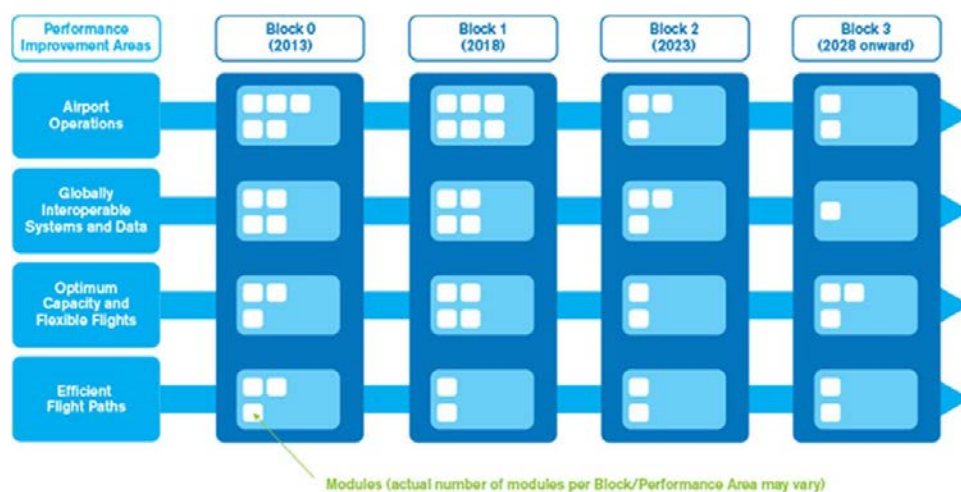


2. AVIATION SYSTEM BLOCK UPGRADES

Introduction: Aviation System Block Upgrades

- 2.1. The Global Air Navigation Plan introduces a systems engineering planning and implementation approach which has been the result of extensive collaboration and consultation between ICAO, its Member States and industry stakeholders.
- 2.2. ICAO developed the Block Upgrade global framework primarily to ensure that aviation Safety will be maintained and enhanced, that ATM improvement programmes are effectively harmonized, and that barriers to future aviation efficiency and environmental gains can be removed at reasonable cost.
- 2.3. The Block Upgrades incorporate a long-term perspective matching that of the three companion ICAO Air Navigation planning documents. They coordinate clear aircraft- and ground-based operational objectives together with the avionics, data link and ATM system requirements needed to achieve them. The overall strategy serves to provide industry-wide transparency and essential investment certainty for operators, equipment manufacturers and ANSPs.
- 2.4. The core of the concept is linked to four specific and interrelated aviation performance improvement areas, namely:
- a) Airport operations;
 - b) Globally-interoperable systems and data.
 - c) Optimum capacity and flexible flights.
 - d) Efficient flight paths.
- 2.5. The performance improvement areas and the ASBU Modules associated with each have been organized into a series of four Blocks (Blocks 0, 1, 2 and 3) based on timelines for the various capabilities they contain, as illustrated in **Fig 1** below, depicting Block 0–3 availability milestones, Performance Improvement Areas, and technology/procedure/capability Modules.

Figure 1



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

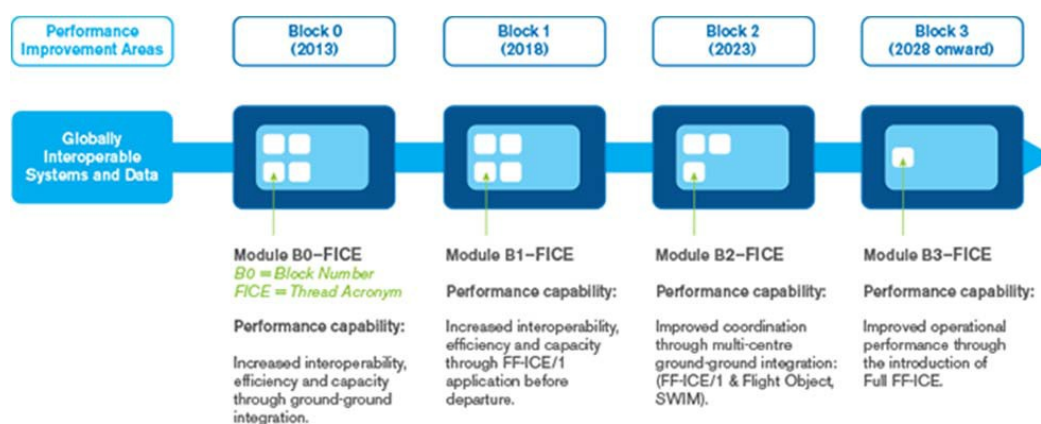
operational need. Blocks 1 through 3 are characterized by both existing and projected performance area solutions, with availability milestones beginning in 2018, 2023 and 2028 respectively.

- 2.7. Associated timescales are intended to depict the initial deployment targets along with the readiness of all components needed for deployment. It must be stressed that a Block's availability milestone is not the same as a deadline. Though Block 0's milestone is set at 2013, for example, it is expected that the globally harmonized implementation of its capabilities (as well as the related Standards supporting them) will be achieved over the 2013 to 2018 timeframe. The same principle applies for the other Blocks and therefore provides for significant flexibility with respect to operational need, budgeting and related planning requirements.
- 2.8. While the traditional Air Navigation planning approach addresses only ANSP needs, the ASBU methodology calls for addressing regulatory as well as user requirements. The ultimate goal is to achieve an interoperable global system whereby each State has adopted only those technologies and procedures corresponding to its operational requirements.

Understanding Modules and Threads

- 2.9. Each block is made up of distinct Modules, as shown in the previous illustrations and those below. Modules only need to be implemented if and when they satisfy an operational need in a given State, and they are supported by procedures, technologies, regulations or Standards as necessary, as well as a business case.
- 2.10. A Module is generally made up of a grouping of elements which define required CNS Upgrade components intended for aircraft, communication systems, air traffic control (ATC) ground components, decision support tools for controllers, etc. The combination of elements selected ensures that each Module serves as a comprehensive and cohesive deployable performance capability.
- 2.11. A series of dependent Modules across consecutive Blocks is therefore considered to represent a coherent transition 'Thread' in time, from basic to more advanced capability and associated performance. Modules are therefore identified by both a Block number and a Thread acronym, as illustrated below.
- 2.12. Each Thread describes the evolution of a given capability through the successive Block timelines as each Module is implemented realizing a performance capability as part of the Global Air Traffic Management Operational Concept (Doc 9854).

Fig. 2: A Module Thread is associated with a specific performance improvement area. Note that the Modules in each consecutive Block feature the same Thread Acronym (FICE), indicating that they are elements of the same Operational Improvement process.



2.13. Each block includes a target date reference for its availability. Each of the modules that form the Blocks must meet a readiness review that includes the availability of standards (to include performance standards, approvals, advisory/guidance documents, etc.), avionics, infrastructure, ground automation and other enabling capabilities. In order to provide a community perspective, each module should have been fielded in two regions and include operational approvals and procedures. This allows States wishing to adopt the Blocks to draw on the experiences gained by those already employing those capabilities.

Aviation System Block Upgrade (ASBU) Block 0

2.14. Block 0 is composed of Modules containing technologies and capabilities which have already been developed and can be implemented from 2013. Based on the milestone framework established under the overall Block Upgrade strategy, ICAO Member States are encouraged to implement those Block 0 Modules applicable to their specific operational needs. **Appendix D** to this document provides a detailed description of Block 0 Modules.

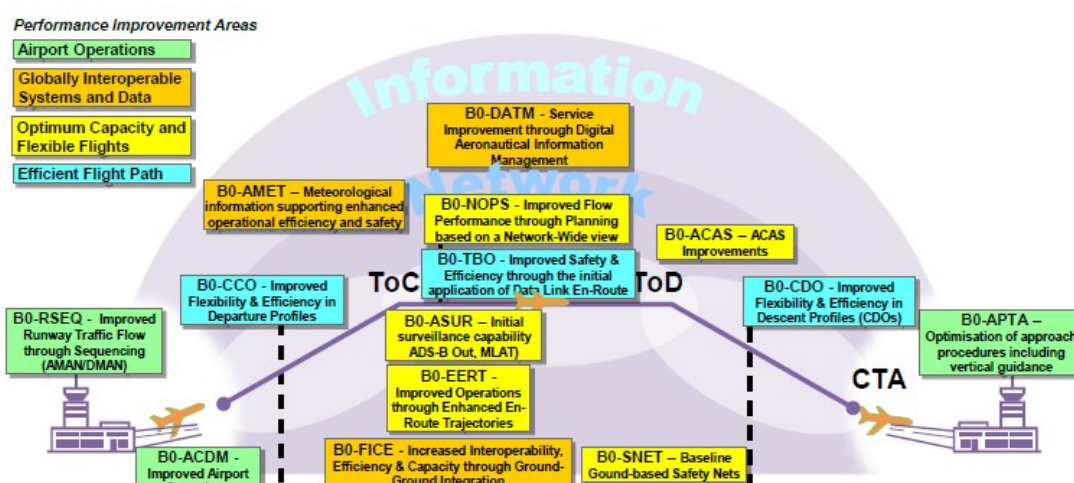


Figure 3. Block 0 in perspective

3. CATEGORIZATION OF ASBU BLOCK 0 MODULES FOR THE AFI REGION

- 3.1. The Fourth Edition of the Global Air Navigation Plan introduces ICAO's ASBU methodology and supporting technology roadmaps based on a rolling fifteen-year planning horizon. Although the GANP has a global perspective, it is not intended that all ASBU modules are to be applied around the globe. Some of the ASBU modules contained in the GANP are specialized packages that should be applied where specific operational requirements or corresponding benefits exist.
- 3.2. Although some modules are suitable for entirely stand-alone deployment, an overall integrated deployment of a number of modules could generate additional benefits. The benefits from an integrated implementation of a number of modules may be greater than the benefits from a series of isolated implementations. Similarly, the benefits from the coordinated deployment of one module simultaneously across a wide area (e.g. a number of proximate airports or a number of contiguous airspaces/flight information regions) may exceed the benefits of the implementations conducted on an ad hoc or isolated basis.
- 3.3. An example of a need for global applicability would be performance-based navigation (PBN). Assembly Resolution A37-11 urges all States to implement approach procedures with vertical guidance in accordance with the PBN concept. Therefore, the ASBU modules on PBN approaches should be seen as required for implementation at all airports. In the same way, some modules are well suited for regional or sub-regional deployment and should take this into account when considering which modules to implement regionally and in what circumstances and agreed timeframes.
- 3.4. Based on the above paragraphs, it is important to clarify how each ASBU module fits into the framework of AFI regional air navigation system. To assist in this regard, a module categorization has been developed below with the objective of ranking each module in terms of implementation priority. On the basis of operational requirements and taking into benefits associated, AFI region has chosen all 18 Block 0 Module for implementation. The categories of 18 Block 0 Modules are as follows:
- a) Essential (E): These are the ASBU modules that provide substantial contribution towards global interoperability, safety or regularity. The five (5) Modules for all States of AFI region are FICE, DATM; ACAS, FRTO and APTA
 - b) Desirable (D): These are the ASBU modules that, because of their strong business and/or safety case, are recommended for implementation almost everywhere. The eight (8) Modules for all States of AFI region are ACDM, NOPS, ASUR, SNET, AMET, TBO, CDO, and CCO
 - c) Specific (S): These are the ASBU modules that are recommended for implementation to address a particular operational environment in specific countries of AFI region (for example South Africa). The (3) Modules are OPFL, ASEP and WAKE.
 - d) Optional (O): These are the ASBU modules that address particular operational requirements in specific countries of AFI region and provide additional benefits that may not be common everywhere. The two (2) Modules are SURF and RSEQ.
- 3.5. The 18 modules considered and associated to each of the Performance Improvement Areas (PIA) are the following:

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

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

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

Table 1: AFI ASBU Block 0 Priority

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

5. AIR NAVIGATION REPORT FORMS

- 5.1. Air Navigation Report Form (ANRF): This form is nothing but the revised version of Performance Framework Form that was being used by Planning and Implementation Regional Groups (PIRGs)/States until now. The ANRF is a customized tool for Aviation System Block Upgrades (ASBU) Modules which is recommended for application for setting planning targets, monitoring implementation, identifying challenges, measuring implementation/performance and reporting. Also, the PIRGs and States could use this report format for any other air navigation improvement programmes such as Search and Rescue. If necessary, other reporting formats that provide more details may be used but should contain as a minimum the elements described in this ANRF template. The results will be analyzed by ICAO and aviation partners and utilized in developing the Regional Performance Dashboard and the Annual Global Air Navigation Report. The conclusions from the Global Air Navigation Report will serve as the basis for future policy adjustments, aiding safety practicality, affordability and global harmonization, amongst other concerns.
- 5.2. Regional/National Performance objective: In the ASBU methodology, the performance objective will be the title of the ASBU module itself. Furthermore, indicate alongside corresponding Performance Improvement area (PIA).
- 5.3. Impact on Main Key Performance Areas: Key to the achievement of a globally interoperable ATM system is a clear statement of the expectations/benefits to the ATM community. The expectations/benefits are referred to eleven Key Performance Areas (KPA) and are interrelated and cannot be considered in isolation since all are necessary for the achievement of the objectives established for the system as a whole. It should be noted that while safety is the highest priority, the eleven KPAs shown below are in alphabetical order as they would appear in English. They are access/equity; capacity; cost effectiveness; efficiency; environment; flexibility; global interoperability; participation of ATM community; predictability; safety; and security. However, out of these eleven KPAs, for the present, only five have been selected for reporting through ANRF, which are Access & Equity, Capacity, Efficiency, Environment and Safety. The KPAs applicable to respective ASBU module are to be identified by marking Y (Yes) or N (No). The impact assessment could be extended to more than five KPAs mentioned above if maturity of the national system allows and the process is available within the State to collect the data.
- 5.4. Planning Targets and Implementation Progress: This section indicates planning targets and status of progress in the implementation of different elements of the ASBU Module for both air and ground segments.
- 5.5. Elements related to ASBU module: Under this section list elements that are needed to implement the respective ASBU Module. Furthermore, should there be elements that are not reflected in the ASBU Module (example: In ASBU B0-ACDM, Aerodrome certification and data link applications D-VOLMET, D-ATIS, D-FIS are not included; Similarly in ASBU B0-DATM, note that WGS-84 and e-TOD are not included) but at the same time if they are closely linked to the module, ANRF should specify those elements. As a part of guidance to PIRGs/States, every Regional ANP will have the complete list of all 18 Modules of ASBU Block 0 along with corresponding elements, equipage required on the ground and in the air as well as metrics specific to both implementation and benefits.
- 5.6. Targets and implementation progress (Ground and Air): Planned implementation date (month/year) and the current status/responsibility for each element are to be reported in this section. Please provide as much details as possible and should cover both avionics and ground systems. If necessary, use additional pages.
- 5.7. Implementation challenges: Any challenges/problems that are foreseen for the implementation of elements of the Module are to be reported in this section. The purpose of the section is to identify in advance any issues that will delay the implementation and if so, corrective action is to be initiated by the concerned person/entity. The four areas, under which implementation issues, if any, for the ASBU Module to be identified, are as follows:

- Ground System Implementation:
- Avionics Implementation:
- Procedures Availability:
- Operational Approvals:

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

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

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

5.11. Performance Monitoring: The metric in this section allows to asses benefits accrued as a result of implementation of the module. The benefits or expectations, also known as Key Performance Areas (KPA), are interrelated and cannot be considered in isolation since all are necessary for the achievement of the objectives established for the system as a whole. It should be noted that while safety is the highest priority, the eleven KPAs shown below are in alphabetical order as they would appear in English. They are access/equity; capacity; cost effectiveness; efficiency; environment; flexibility; global interoperability; participation of ATM community; predictability; safety; and security. However, out of these eleven KPAs, for the present, only five have been selected for reporting through ANRF, which are Access & Equity, Capacity, Efficiency, Environment and Safety. It is not necessary that every module contributes to all of the five KPAs. Consequently, a limited number of metrics per type of KPA, serving as an example to measure the module(s)’ implementation benefits, without trying to apportion these benefits between module, have been identified below. This approach would facilitate States in collecting data for the chosen metrics. If it is not possible to identify performance metrics for an individual module, mention qualitative benefits under this section.

EXAMPLES OF PERFORMANCE METRICS FOR ASBU MODULES RELATED TO THE ELEVEN KPAs (ICAO Doc 9883)

Key Performance Area	Related Performance Metrics
1. Access & Equity	1. KPA/Access: Number of international aerodromes with APV
	2. KPA/Access: Percentage of time Special Use Airspace (SUA) available to Civil Operations
	3. KPA/Access: Percentage of requested flight level versus cleared flight level
	4. KPA/Access: Number of access denials due to equipment failure
	5. KPA/Equity: Percentage of aircraft operators by class who consider that equity is achieved
	6. KPA/Equity: Percentage of different types of aircraft operating in a particular airspace or international aerodrome.

Key Performance Area	Related Performance Metrics
2. Capacity	1. Number of operations (arrivals and departures) per international aerodrome per day 2. Average ATFM delay per flight at an international aerodrome 3. Number of landings before and after APV per international aerodrome 4. Average en-route ATFM delay generated by airspace volume 5. Number of aircraft in a defined volume of airspace for a period of time
3. Cost effectiveness	1. IFR movements per ATCO hour on duty 2. IFR flights (en-route) per ATCO hour duty
4. Efficiency	1. Kilograms of fuel saved per flight 2. Average ATFM delay per flight at the international aerodrome 3. Percentage of PBN routes
5. Environment	1. Kilogrammes of CO ₂ emissions reduced per flight (= KGs fuel saved per flight x 3.157) 2. The number of electronic pages dispatched
6. Flexibility	1. Number of backups available in emergency 2. Number of changes approved to the flight plan 3. Number of alternatives granted
7. Global Interoperability	1. Number of ATC automated systems that are interconnected
8. Participation of the ATM Community	1. Level of participation in meetings 2. Level of responses to planning activities
9. Predictability	1. Arrival/departure delay (in minutes) at international aerodrome
10. Safety	1. Number of runway incursions per international aerodrome per year. 2. Number of incidents/accidents with MET conditions as a sole or as a contributory factor. 3. Number of ACAS RA events. 4. Number of CFIT accidents. 5. Number of missed approaches avoided due to use of CDO.
11. Security	Not Applicable.

APPENDIX A: AIR NAVIGATION REPORTING FORMS

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-15/RSEQ Improved Traffic Flow through Runway Sequencing (AMAN/DMAN)					
Performance Improvement Area 1: Airport Operations					
3. ASBU B0-15/RSEQ: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	Y	Y	Y	N
4. ASBU B0-15/RSEQ: Planning Targets and Implementation Progress					
5. Elements		6. Targets and Implementation Progress (Ground and Air)			
1. AMAN and time-based metering		December 2015			
2. Departure management		December 2015			
3. Movement Area Capacity Optimization		December 2015			
7. ASBU B0-15/RSEQ: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. AMAN and time-based metering	Lack of automation system to support synchronization	NIL	Lack of appropriate training. Lack of STARS PBN. Lack of slots assignment	Lack of procedures and inspectors for operational approvals	
2. Departure management	Lack of automation system to support synchronization	NIL	Lack of appropriate training. Lack of SIDs PBN. Lack of slots assignment	Lack of procedures and inspectors for operational approvals	
3. Movement Area Capacity Optimization	NIL	NIL	Lack of procedures for RWY, TWY & platform capacity calculation. Guidelines for movement area capacity organization.	Lack of procedures and inspectors for operational approvals	
8. ASBU B0-15/RSEQ: Performance Monitoring and Measurement					
8A. ASBU B0-86/OPFL: Implementation Monitoring					
Elements	Performance Indicators / Supporting Metrics				
1. AMAN and time-based metering	Indicator: Percentage of international aerodromes with AMAN and time-based metering. Supporting metric: Number of international airports with AMAN and time-based metering.				
2. Departure management	Indicator: Percentage of international aerodromes with DMAN. Supporting metric: Number of international airports with DMAN.				
3. Movement Area Capacity Optimization	Indicator: Percentage of international aerodromes with Airport-capacity calculated. Supporting metric: Number of international airports with Airport-capacity calculated.				
8. ASBU B0-15/RSEQ: Performance Monitoring and Measurement					
8B. ASBU B0-15/RSEQ: Performance Monitoring					
Key Performance Areas	Metrics (if not , indicate qualitative benefits)				
Access & Equity	N/A				
Capacity	Improved airport movement area capacity through optimization				
Efficiency	Efficiency is positively impacted as reflected by increased runway throughput and arrival rates				
Environment	Reduction of carbon emissions				
Safety	N/A				

1. AIR NAVIGATION REPORT FORM (ANRF)

Regional and National planning for ASBU Modules

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

Performance Improvement Area 1: Airport Operations

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

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

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

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

7. ASBU B0-65/APTA: Implementation Challenges

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

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

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

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

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

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

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

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

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

Performance Improvement Area 1: Airport Operations

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

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

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

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

7. ASBU B0-75/SURF: Implementation Challenges

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

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

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-80/ACDM Improved Airport Operations through Airport					
Performance Improvement Area 1: Airport Operations					
3. ASBU B0-80/ACDM: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	Y	Y	Y	Y	Y
4. ASBU B0-80/ACDM: Planning Targets and Implementation Progress					
5. Elements			6. Targets and Implementation Progress (Ground and Air)		
1. Airport – CDM			December 2015 – Airport Operator, ANSPs, aircraft operators		
2. Aerodrome certification			December 2015 – State CAA		
3. Airport planning			December 2017 – Airport Operators		
4. Heliport operation			December 2017 – State CAA		
5. SMS implementation			December 2014 – Aerodrome Operators		
6. Development of regulations and technical guidance material for runway safety			December 2014 – State CAA		
7. Development and implementation of runway safety programmes and reduce runway-related accidents and serious incidents to no more than eight per year.			December 2014 – State CAA		
7. ASBU B0-80/ACDM: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. Airport – CDM	Interconnection of ground systems of different partners for Airport – CDM	NILNIL	Lack for coordination procedures. Lack of commitment from all stakeholders	NILNIL	
2. Aerodrome certification	Lack of effective implementation of Annex 14 SARPs	NILNIL	Lack of procedures. Lack of training	Lack of adequately trained inspectors	
3. Airport planning	NILNIL	NILNIL	Lack of procedures	Lack of adequately trained inspectors	
4. Heliport operation	Lack of regulations	NILNIL	Lack of procedures	Lack of trained inspectors	
5. SMS implementation	NILNIL	NILNIL	Lack of States regulations. Lack of training	Lack of high level management commitment	
6. Development of regulations and technical guidance material for runway safety	NILNIL	NILNIL	Lack of States regulations	Lack of high level management commitment	
7. Development and implementation of runway safety programmes and reduce runway-related accidents and serious incidents to no more than eight per year.	NILNIL	NILNIL	Lack of standards from ICAO. Lack of States regulations. Lack of training.	Lack of high level management commitment	
8. ASBU B0-80/ACDM: Performance Monitoring and Measurement					
8A. ASBU B0-80/ACDM: Implementation Monitoring					

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

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-25/FICE
Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration

Performance Improvement Area 2: Global Interoperable Systems and Data
– Through Globally Interoperable System-Wide Information Management

3. ASBU B0-25/FICE: Impact on Main Key Performance Areas (KPA)

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

4. ASBU B0-25/FICE: Planning Targets and Implementation Progress

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

7. ASBU B0-25/FICE: Implementation Challenges

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

8. ASBU B0-25/FICE: Performance Monitoring and Measurement

8A. ASBU B0-25/FICE: Implementation Monitoring

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

8. ASBU B0-25/FICE: Performance Monitoring and Measurement
8B. ASBU B0-25/FICE: Performance Monitoring

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

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-105/AMET Meteorological Information Supporting Enhanced Operational Efficiency and Safety					
Performance Improvement Area 2: Global Interoperable Systems and Data – Through Globally Interoperable System-Wide Information Management					
3. ASBU B0-105/AMET: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	Y	Y	Y	Y
4. ASBU B0-105/AMET: Planning Targets and Implementation Progress					
5. Elements			6. Targets and Implementation Progress (Ground and Air)		
1. WAFS			In process of implementation		
2. IAVW			In process of implementation		
3. Tropical cyclone watch			In process of implementation		
4. Aerodrome warnings			In process of implementation		
5. Wind shear warnings and alerts			50% by December 2014		
6. SIGMET			80% by December 2014		
7. QMS/MET			75% by December 2014		
8. Other OPMET Information (METAR, SPECI, TAF)			In process of improvement		
7. ASBU B0-105/AMET: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. WAFS	Connection to the AFS satellite and public internet distribution systems	NIL	Prepare a contingency plan in case of public internet failure	N/A	
2. IAVW	Connection to the AFS satellite and public internet distribution systems	NIL	Prepare a contingency plan in case of public internet failure	N/A	
3. Tropical cyclone watch	Connection to the AFS satellite and public internet distribution systems	NIL	Prepare a contingency plan in case of public internet failure	N/A	
4. Aerodrome warnings	Connection to the AFTN	NIL	Local arrangements for reception of aerodrome warnings	N/A	
5. Wind shear warnings and alerts	Connection to the AFTN	NIL	Local arrangements for reception of aerodrome warnings	N/A	
6. SIGMET	Connection to the AFTN	NIL	Prepare a contingency plan in case of AFTN systems failure	N/A	
7. QMS/MET	NIL		Appropriate arrangements for establishment and implementation of QMS	Commitment of top management	
8. Other OPMET Information (METAR, SPECI, TAF)	Connection to the AFTN	NIL	Prepare a contingency plan in case of AFTN systems failure	N/A	
8. ASBU B0-105/AMET: Performance Monitoring and Measurement					
8A. ASBU B0-105/AMET: Implementation Monitoring					
Elements	Performance Indicators / Supporting Metrics				
1. WAFS	Indicator: States implementation of SADIS 2G/secure SADIS FTP Supporting metric. Supporting metric: Number of States implementation of SADIS 2G/secure SADIS FTP				

2. IAVW	Indicator: States implementation of SADIS 2G/secure SADIS FTP Supporting metric: Number of States implementation of SADIS 2G/secure SADIS FTP
3. Tropical cyclone watch	Indicator: Percentage of international aerodromes/MWOs with Tropical cyclone watch procedures implemented Supporting metric: Number of international aerodromes/MWOs with Tropical cyclone watch
4. Aerodrome warnings	Indicator: Percentage of international aerodromes/AMOs with Aerodrome warnings implemented Supporting metric: Number of international aerodromes/AMOs with Aerodrome warnings implemented
5. Wind shear warnings and alerts	Indicator: Percentage of international aerodromes/AMOs with wind shear warnings procedures implemented Supporting metric: Number of international aerodromes/AMOs with shear warnings and alerts implemented
6. SIGMET	Indicator: Percentage of international aerodromes/MWOs with SIGMET procedures implemented Supporting metric: Number of international aerodromes/MWOs with SIGMET procedures implemented
7. QMS/MET	Indicator: Percentage of MET Provider States with QMS/MET implemented Supporting metric: Number of MET Provider States with QMS/MET certificated
8. Other OPMET Information (METAR, SPECI, TAF)	Indicator: Percentage of OPMET available at international aerodrome AMOs/MWOs Supporting metric: Number of international aerodromes/MWOs issuing required OPMET information
8. ASBU B0-105/AMET: Performance Monitoring and Measurement	
8B. ASBU B0-105/AMET: Performance Monitoring	
Key Performance Areas	Metrics (if not, indicate qualitative benefits)
Access & Equity	N/A
Capacity	Optimized usage of airspace and aerodrome capacity due to MET support
Efficiency	Reduced arrival/departure holding time, thus reduced fuel burn due to MET support
Environment	Reduced emission due to reduced fuel burn due to MET support
Safety	Reduced incidents/accidents in flight and at international aerodromes due to MET support

1. AIR NAVIGATION REPORT FORM (ANRF)

AFI Regional Planning for ASBU Modules

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

Service Improvement through Digital Aeronautical Information Management

Performance Improvement Area 2: Global Interoperable Systems and Data

– Through Globally Interoperable System-Wide Information Management

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

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

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

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

7. ASBU B0-30/DATM: Implementation Challenges

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

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

8A. ASBU B0-30/DATM: Implementation

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

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-35/NOPS Improved Flow Performance through Planning based on a Network-Wide view					
Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM					
3. ASBU B0-35/NOPS: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	Y	Y	Y	Y	Y
4. ASBU B0-35/NOPS: Planning Targets and Implementation Progress					
5. Elements		6. Targets and Implementation Progress (Ground and Air)			
1. Air Traffic Flow Management		December 2015			
7. ASBU B0-35/NOPS: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. Air Traffic Flow Management	Funding	NIL	Lack of ATFM and CDM procedures. Lack of training	<u>NIL</u>	
8. ASBU B0-35/NOPS: Performance Monitoring and Measurement					
8A. ASBU B0-35/NOPS: Implementation Monitoring					
Elements	Performance Indicators / Supporting Metrics				
1. Air Traffic Flow Management	Indicator: Percentage of implemented FMUs Supporting metric: Number of States with ATFM units implemented				
8. ASBU B0-35/NOPS: Performance Monitoring and Measurement					
8B. ASBU B0-35/NOPS: Performance Monitoring					
Key Performance Areas	Metrics (if not, indicate qualitative benefits)				
Access & Equity	Improved access and equity in the use of airspace or aerodrome				
Capacity	Number of aircrafts in a defined volume or airspace for a period of time.				
Efficiency	Reduced fuel burn due to better anticipation of flow issues; Reduced block times and times with engines on				
Environment	. Reduced CO ₂ emissions per flight				
Safety	Reduced number of occurrences of undesired sector overloads				

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-101/ACAS ACAS Improvements					
Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM					
3. ASBU B0-101/ACAS: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	N	Y	N	Y
4. ASBU B0-101/ACAS: Planning Targets and Implementation Progress					
5. Elements			6. Targets and Implementation Progress (Ground and Air)		
1. ACAS II (TCAS Version 7.1)			2013-2018		
7. ASBU B0-101/ACAS: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. ACAS II (TCAS Version 7.1)	NIL	Equipage	NIL	NIL	
8. ASBU B0-101/ACAS: Performance Monitoring and Measurement					
8A. ASBU B0-101/ACAS: Implementation Monitoring					
Elements	Performance Indicators / Supporting Metrics				
1. ACAS II (TCAS Version 7.1)	Indicator: Percentage of aircrafts that are equipped Supporting metric: Reduction in number of RA incidents				
8. ASBU B0-101/ACAS: Performance Monitoring and Measurement					
8B. ASBU B0-101/ACAS: Performance Monitoring					
Key Performance Areas	Metrics (if not, indicate qualitative benefits)				
Access & Equity	N/A				
Capacity	ACAS improvement will reduce unnecessary resolution advisory (RA) and then reduce trajectory deviations				
Efficiency	N/A				
Environment	N/A				
Safety	Reduced number of potential AIR-PROX. ACAS increases safety in the case of breakdown of separation				

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-84/ASUR Improved Flow Performance through Planning based on a Network-Wide view					
Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM					
3. ASBU B0-84/ASUR: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	Y	N	N	Y
4. ASBU B0-84/ASUR: Planning Targets and Implementation Progress					
5. Elements		6. Targets and Implementation Progress (Ground and Air)			
1. Implementation of ADS-B		June 2018 – Users and service provider			
2. Implementation of Multilateration		June 2018 – Users and service provider			
3. Automation system (Presentation)		June 2017 – Users and service provider			
7. ASBU B0-84/ASUR: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. Implementation of ADS-B	Lack of ADS-B systems implementation due to recent implementation of conventional surveillance systems	Lack of ADS-B implementation in general aviation, and old commercial fleet	Lack of procedures	Lack of inspectors with appropriate capability	
2. Implementation of Multilateration	Facilities of remote stations. Establishment of communications networks	NIL	NIL	Lack of inspectors with appropriate capability	
3. Automation system (Presentation)	Lack of any automation functionality	NIL	NIL	NIL	
8. ASBU B0-84/ASUR: Performance Monitoring and Measurement					
8A. ASBU B0-84/ASUR: Implementation Monitoring					
Elements	Performance Indicators / Supporting Metrics				
1. Implementation of ADS-B	Indicator: Percentage of international aerodromes with ADS-B implemented Supporting metric: Number of ADS-B implemented				
2. Implementation of Multilateration	Indicator: Percentage of Multilateration system implemented Supporting metric: Number of Multilateration system implemented				
3. Automation system (Presentation)	Indicator: Percentage of ATS units with automation system implemented Supporting metric: Number of automation system implemented in ATS units				
8. ASBU B0-84/ASUR: Performance Monitoring and Measurement					
8B. ASBU B0-84/ASUR: Performance Monitoring					
Key Performance Areas	Metrics (if not, indicate qualitative benefits)				
Access & Equity	N/A				
Capacity	Typical separation minima are 3 NM or 5 NM enabling an increase in traffic density compared to procedural minima. TMA surveillance performance improvements are achieved through high accuracy, better velocity vector and improved coverage.				
Efficiency	N/A				
Environment	N/A				
Safety	Reduction of the number of major incidents. Support to search and rescue				

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-102/SNET Increased Effectiveness of Ground-based Safety Nets					
Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM					
3. ASBU B0-102/SNET: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	N	NN	N	Y
4. ASBU B0-102/SNET: Planning Targets and Implementation Progress					
5. Elements			6. Targets and Implementation Progress (Ground and Air)		
1. Short Term Conflict Alert (STCA)			June 2014 / Service provider 2013-2018		
2. Area Proximity Warning (APW)			June 2014 / Service provider 2013-2018		
3. Minimum Safe Altitude Warning (MSAW)			June 2014		
4. Dangerous Area Infringement Warning (DAIW)			2013-2018		
7. ASBU B0-102/SNET: Implementation Challenges					
Elements		Implementation Area			
		Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals
1. Short Term Conflict Alert (STCA)		NIL Funding	NIL	NIL	NIL
2. Area Proximity Warning (APW)		NIL Funding	NIL	NIL	NIL
3. Minimum Safe Altitude Warning (MSAW)		NIL Funding	NIL	NIL	NIL
4. Dangerous Area Infringement Warning (DAIW)		Funding			
8. ASBU B0-102/SNET: Performance Monitoring and Measurement					
8A. ASBU B0-102/SNET: Implementation Monitoring					
Elements		Performance Indicators / Supporting Metrics			
1. Short Term Conflict Alert (STCA)		Indicator: Percentage of ATS units with ground-based safety nets (STCA) implemented Supporting metric: Number of safety net (STCA) implemented			
2. Area Proximity Warning (APW)		Indicator: Percentage of ATS units with ground-based safety nets (APW)implemented Supporting metric: Number of safety net (APW)implemented			
3. Minimum Safe Altitude Warning (MSAW)		Indicator: Percentage of ATS units with ground-based safety nets (MSAW) implemented Supporting metric: Number of safety net (MSAW) implemented			
4. Dangerous Area Infringement Warning (DAIW)		Indicator: Percentage of ATS units with ground-based safety nets (DAIW) implemented Supporting metric: Number of safety net (DAIW) implemented			
8. ASBU B0-102/SNET: Performance Monitoring and Measurement					
8B. ASBU B0-102/SNET CAS: Performance Monitoring					
Key Performance Areas		Metrics (if not, indicate qualitative benefits)			
Access & Equity		N/A			
Capacity		N/A			
Efficiency		N/A			
Environment		N/A			
Safety		Significant reduction of the number of major incidents			

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-05/CDO Improved Flexibility and Efficiency in Descent Profiles: Continuous Descent Operations (CDO) Performance Improvement Area 4: Efficient Flight Path – Through Trajectory-based Operations					
3. ASBU B0-05/CDO: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	N	Y	N	Y
4. ASBU B0-05/CDO: Planning Targets and Implementation Progress					
5. Elements			6. Targets and Implementation Progress (Ground and Air)		
1. CDO implementation			December 2017		
2. PBN STARs implementation			December 2017		
7. ASBU B0-05/CDO: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. CDO implementation	The ground trajectory calculation function will need to be upgraded	NIL	Coordination procedures between ATSUs and Training	In accordance with applicable requirements	
2. PBN STARs implementation	Airspace Design	NIL	Coordination procedures between ATSUs and Training		
8. ASBU B0-05/CDO: Performance Monitoring and Measurement					
8A. ASBU B0-05/CDO: Implementation Monitoring					
Elements	Performance Indicators / Supporting Metrics				
1. CDO implementation	Indicator: Percentage of international aerodromes/TMAs with CDO implemented Supporting metric: Number of international aerodromes/TMAs with CDO implemented				
2. PBN STARs	Indicator: Percentage of international aerodromes/TMA with PBN STAR implemented Supporting metric: Number of international aerodromes/TMAs with PBN STAR implemented				
8. ASBU B0-05/CDO: Performance Monitoring and Measurement					
8B. ASBU B0-05/CDO: Performance Monitoring					
Key Performance Areas	Metrics (if not, indicate qualitative benefits)				
Access & Equity	N/A				
Capacity	Increased Terminal Airspace Capacity				
Efficiency	Cost savings through reduced fuel burn. Reduction in the number of required radio transmissions.				
Environment	Reduced emissions as a result of reduced fuel burn.				
Safety	More consistent flight paths and stabilized approach. Reduction in the incidence of controlled flight into terrain (CFIT)				

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-20/CCO Improved Flexibility and Efficiency in Departure Profiles: Continuous Climb Operations (CCO)					
Performance Improvement Area 4: Efficient Flight Path – Through Trajectory-based Operations					
3. ASBU B0-20/CCO: Improved Flexibility and Efficiency in Departure Profiles (CCO)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	Y	Y	Y	Y
4. ASBU B0-20/CCO: Planning Targets and Implementation Progress					
5. Elements			6. Targets and Implementation Progress (Ground and Air)		
1. CCO implementation			December 2017		
2. PBN SIDs implementation			December 2017		
7. ASBU B0-20/CCO: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. CCO implementation	NIL	NIL	Coordination procedures between ATSU's and Training	In accordance with applicable requirements	
2. PBN SIDs implementation	Airspace Design	NIL	Coordination procedures between ATSU's and Trainings	Approvals of procedures	
8. ASBU B0-20/CCO: Performance Monitoring and Measurement					
8A. ASBU B0-20/CCO: Implementation Monitoring					
Elements	Performance Indicators / Supporting Metrics				
1. CCO implementation	Indicator: Percentage of international aerodromes with CCO implemented Supporting metric: Number of international airports with CCO implemented				
2. PBN SIDs implementation	Indicator: Percentage of international aerodromes with PBN SIDs implemented Supporting metric: Number of international airports with PBN SIDs implemented				
8. ASBU B0-20/CCO: Performance Monitoring and Measurement					
8B. ASBU B0-20/CCO: Performance Monitoring					
Key Performance Areas	Metrics (if not , indicate qualitative benefits)				
Access & Equity	...				
Capacity	Increased Terminal Airspace Capacity				
Efficiency	Cost savings through reduced fuel burn and efficient aircraft operating profiles. Reduction in the number of required radio transmissions.				
Environment	Authorization of operations where noise limitations would otherwise result in operations being curtailed or restricted. Environmental benefits through reduced emissions.				
Safety	More consistent flight paths. Reduction in the number of required radio transmissions. Lower pilot and air traffic control workload.				

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-40/TBO Improved Safety and Efficiency through the initial application of Data Link en-Route					
Performance Improvement Area 4: Efficient Flight Path – Through Trajectory-based Operations					
3. ASBU B0-40/TBO: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	Y	Y	Y	Y
4. ASBU B0-40/TBO: Planning Targets and Implementation Progress					
5. Elements			6. Targets and Implementation Progress (Ground and Air)		
1. ADS-C over oceanic and remote areas			June 2018 – Service provider		
2. Continental CPDLC			June 2018 – Service provider		
7. ASBU B0-40/TBO: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. ADS-C over oceanic and remote areas	Funding and limited link service provider and infrastructure	Implementation of ADS-C in general aviation pending	NIL	Lack of duly trained inspectors for approval of operations	
2. Continental CPDLC	Funding and limited link service provider and infrastructure	Implementation of CPDLC in general aviation pending	NIL	Lack of duly trained inspectors for approval of operations	
8. ASBU B0-40/TBO: Performance Monitoring and Measurement					
8A. ASBU B0-40/TBO: Implementation Monitoring					
Elements	Performance Indicators / Supporting Metrics				
1. ADS-C over oceanic and remote areas	Indicator: Percentage of FIRs with ADS-C implemented Supporting metric: Number of ADS-C approved procedures over oceanic and remote areas				
2. Continental CPDLC	Indicator: Percentage of CPDLC implemented Supporting metric: Number of CPDLC approved procedures over continental areas				
8. ASBU B0-40/TBO: Performance Monitoring and Measurement					
8B. ASBU B0-40/TBO: Performance Monitoring					
Key Performance Areas	Metrics (if not, indicate qualitative benefits)				
Access & Equity	N/A				
Capacity	Number of aircrafts in a defined airspace for a period of time				
Efficiency	Kilogrammes of fuel saved per flight. Reduction of separation				
Environment	Reduced emission as a result of reduced fuel burn				
Safety	. Increased situational awareness				

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-15/RSEQ
Improved Traffic Flow through Runway Sequencing (AMAN/DMAN)

Performance Improvement Area 1: Airport Operations

3. ASBU B0-15/RSEQ: Impact on Main Key Performance Areas (KPA)

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

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

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

7. ASBU B0-15/RSEQ: Implementation Challenges

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

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

8A. ASBU B0-86/OPFL: Implementation Monitoring

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

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

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

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

1. AIR NAVIGATION REPORT FORM (ANRF)

Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-65/APTA					
Optimization of Approach Procedures Including Vertical Guidance					
Performance Improvement Area 1: Airport Operations					
3. ASBU B0-65/APTA: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	Y	Y	Y	Y	Y
4. ASBU B0-65/APTA: Planning Targets and Implementation Progress					
5. Elements		6. Targets and Implementation Progress (Ground and Air)			
1. APV with Baro-VNAV		December 2016 – Service Providers and users			
2. APV with SBAS		December 2017 – As per AFI-GNSS Strategy. Not Applicable			
3. APV with GBAS		December 2018 – Initial implementation at some States (service providers)			
7. ASBU B0-65/APTA: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. APV with Baro-VNAV	NIL	Insufficient number of equipped aircraft	Insufficient appropriate training	Lack of appropriate training	
2. APV with SBAS	Network Infrastructure.	Cost of aircraft equipage.	Limited to certain States which have implemented.	Lack of knowledge and appropriate training.	
3. APV with GBAS	Lack of cost-benefit analysis. Adverse ionosphere	Insufficient number of equipped aircraft	Insufficient appropriate training	Lack of appropriate training. Evaluation of a real operation requirement	
8. ASBU B0-65/APTA: Performance Monitoring and Measurement					
8A. ASBU B0-65/APTA: Implementation Monitoring					
Elements	Performance Indicators / Supporting Metrics				
1. APV with Baro-VNAV	Indicator: Percentage of international aerodromes having instrument runways provided with APV with Baro-VNAV procedure implemented (Where the % is defined) Supporting metric: Number of international airports having approved APV with Baro-VNAV				
2. APV with SBAS	Indicator: Percentage of international aerodromes having instrument runways provided with APV with SBAS procedure implemented Supporting metric: Number of international airports having approved APV with SBAS				
3. APV with GBAS	Indicator: Percentage of international aerodromes having instrument runways provided with APV with GBAS procedure implemented Supporting metric: Number of international airports having approved APV with GBAS				
8. ASBU B0-65/APTA: Performance Monitoring and Measurement					
8B. ASBU B0-65/APTA: Performance Monitoring					
Key Performance Areas	Metrics (if not , indicate qualitative benefits)				
Access & Equity	Increased aerodrome accessibility				
Capacity	Increased runway capacity				
Efficiency	Reduced fuel burn due to lower minima, fewer diversions, cancellations, delays				
Environment	Reduced emissions due to reduced fuel burn				
Safety	Increased safety through stabilized approach paths				

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

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

Performance Improvement Area 1: Airport Operations

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

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

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

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

7. ASBU B0-75/SURF: Implementation Challenges

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

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

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

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

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

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-80/ACDM Improved Airport Operations through Airport					
Performance Improvement Area 1: Airport Operations					
3. ASBU B0-80/ACDM: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	Y	Y	Y	Y	Y
4. ASBU B0-80/ACDM: Planning Targets and Implementation Progress					
5. Elements			6. Targets and Implementation Progress (Ground and Air)		
1. Airport – CDM			December 2015 – Airport Operator, ANSPs, aircraft operators		
2. Aerodrome certification			December 2015 – State CAA		
3. Airport planning			December 2017 – Airport Operators		
4. Heliport operation			December 2017 – State CAA		
5. SMS implementation			December 2014 – Aerodrome Operators		
6. Development of regulations and technical guidance material for runway safety			December 2014 – State CAA		
7. Development and implementation of runway safety programmes and reduce runway-related accidents and serious incidents to no more than eight per year.			December 2014 – State CAA		
7. ASBU B0-80/ACDM: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. Airport – CDM	Interconnection of ground systems of different partners for Airport – CDM	NIL	Lack for coordination procedures. Lack of commitment from all stakeholders	NIL	
2. Aerodrome certification	Lack of effective implementation of Annex 14 SARPs	NIL	Lack of procedures. Lack of training	Lack of adequately trained inspectors	
3. Airport planning	NIL	NIL	Lack of procedures	Lack of adequately trained inspectors	
4. Heliport operation	Lack of regulations	NIL	Lack of procedures	Lack of trained inspectors	
5. SMS implementation	NIL	NIL	Lack of States regulations. Lack of training	Lack of high level management commitment	
6. Development of regulations and technical guidance material for runway safety	NIL	NIL	Lack of States regulations	Lack of high level management commitment	
7. Development and implementation of runway safety programmes and reduce runway-related accidents and serious incidents to no more than eight per year.	NIL	NIL	Lack of standards from ICAO. Lack of States regulations. Lack of training.	Lack of high level management commitment	

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

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-25/FICE
Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration

Performance Improvement Area 2: Global Interoperable Systems and Data
– Through Globally Interoperable System-Wide Information Management

3. ASBU B0-25/FICE: Impact on Main Key Performance Areas (KPA)

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

4. ASBU B0-25/FICE: Planning Targets and Implementation Progress

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

7. ASBU B0-25/FICE: Implementation Challenges

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

8. ASBU B0-25/FICE: Performance Monitoring and Measurement

8A. ASBU B0-25/FICE: Implementation Monitoring

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

8. ASBU B0-25/FICE: Performance Monitoring and Measurement
8B. ASBU B0-25/FICE: Performance Monitoring

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

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-105/AMET Meteorological Information Supporting Enhanced Operational Efficiency and Safety					
Performance Improvement Area 2: Global Interoperable Systems and Data – Through Globally Interoperable System-Wide Information Management					
3. ASBU B0-105/AMET: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	YY	Y	Y	Y
4. ASBU B0-105/AMET: Planning Targets and Implementation Progress					
5. Elements			6. Targets and Implementation Progress (Ground and Air)		
1. WAFS			In process of implementation		
2. IAVW			In process of implementation		
3. Tropical cyclone watch			In process of implementation		
4. Aerodrome warnings			In process of implementation		
5. Wind shear warnings and alerts			50% by December 2014		
6. SIGMET			80% by December 2014		
7. QMS/MET			75% by December 2014		
8. 8. Other OPMET Information (METAR, SPECI, TAF)			In process of improvement		
7. ASBU B0-105/AMET: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. WAFS	Connection to the AFS satellite and public internet distribution systems	NIL	Prepare a contingency plan in case of public internet failure	N/A	
2. IAVW	Connection to the AFS satellite and public internet distribution systems	NIL	Prepare a contingency plan in case of public internet failure	N/A	
3. Tropical cyclone watch	Connection to the AFS satellite and public internet distribution systems	NIL	Prepare a contingency plan in case of public internet failure	N/A	
4. Aerodrome warnings	Connection to the AFTN	NIL	Local arrangements for provision of aerodrome warnings	N/A	
5. Wind shear warnings and alerts	Connection to the AFTN	NIL	Local arrangements for provision of wind and shear warning and alerts	N/A	
6. SIGMET	Connection to the AFTN	NIL	Prepare a contingency plan in case of AFTN systems failure	N/A	
7. QMS/MET	NIL		Appropriate arrangements for establishment and implementation of QMS	Commitment of top management	
8. 8. Other OPMET Information (METAR, SPECI, TAF)	Connection to the AFTN	NIL	Prepare a contingency plan in case of AFTN systems failure	N/A	
8. ASBU B0-105/AMET: Performance Monitoring and Measurement					
8A. ASBU B0-105/AMET: Implementation Monitoring					
Elements	Performance Indicators / Supporting Metrics				
1. WAFS	Indicator: States implementation of SADIS 2G/secure SADIS FTP Supporting metric:				

	Number of States implementation of SADIS 2G/secure SADIS FTP
2. IAVW	Indicator: States implementation of SADIS 2G/secure SADIS FTP Supporting metric: Number of States implementation of SADIS 2G/secure SADIS FTPd
3. Tropical cyclone watch	Indicator: Percentage of international aerodromes/MWOs with Tropical cyclone watch procedures implemented Supporting metric: Number of international aerodromes/MWOs with Tropical cyclone watch procedures implemented
4. Aerodrome warnings	Indicator: Percentage of international aerodromes/AMOs with Aerodrome warnings procedures implemented Supporting metric: Number of international aerodromes/AMOs with Aerodrome warnings implemented
5. Wind shear warnings and alerts	Indicator: Percentage of international aerodromes/AMOs with wind shear warnings procedures implemented Supporting metric: Number of international aerodromes/AMOs with wind shear warnings and alerts implemented
6. SIGMET	Indicator: Percentage of international aerodromes/MWOs with SIGMET procedures implemented Supporting metric: Number of international aerodromes/MWOs with SIGMET procedures implemented
7. QMS/MET	Indicator: Percentage of MET Provider States with QMS/MET implemented Supporting metric: Number of MET Provider States with QMS/MET certificated
8. Other OPMET Information (METAR, SPECI, TAF)	Indicator: Percentage of OPMET available at international aerodrome AMOs/MWOs Supporting metric: Number of international aerodromes/MWOs issuing required OPMET information
8. ASBU B0-105/AMET: Performance Monitoring and Measurement	
8B. ASBU B0-105/AMET: Performance Monitoring	
Key Performance Areas	Metrics (if not, indicate qualitative benefits)
Access & Equity	N/A
Capacity	Optimized usage of airspace and aerodrome capacity due to MET support
Efficiency	Reduced arrival/departure holding time, thus reduced fuel burn due to MET support
Environment	Reduced emission due to reduced fuel burn due to MET support
Safety	Reduced incidents/accidents in flight and at international aerodromes due to MET support

1.
1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-30/DATM Service Improvement through Digital Aeronautical Information Management Performance Improvement Area 2: Global Interoperable Systems and Data – Through Globally Interoperable System-Wide Information Management					
3. ASBU B0-30/DATM: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	N	Y	Y	Y
4. ASBU B0-30/DATM: Planning Targets and Implementation Progress					
5. Elements			6. Targets and Implementation Progress (Ground and Air)		
1. QMS for AIM			December 2014		
2. e-TOD implementation			December 2016		
3. WGS-84 implementation			Implemented		
4. AIXM implementation			December 2018		
5. e-AIP implementation			December 2015		
6. Digital NOTAM			December 2018		
7. ASBU B0-30/DATM: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. QMS for AIM	Lack of electronic database. Lack of electronic access based on internet protocol services	NIL	Lack of procedures to allow airlines provide digital AIS data to on-board devices, in particular electronic flight bags (EFBs). Lack of training for AIS/AIM personnel.	NIL	
2. e-TOD implementation					
3. WGS-84 implementation					
4. AIXM implementation					
5. e-AIP implementation					
6. Digital NOTAM					
8. ASBU B0-30/DATM: Performance Monitoring and Measurement					

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

1. AIR NAVIGATION REPORT FORM (ANRF)

Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-10/FRTO Improved Operations through Enhanced En-route Trajectories Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM					
3. ASBU B0-10/FRTO: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	Y	Y	Y	Y	N
4. ASBU B0-10/FRTO: Planning Targets and Implementation Progress					
5. Elements			6. Targets and Implementation Progress (Ground and Air)		
1. Airspace planning			December 2018		
2. Flexible use of airspace			December 2016		
3. Flexible routing			December 2018		
7. ASBU B0-10/FRTO: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. Airspace planning	Lack of organized and managed airspace prior to the time of flight. Lack of AIDC WGS-84 Survey	NIL	Lack of Procedures		
2. Flexible use of airspace	NIL	NIL	Lack of implementation FUA Guidance and coordination agreements		
3. Flexible routing	ADS-C/CPDLC	Insufficient number of equipped aircraft / Lack of FANS 1/A. lack of ACARS	Lack of LOAs and procedures	Poor percentage of fleet approvals	
8. ASBU B0-10/FRTO: Performance Monitoring and Measurement 8A. ASBU B0-10/FRTO: Implementation Monitoring					
Elements	Performance Indicators / Supporting Metrics				
1. Airspace planning	Not assigned Indicator and metrics				
2. Flexible use of airspace	Indicator: Percentage of time segregated airspaces are available for civil operations in the State Supporting metric: Reduction of delays in time of civil flights				
3. Flexible routing	Indicator: Percentage of PBN routes implemented Supporting metric: KG of Fuel savings Supporting metric: Tons of CO2 reduction				
8. ASBU B0-10/FRTO: Performance Monitoring and Measurement 8B. ASBU B0-10/FRTO: Performance Monitoring					
Key Performance Areas	Metrics (if not , indicate qualitative benefits)				
Access & Equity	Better access to airspace by a reduction of the permanently segregated volumes of airspace				
Capacity	Flexible routing reduces potential congestion on trunk routes and at busy crossing points. The flexible use of airspace gives greater possibilities to separate flights horizontally. PBN helps to reduce route spacing and aircraft separations.				
Efficiency	In particular the module will reduce flight length and related fuel burn and emissions. The module will reduce the number of flight diversions and cancellations. It will also better allow avoiding noise-sensitive areas.				
Environment	Fuel burn and emissions will be reduced				
Safety	N/A				

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-35/NOPS Improved Flow Performance through Planning based on a Network-Wide view					
Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM					
3. ASBU B0-35/NOPS: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	Y	Y	Y	Y	Y
4. ASBU B0-35/NOPS: Planning Targets and Implementation Progress					
5. Elements		6. Targets and Implementation Progress (Ground and Air)			
1. Air Traffic Flow Management		December 2015			
7. ASBU B0-35/NOPS: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. Air Traffic Flow Management	Lack for system software for ATFM. Lack of ATFM units implemented. Funding	NIL	Lack of ATFM and CDM procedures. Lack of training	---	
8. ASBU B0-35/NOPS: Performance Monitoring and Measurement					
8A. ASBU B0-35/NOPS: Implementation Monitoring					
Elements	Performance Indicators / Supporting Metrics				
1. Air Traffic Flow Management	Indicator: Percentage of implemented FMUs Supporting metric: Number of States with ATFM units implemented				
8. ASBU B0-35/NOPS: Performance Monitoring and Measurement					
8B. ASBU B0-35/NOPS: Performance Monitoring					
Key Performance Areas	Metrics (if not, indicate qualitative benefits)				
Access & Equity	Improved access and equity in the use of airspace or aerodrome by avoiding disruption of air traffic. ATFM processes take care of equitable distribution of delays				
Capacity	Better utilization of available capacity, ability to anticipate difficult situations and mitigate them in advance. Number of aircrafts in a defined volume or airspace for a period of time.				
Efficiency	Reduced fuel burn due to better anticipation of flow issues; Reduced block times and times with engines on				
Environment	Reduced fuel burn as delays are absorbed on the ground, with shut engines; or at optimum flight levels through speed or route management. Reduced CO2 emissions per flight				
Safety	Reduced occurrences of undesired sector overloads				

**1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules**

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-101/ACAS ACAS Improvements					
Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM					
3. ASBU B0-101/ACAS: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	N	Y	N	Y
4. ASBU B0-101/ACAS: Planning Targets and Implementation Progress					
5. Elements		6. Targets and Implementation Progress (Ground and Air)			
1. ACAS II (TCAS Version 7.1)		2013-2018			
7. ASBU B0-101/ACAS: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. ACAS II (TCAS Version 7.1)	NIL	Equipage	NIL	NIL	
8. ASBU B0-101/ACAS: Performance Monitoring and Measurement					
8A. ASBU B0-101/ACAS: Implementation Monitoring					
Elements	Performance Indicators / Supporting Metrics				
1. ACAS II (TCAS Version 7.1)	Indicator: Percentage of aircrafts that are equipped Supporting metric: Reduction in number of RA incidents				
8. ASBU B0-101/ACAS: Performance Monitoring and Measurement					
8B. ASBU B0-101/ACAS: Performance Monitoring					
Key Performance Areas	Metrics (if not, indicate qualitative benefits)				
Access & Equity	N/A				
Capacity	ACAS improvement will reduce unnecessary resolution advisory (RA) and then reduce trajectory deviations				
Efficiency	N/A				
Environment	N/A				
Safety	Reduced number of potential AIR-PROX. ACAS increases safety in the case of breakdown of separation				

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-84/ASUR Improved Flow Performance through Planning based on a Network-Wide view					
Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM					
3. ASBU B0-84/ASUR: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	Y	N	N	Y
4. ASBU B0-84/ASUR: Planning Targets and Implementation Progress					
5. Elements		6. Targets and Implementation Progress (Ground and Air)			
1. Implementation of ADS-B		June 2018 – Users and service provider			
2. Implementation of Multilateration		June 2018 – Users and service provider			
3. Automation system (Presentation)		June 2017 – Users and service provider			
7. ASBU B0-84/ASUR: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. Implementation of ADS-B	Lack of ADS-B systems implementation due to recent implementation of conventional surveillance systems	Lack of ADS-B implementation in general aviation, and old commercial fleet	Lack of procedures	Lack of inspectors with appropriate capability	
2. Implementation of Multilateration	Facilities of remote stations. Establishment of communications networks	NIL	NIL	Lack of inspectors with appropriate capability	
3. Automation system (Presentation)	Lack of any automation functionality	NIL	NIL	NIL	
8. ASBU B0-84/ASUR: Performance Monitoring and Measurement					
8A. ASBU B0-84/ASUR: Implementation Monitoring					
Elements	Performance Indicators / Supporting Metrics				
1. Implementation of ADS-B	Indicator: Percentage of international aerodromes with ADS-B implemented Supporting metric: Number of ADS-B implemented				
2. Implementation of Multilateration	Indicator: Percentage of Multilateration system implemented Supporting metric: Number of Multilateration system implemented				
3. Automation system (Presentation)	Indicator: Percentage of ATS units with automation system implemented Supporting metric: Number of automation system implemented in ATS units				
8. ASBU B0-84/ASUR: Performance Monitoring and Measurement					
8B. ASBU B0-84/ASUR: Performance Monitoring					
Key Performance Areas	Metrics (if not, indicate qualitative benefits)				
Access & Equity	N/A				
Capacity	Typical separation minima are 3 NM or 5 NM enabling an increase in traffic density compared to procedural minima. TMA surveillance performance improvements are achieved through high accuracy, better velocity vector and improved coverage.				
Efficiency	N/A				
Environment	N/A				
Safety	Reduction of the number of major incidents. Support to search and rescue				

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-102/SNET Increased Effectiveness of Ground-based Safety Nets					
Performance Improvement Area 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM					
3. ASBU B0-102/SNET: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	N	NN	N	Y
4. ASBU B0-102/SNET: Planning Targets and Implementation Progress					
5. Elements			6. Targets and Implementation Progress (Ground and Air)		
1. Short Term Conflict Alert (STCA)			June 2014 / Service provider 2013-2018		
2. Area Proximity Warning (APW)			June 2014 / Service provider 2013-2018		
3. Minimum Safe Altitude Warning (MSAW)			June 2014		
4. Dangerous Area Infringement Warning (DAIW)			2013-2018		
7. ASBU B0-102/SNET: Implementation Challenges					
Elements		Implementation Area			
		Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals
1. Short Term Conflict Alert (STCA)		NIL Funding	NIL	NIL	NIL
2. Area Proximity Warning (APW)		NIL Funding	NIL	NIL	NIL
3. Minimum Safe Altitude Warning (MSAW)		NIL Funding	NIL	NIL	NIL
4. Dangerous Area Infringement Warning (DAIW)		Funding			
8. ASBU B0-102/SNET: Performance Monitoring and Measurement					
8A. ASBU B0-102/SNET: Implementation Monitoring					
Elements		Performance Indicators / Supporting Metrics			
1. Short Term Conflict Alert (STCA)		Indicator: Percentage of ATS units with ground-based safety nets (STCA) implemented Supporting metric: Number of safety net (STCA) implemented			
2. Area Proximity Warning (APW)		Indicator: Percentage of ATS units with ground-based safety nets (APW)implemented Supporting metric: Number of safety net (APW)implemented			
3. Minimum Safe Altitude Warning (MSAW)		Indicator: Percentage of ATS units with ground-based safety nets (MSAW) implemented Supporting metric: Number of safety net (MSAW) implemented			
4. Dangerous Area Infringement Warning (DAIW)		Indicator: Percentage of ATS units with ground-based safety nets (DAIW) implemented Supporting metric: Number of safety net (DAIW) implemented			
8. ASBU B0-102/SNET: Performance Monitoring and Measurement					
8B. ASBU B0-102/SNET CAS: Performance Monitoring					
Key Performance Areas		Metrics (if not, indicate qualitative benefits)			
Access & Equity		N/A			
Capacity		N/A			
Efficiency		N/A			
Environment		N/A			
Safety		Significant reduction of the number of major incidents			

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-05/CDO Improved Flexibility and Efficiency in Descent Profiles: Continuous Descent Operations (CDO)					
Performance Improvement Area 4: Efficient Flight Path – Through Trajectory-based Operations					
3. ASBU B0-05/CDO: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	N	Y	N	NY
4. ASBU B0-05/CDO: Planning Targets and Implementation Progress					
5. Elements		6. Targets and Implementation Progress (Ground and Air)			
1. CDO implementation		December 2017			
2. PBN STARs implementation		December 2017			
7. ASBU B0-05/CDO: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. CDO implementation	The ground trajectory calculation function will need to be upgraded	CDO Function	LOAs and Training	In accordance with applicable requirements	
2. PBN STARs implementation	Airspace Design	NIL	LOAs and Training		
8. ASBU B0-05/CDO: Performance Monitoring and Measurement					
8A. ASBU B0-05/CDO: Implementation Monitoring					
Elements	Performance Indicators / Supporting Metrics				
1. CDO implementation	Indicator: Percentage of international aerodromes/TMAs with CDO implemented Supporting metric: Number of international aerodromes/TMAs with CDO implemented				
2. PBN STARs implementation	Indicator: Percentage of international aerodromes with PBN STARs implementation Supporting metric: Number of international airport with PBN STARs implementation				
8. ASBU B0-05/CDO: Performance Monitoring and Measurement					
8B. ASBU B0-05/CDO: Performance Monitoring					
Key Performance Areas	Metrics (if not, indicate qualitative benefits)				
Access & Equity	N/A				
Capacity	Increased Terminal Airspace Capacity N/A				
Efficiency	Cost savings through reduced fuel burn. Reduction in the number of required radio transmissions.				
Environment	Reduced emissions as a result of reduced fuel burn.				
Safety	More consistent flight paths and stabilized approach. Reduction in the number of incidence of controlled flight into terrain (CFIT)				

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-20/CCO Improved Flexibility and Efficiency in Departure Profiles: Continuous Climb Operations (CCO)					
Performance Improvement Area 4: Efficient Flight Path – Through Trajectory-based Operations					
3. ASBU B0-20/CCO: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	Y	NY	Y	NY	NY
4. ASBU B0-20/CCO: Planning Targets and Implementation Progress					
5. Elements			6. Targets and Implementation Progress (Ground and Air)		
1. CCO implementation			December 2017		
2. PBN SIDs implementation			December 2017		
7. ASBU B0-20/CCO: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. CCO implementation	NIL	NIL		In accordance with applicable requirements	
2. PBN SIDs implementation	Airspace Design	NIL		Approvals of procedures	
8. ASBU B0-20/CCO: Performance Monitoring and Measurement					
8A. ASBU B0-20/CCO: Implementation Monitoring					
Elements	Performance Indicators / Supporting Metrics				
1. CCO implementation	Indicator: Percentage of international aerodromes with CCO implemented Supporting metric: Number of international airports with CCO implemented				
2. PBN SIDs implementation	Indicator: Percentage of international aerodromes with PBN SIDs implemented Supporting metric: Number of international airports with PBN SIDs implemented				
8. ASBU B0-20/CCO: Performance Monitoring and Measurement					
8B. ASBU B0-20/CCO: Performance Monitoring					
Key Performance Areas	Metrics (if not , indicate qualitative benefits)				
Access & Equity	...				
Capacity	Increased Terminal Airspace Capacity				
Efficiency	Cost savings through reduced fuel burn and efficient aircraft operating profiles. Reduction in the number of required radio transmissions.				
Environment	Authorization of operations where noise limitations would otherwise result in operations being curtailed or restricted. Environmental benefits through reduced emissions.				
Safety	More consistent flight paths. Reduction in the number of required radio transmissions. Lower pilot and air traffic control workload.				

1. AIR NAVIGATION REPORT FORM (ANRF)
Regional and National planning for ASBU Modules

2. REGIONAL /NATIONAL PERFORMANCE OBJECTIVE – B0-40/TBO Improved Safety and Efficiency through the initial application of Data Link en-Route					
Performance Improvement Area 4: Efficient Flight Path – Through Trajectory-based Operations					
3. ASBU B0-40/TBO: Impact on Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	Y	Y	Y	Y
4. ASBU B0-40/TBO: Planning Targets and Implementation Progress					
5. Elements		6. Targets and Implementation Progress (Ground and Air)			
1. ADS-C over oceanic and remote areas		June 2018 – Service provider			
2. Continental CPDLC		June 2018 – Service provider			
7. ASBU B0-40/TBO: Implementation Challenges					
Elements	Implementation Area				
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. ADS-C over oceanic and remote areas	Funding and limited link service provider and infrastructure	Implementation of ADS-C in general aviation pending	Implementation of GOLD procedures pending	Lack of duly trained inspectors for approval of operations	
2. Continental CPDLC	Funding and limited link service provider and infrastructure	Implementation of CPDLC in general aviation pending	Implementation of GOLD procedures pending	Lack of duly trained inspectors for approval of operations	
8. ASBU B0-40/TBO: Performance Monitoring and Measurement					
8A. ASBU B0-40/TBO: Implementation Monitoring					
Elements	Performance Indicators / Supporting Metrics				
1. ADS-C over oceanic and remote areas	Indicator: Percentage of FIRs with ADS-C implemented Supporting metric: Number of ADS-C approved procedures over oceanic and remote areas				
2. Continental CPDLC	Indicator: Percentage of CPDLC implemented Supporting metric: Number of CPDLC approved procedures over continental? areas				
8. ASBU B0-40/TBO: Performance Monitoring and Measurement					
8B. ASBU B0-40/TBO: Performance Monitoring					
Key Performance Areas	Metrics (if not, indicate qualitative benefits)				
Access & Equity	N/A				
Capacity	Number of aircrafts in a defined airspace for a period of time				
Efficiency	Kilogrammes of fuel saved per flight. Reduction of separation				
Environment	Reduced emission as a result of reduced fuel burn				
Safety	ADS-C based safety nets supports cleared level adherence monitoring, route adherence monitoring, danger area infringement warning and improved search and rescue. Reduced occurrences of misunderstandings; solution to stuck microphone situations. Increased situational awareness				

6. PERFORMANCE-BASED PLANNING FRAMEWORK IN THE AFI REGION

The ICAO Special Regional Air Navigation Meeting (November 2008) supported the need to adopt a performance-based approach to regional and national air navigation planning in the AFI Region, which was aligned with the Global Air Navigation Plan (Doc 9750, GANP). The GANP was developed to assist States and regional planning groups in identifying the most appropriate operational improvements to achieve near- and medium-term benefits on the basis of current and foreseen aircraft capabilities and ATM infrastructure while the Global Air Traffic Management Operational Concept (Doc 9854) provided the overall vision of a performance based ATM system.

Several other ICAO documents are available to support the planning process including the Manual on Air Traffic Management System Requirements (Doc 9882) which converted the overall vision of the operational concept into material specifying the functional evolution of ATM, and the Manual on Global Performance of the Air Navigation System (Doc 9883) which provided a broad overview of the tasks that needed to be undertaken to transition to such a system. This approach would support the further evolution of the communication, navigation surveillance/air traffic management (CNS/ATM) transition plans that were already in place, which should be integrated with the performance-based approach to planning.

The AFI Planning and Implementation Regional Group (APIRG) uses the performance framework forms (PFFs) developed by the ICAO Special AFI RAN of 2008 as amended from time to time through the regional planning process, to identify individual parties responsible for achieving the performance objectives as well as to establish timeframes for implementation.

States should develop national plans, using the PFFs, harmonized and aligned with the regional PFFs, and that associated tasks should include the necessary, detailed actions to successfully achieve national performance objectives.

The PFFs developed by the APIRG are provided as **Appendix B** to this document. These PFFs need to be reviewed and aligned with the ICAO Aviation System Block Upgrade (ASBU) Block 0 Modules. **Appendix C** to this document shows the relationship between the existing PFFs and ASBU Block 0 modules.

APPENDIX B : AFI REGIONAL PERFORMANCE FRAMEWORK FORMS

AFI REGIONAL PERFORMANCE OBJECTIVE

1. OPERATIONAL SAFETY ASSESSMENT METHODOLOGY FOR RVSM				
Benefits				
Environment	• Reduction in fuel consumption			
Efficiency	• Ability of aircraft to conduct flight more closely to preferred trajectories • Facilitate utilization for advanced technologies (e.g. improved altimetry systems) thereby increasing efficiency			
Safety	• Enhance safety by wider distribution			
Strategy				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AOM	a) use Safety Programmes and SMS methodologies in control and mitigation of risks in the region.	2009 – December 2015	States	VALID
	b) carry out yearly analysis. The initial acceptability of a collision risk to be determined by experts of the scrutiny group. Meeting the TLS of 2.5x10-9 fatal accidents per aircraft flying hour for technical risk be maintained as a requirement to continue with RVSM operations.	2009 – ongoing	ARMA/States	VALID
	c) to provide yearly reports to APIRG about the status of operations safety in the region.	2009 – ongoing	ARMA	Ongoing
Linkage to GPIs	GPI/2: Support implementation of RVSM			

AFI REGIONAL PERFORMANCE OBJECTIVE

2. OPTIMIZATION OF THE ATS ROUTE STRUCTURE IN EN-ROUTE AIRSPACE				
Benefits				
Environment	• Reduction in gas emissions			
Efficiency	• Ability of aircraft to conduct flight more closely to preferred trajectories • Increase in airspace capacity • Facilitate utilization of advanced technologies (e.g. FMS-based arrivals) and ATC decision support tools (e.g. metering and sequencing), thereby increasing efficiency			
Strategy				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AOM	a) all States in AFI Region to develop Nation PBN implementation plans in relation to AFI PBN plan.	Oct 2013 – Dec 2015	States	On-going
	b) create a National A-CDM implementation plan based on key access points	Oct 2013 – Dec 2020	States	On-going
	c) establish collaborative decision making (CDM) process for creating CDM process within the State	Oct 2013 – Dec 2016	States	Valid
	d) develop airspace concept based on AFI PBN regional implementation plan, in order to design and implement a trunk route network, connecting major city pairs in the upper airspace and for transit to/from aerodromes, on the basis of PBN: RNAV 10 implementation taking into account interregional harmonization	2010-2012	APIRG/States	Completed (RNAV 10 implemented in oceanic airspace (Route network group established 2010))
	e) develop airspace concept based on AFI PBN regional implementation plan, in order to design and implement a trunk route network, connecting major city pairs in the upper airspace and for transit to/from aerodromes, on the basis of PBN: RNAV 5 implementation and taking into account interregional harmonization	2013 – Dec 2017	APIRG/States	On going (Route network group established 2010)
	f) harmonize national and regional PBN implementation plans	2013-Dec 2016	APIRG/States	On-going
	g) develop performance measurement plan	2010- Dec 2015	States	On-going
	h) formulate PBN safety plan to obtain acceptable level of safety	2010- Dec 2015	States	On-going
	i) identify training needs and develop corresponding guidelines	2010- Dec 2015	States	On-going
	j) use Safety Programmes and SMS methodologies in control and mitigation of risks in the region.	2010-Dec 2015	States	On-going
	k) identify training programmes and develop corresponding guidelines	2010- Dec 2015	APIRG/States	On-going
	l) formulate system performance monitoring plan (PBN Implementation)	2010-Dec 2016	APIRG/States	On-going
	m) implementation of en-route PBN ATS/RNAV routes	2010-2014	APIRG/States	In progress
	n) monitor implementation progress in accordance with AFI PBN implementation plan and State implementation plan	2010 and beyond	APIRG/States	On-going
Linkage to GPIs	GPI/2: Performance-based navigation; GPI/7: Dynamic and flexible ATS route management; GPI/8: collaborative airspace design and management; GPI/10: terminal area design and management; GPI/11: RNP and RNAV SIDs and STARs; GPI/12 FMS-based arrival procedures			

AFI REGIONAL PERFORMANCE OBJECTIVE

3. OPTIMIZATION OF THE ATS ROUTE STRUCTURE IN TERMINAL AIRSPACE				
Benefits				
Environment	• Reduction in gas emissions			
Efficiency	• Ability of aircraft to conduct flight more closely to preferred trajectories • Increase in airspace capacity • Improved availability of procedures • Facilitate utilization of advanced technologies (e.g. FMS-based arrivals) and ATC decision support tools (e.g. metering and sequencing), thereby increasing efficiency			
Strategy				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AOM	a) All States in AFI Region to develop National PBN implementation plans in relation to AFI PBN plan	Dec 2015	States	On going
	b) establish collaborative decision making (CDM) process within the State	2013 – Dec 2020	States	On going
	c) develop airspace concept based on AFI PBN roadmap, in order to design and implement an optimized standard instrument departures (SIDs), standard instrument arrivals (STARs), holding and associated instrument flight procedures, on the basis of PBN and, in particular RNAV 1 and Basic-RNP 1	2009- Dec 2017	PBN TF/States	On going
	d) develop performance measurement plan	2010-Dec 2015	States	On going
	e) formulate safety plan	2010- Dec 2015	States	On going
	f) publish national regulations for aircraft and operators approval using PBN manual as guidance material	2010- Dec 2015	States	On going
	g) identify training needs and develop corresponding guidelines	2010- Dec 2015	States	On going
	h) identify training programmes and develop corresponding guidelines	2010- Dec 2015	APIRG	On going
	i) formulate system performance monitoring plan	2010- Dec 2016	APIRG/States	On going
	j) develop a regional strategy and work programme implementation of SIDs and STARs	2009- Dec 2015	APIRG/States	On going
	k) monitor implementation progress in accordance with AFI PBN implementation roadmap and State implementation plan	2010 and beyond	APIRG/States	On going
Linkage to GPIs	GPI/5: performance-based navigation; GPI/7: dynamic and flexible ATS route management; GPI/8: collaborative airspace design and management; GPI/10: terminal area design and management; GPI/11: RNP and RNAV SIDs and STARs; GPI/12: FMS-based arrival procedures.			

AFI REGIONAL PERFORMANCE OBJECTIVE

4. OPTIMIZATION OF VERTICALLY GUIDED RNP APPROACHES				
Benefits				
Environment	• Reduction in gas emissions			
Efficiency	• Ability increased accessibility to aerodromes, including continuity of access • increased runway capacity • reduced pilot workload • availability of reliable lateral and vertical navigation capability			
Strategy				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AOM	a) All States in AFI Region to develop National PBN implementation plans in relation to AFI PBN plan	Dec 2015	States	On going
	b) establish collaborative decision making (CDM) process within the state	2013 – Dec 2020	States	On going
	c) develop airspace concept based on AFI PBN implementation plan, in order to design and implement RNP APCH with Baro-VNAV or LNAV only (see note 1) in accordance with relevant Assembly resolutions , and RNP AR APCH where beneficial	2009 – Dec 2017	APIRG/States	On going
	d) develop performance measurement plan	2010- Dec 2015	States	On going
	e) formulate safety plan	2010- Dec 2015	States	On going
	f) publish national regulations for aircraft and operators approval using PBN manual as guidance material	2010- Dec 2015	States	On going
	g) identify training needs and develop corresponding guidelines	2010- Dec 2015	States	On going
	h) identify training programmes and develop corresponding guidelines	2010- Dec 2015	APIRG/States	On going
	i) implementation of APV procedures	2010 – Dec 2016	APIRG/States	On going
	j) Formulate system performance monitoring plan	2010-Dec 2017	APIRG/States	On going
Linkage to GPIs	GPI/8: collaborative airspace design and management; GPI/10: terminal area design and management; GPI/11: RNP and RNAV SIDs and STARs; GPI/12: FMS-based arrival procedures			

Note 1: States that have not already done so should complete preparation of their national PBN implementation plans as soon as possible.

Note 2: Where altimeter setting does not exist or aircraft are not suitably equipped for APV.

AFI REGIONAL PERFORMANCE OBJECTIVE

5. ESTABLISHMENT OF SUB-REGIONAL SAR ARRANGEMENTS				
Benefits				
Environment	• cost-efficient use of accommodation and RCC equipment on a shared basis			
Efficiency	• service provision more uniform across a geographic area defined by risk			
	• proficient services provided near and within States with limited resources			
	• harmonization of aviation / maritime procedures			
	• inter-operability of life-saving equipment			
	• development of a pool of experienced SAR mission coordinators skilled across both aviation and maritime domains thus reducing coordination and fragmentation			
Strategy				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
N/A	a) conduct AFI Regional SAR workshop to assist states to develop National and Regional SAR Implementation plans (Workshop to include all relevant stakeholders of each state)	every year	ICAO/States	On going (Certain states already started with National Implementation plans)
	b) Collaboration between states (signed MoU)	2013 – Dec 2017	ICAO/States	On going
	c) Nominate a focal point within each state/organization to coordinate SAR issues	2013 - Dec 2015	States	On going
	d) develop needs assessment and gap analysis	2011 – 2015	APIRG/States	On going
	e) conduct self-audits	2011 – Dec 2015	States	On going
	f) develop regional action plan to resolve the deficiencies	2011 – Dec 2015	APIRG/States	On going
	g) conduct regional SAR Administrators training and SAR Mission Coordinators training	2013– Dec 2017	ICAO/State	On going
	h) determine regional and sub-regional organization, functions and responsibilities, accommodation and equipment needs for the establishment of regional SAR Centres	2011 – Dec 2017	APIRG/ States	On going
	i) produce draft legislation, regulations, operational procedures, letters of agreement, SAR plans and safety management policies for regional SAR provision using IAMSAR manual as guidance	2010 – Dec 2017	APIRG/States	On going
	j) determine future training needs and develop training plans and conduct training as required	2010 – permanent	APIRG/States	Implementation on a continuous basis

	k) develop SAR plan	2011 – 2016	States	On-going
	l) alerting procedures			
	m) resource databases			
	n) interface procedures with aerodrome emergency procedures and generic disaster response providers			
	o) RCC check lists			
	p) staffing, proficiency and certification plans			
	q) preventive SAR programmes			
	r) quality programmes			
	s) education and awareness programmes			
	t) in-flight emergency response procedures			
	u) conduct SAR exercises required: -National -Multinational	2012 - Permanent	States	On-going
	v) monitor implementation process	2012-on-going	ICAO/States	On-going
Linkage to GPIs		N/A		

Notes:

1. Enablers: Regional Organizations like SADC, ECOWAS, CEMAC, EAC etc.
2. The Task Force has identified the following groups of RCCs as potential base for regional/sub-regional SAR close co-operation e.g. SAR exercise, training, meetings etc..
 - Casablanca, Canarias, Dakar, Roberts, Sal,
 - Algiers, Asmara, Cairo, Tripoli, Tunis,
 - Accra, Brazzaville, Kano, Kinshasa, Ndjamena, Niamey,
 - Addis, Entebbe, Khartoum, Mogadishu, Nairobi,
 - Southern African States,
 - Antananarivo, Mauritius, Seychelles.
3. All work requires close cooperation with all States affected, ICAO, IMO, COSPAS-SARSAT and other worldwide bodies as required.

AFI REGIONAL PERFORMANCE OBJECTIVE

6. AERODROME OPERATIONS IMPROVEMENT				
Benefits				
Access & Equity	• Improve portions of the manoeuvring area obscured from view of the control tower for vehicles and aircraft • Ensure equity in ATC handling of surface traffic regardless of the traffic’s position on the international aerodrome • Enhanced equity on the use of aerodrome facilities			
Capacity	• Increased airport movement area capacity through optimization • Sustained level of aerodrome capacity during periods of reduced visibility • Enhanced use of existing Implementation of gate and stands (unlock latent capacity). • Reduced workload, better organization of the activities to manage flights • Enhanced aerodrome capacity according with the demand			
Efficiency	• Ensure aerodrome operators comply with relevant ICAO SARPs and/or applicable national regulations • Continued provision of safe and efficient aircraft operations at aerodromes • Efficiency is positively impacted as reflected by increased runway throughput and arrival rates • Reduced taxi times through diminished requirements for intermediate holdings based on reliance on visual surveillance only. Reduced fuel burn • Improved operational efficiency (fleet management); and reduced delay • Reduced fuel burn due to reduced taxi time and lower aircraft engine run time • Improved aerodrome expansion in accordance with Master Plan			
Environment	• Reduced emissions due to reduced fuel burn			
Safety	• Strengthen States’ safety oversight responsibility on aerodrome operations • Reduced runway incursions • Improved response to unsafe situations • Improved situational awareness leading to reduced ATC workload			
Strategy				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AOM	a) Analyze Annex 14, Volume I provisions on aerodrome certification vis-a-vis national legislations and regulations to develop and/or complete national regulations on aerodrome certification as necessary	2013-Dec. 2014	States	Ongoing
	b) Analyze guidance in the Manual on Certification of Aerodromes (Doc 9774) vis-à-vis national regulations	2013-Dec. 2014	States	Ongoing
	c) Train aerodrome inspectors	Dec 2015	States	Ongoing
	d) Implement SMS	Dec 2015	Aerodrome operators	Ongoing
	e) Develop regulations and technical guidance materials for runway safety	Dec 2015	States	Ongoing
	f) Develop and implement runway safety programs and reduce runway related accidents and serious incidents to no more than eight per year	Dec 2015	ICAO Aerodrome operators ANSPs	Ongoing
	g) Develop and implement an action plan for certifying all remaining aerodromes used for international operations	2015	States	Ongoing
	h) Provide annual feedback to APIRG regarding the status of the implementation of aerodrome certification	Jan. 2014 - Dec. 2015	States	Ongoing
	i) Develop and implement an action plan for AMAN and DMAN	Dec. 2015	States	Ongoing
	j) Implement Surveillance system for ground surface movement (PSR, SSR, ADS B or Multilateration)	Dec. 2017	Service provider (ANSPs/aerodrome operators)	Ongoing

	k) Install Surveillance system on board (SSR transponder, ADS B capacity	Dec. 2017	Aircraft operators	Ongoing
	l) Install Surveillance system for vehicle	Dec. 2017	Aerodrome operators	Ongoing
	m) Implement Visual aids for navigation	December 2015	Service provider (ANSPs/aerodrome operators)	Ongoing
	n) Establish mechanism for wild life strike hazard reduction	December 2015	Aerodrome operator/wildlife committee	Ongoing
	o) Implement system for displaying and processing information	December 2017	Aerodrome operator	Ongoing
	p) Implement Airport – CDM	Dec. 2015 –	Airport Operator ANSP Aircraft operators	Ongoing
	q) Develop/review airport planning	December 2017	Aerodrome operators	Ongoing
	r) Develop/review regulations for Heliport Operations	December 2017	States	Ongoing
Linkage to GPIs	GPI/13: Aerodrome design and management; GPI/14: Runway operations			

AFI REGIONAL PERFORMANCE OBJECTIVE

7. AERONAUTICAL TELECOMMUNICATIONS				
Benefits				
Safety	- Improvement of safety in airspace and at aerodromes - Enhanced safety in flight operation			
Efficiency	- Improved ATS coordination - Increased availability of communications - Avoid misunderstanding in communications - Facilitate the utilization of advanced technologies			
Strategy				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AO, TS, CM, AUO, AOM, SDM	Aeronautical mobile service (AMS)			
	a) provision of VHF in FIRs Luanda, Khartoum, Somalia	2013-Dec 2016	Luanda, Khartoum, Somalia	Ongoing Implement
	b) provision of controller-pilot data link communications (CPDLC) procedures	2013-Dec 2018	States	On-going
	c) Implementation of CNS elements for Reporting Agencies and similar	2013-Dec 2016	State	Valid
	d) development of regional guidance for required communication performance (RCP)	2013-Dec 2016	APIRG	On-going Global Operational Data Link Document (GOLD) adopted
	e) implementation of RCP	2013- Dec 2018	States	Not started
	Aeronautical fixed service (AFS)			
	f) implementation of bit-oriented protocol (BOP) between AFTN main centres	2013- Dec 2016	States	On going
	g) IP Based: IPV6	2013- Dec 2028	States	On going
	h) implementation of Aeronautical Message Handling System (AMHS)	2013- Dec 2018	States	On going
	i) implementation of ATS Inter-facility Data Communications (AIDC)	2013- Dec 2018	States	On going
	Navigation			
	j) implementation of navigational aids to increase safety at terminal areas (Conventional)	2013- Dec 2018	States	Ongoing
	k) implementation of GNSS – carry out survey to determine the implementation status and identify the specific assistance needed if any	2013- Dec 2018	States	Ongoing. Coordinate with PBN
	Surveillance			
	l) implementation of AFI surveillance plan for en-route operations, including provision of automatic dependent surveillance (ADS-C) procedures	2013- Dec 2018	States	Ongoing
	m) development of State implementation action plan based on AFI surveillance plan	2013- Dec 2016	APIRG	ongoing
	Aeronautical spectrum			
	n) implementation of automation support tools to enhance frequency management	2013-2015	ICAO	Implementation in progress (VHF, HF/HFDL, SURVEILLANCE)
	o) Aeronautical Spectrum availability (VSAT C-BAND)	2013 - Dec 2015	States/ ICAO	Ongoing WRC 15

	Performance measurement			
	p) Development of performance measurement plan for CNS services: • Communication(Air ground and ground-ground) • Navigation • Surveillance	2010 - Dec 2015	APIRG	Not started
Linkage to GPIs	GPI/9: Situational awareness; GPI/10: Terminal area design and management; GPI/17: Implementation of data link applications; - GPI/21: Navigation systems; GPI/22: Communication network infrastructure; GPI/23 – Aeronautical spectrum			

AFI REGIONAL PERFORMANCE OBJECTIVE

8. TRANSITION FROM AIS TO AIM				
Benefits				
Environment	• reductions in fuel consumption			
Efficiency	• improved planning and management of flights			
	• efficient use of airspace			
Safety	• improved safety			
KPI	• Status of implementation of the AIRAC system in the AFI Region			
	• Status of implementation of QMS in the AFI Region			
	• Status of implementation of AIS Automation in the AFI Region			
	• Status of implementation of the Centralised AIS database in the AFI Region			
Proposed metrics	• Number of States complying with the AIRAC procedures			
	• Number of Posting of AIS information on the ICAO AFI Forum			
	• Number of States having developed and signed service Level Agreements between AIS and data originators			
	• Number of States having organized QMS awareness campaigns and training programmes			
	• Number of States having implemented QMS			
	• Number of States with AIM QMS Certification			
	• Number of States having developed eAIP			
	• Number of States having developed a National Plan for the transition from AIS to AIM			
	• Number of states having implemented the Digital NOTAM			
Strategy				
Short term (2010-2011) : Medium term (2011 – 2015)				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AUO, ATM SDM	a) Improve the compliance with the AIRAC system	Ongoing	States & APIRG	In progress
	b) Use of the internet, including the ICAO AFI Forum, for the advance posting of the aeronautical information considered of importance to users;	2009 – 2015	States & ICAO	In progress
	c) Signing of service Level Agreements between AIS and data originators;	2009 – 2015	States	On going
	d) Foster the implementation of AFI QMS based on the AFI Region Methodology for the implementation of QMS ;	2009 – 2014	ICAO & APIRG & States	On going
	e) Monitor the implementation of QMS until complete implementation of the requirements by all AFI States;	2008 – 2014	ICAO & APIRG	On going
	f) Monitor QMS certification & maintenance by the AFI states	2013 – Ongoing	States, APIRG & ICAO	Ongoing
	g) Foster the development of eAIPs by AFI States;	2009 – 2014	States & APIRG	On going
	h) Monitor the implementation of AIS automation that shall enable digital aeronautical data exchange and use aeronautical information exchange models and data exchange models designed to be globally interoperable.	2008 – 2016	ICAO & APIRG	On going
	i) Monitor the Implementation of the digital NOTAM	2014 – 2017	ICAO & APIRG & States	On going
	j) Foster the development of National and/or regional AIS databases;	2010 – 2015	ICAO & APIRG & States	In progress
Linkage to GPIs	GPI-5: performance-based navigation; GPI-11: RNP and RNAV SIDs and STARs; GPI-8: Aeronautical Information			

AFI REGIONAL PERFORMANCE OBJECTIVE

9. REGIONAL/NATIONAL PERFORMANCE OBJECTIVE IMPLEMENTATION OF WGS-84 AND e-TOD				
Benefits				
Environment	• Supporting benefits described in performance objectives for PBN			
Efficiency	• WG8 -84 is a prerequisite for performance-based navigation, benefits described in performance objectives for PBN			
	• support approach and departure procedure design and implementation			
	• improve aircraft operating limitations analysis			
	• support aeronautical chart production and on-board databases			
Safety	• improve situational awareness			
	• support determination of emergency contingency procedures			
	• support technologies such as ground proximity and minimum safe altitude warning systems			
	• see benefits described in performance objectives for PBN			
KPI	• Status of implementation of WGS-84 in the AFI Region			
	• status of implementation of e-TOD in the AFI Region (for Areas 1 & 4)			
Proposed metrics	• Number of States having fully implemented WGS-84			
	• Number of States having organized e-TOD awareness campaigns and training programmes			
	• Number of states having implemented e-TOD for Areas 1 & 4			
Strategy				
Short term (2010-2012) : Medium term (2012 - 2016)				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
ATM CM	Electronic terrain and obstacle data (e-TOD)			
	a) share experience and resources in the implementation of e-TOD through the establishment of an e-TOD working group	2008 - 2011	APIRG States	e-TOD WG has been established
	b) report requirements and monitor implementation status of e-TOD	2008 - ongoing	APIRG States	In progress
ATM, AUO	c) develop a high level policy for the management of a national e-TOD programme	2008 - 2014	States	
ATM, AUO	d) Provide Terrain and Obstacle data for area 1	2009 – 2014	States	Complete
	e) Provide Terrain and Obstacle data for area 4 in airports where it is applicable	2008 – 2014	States	In progress
	f) assessment of Annex 15 requirements related to the provision of e-TOD for area 2 and 3	2013 – Ongoing	States	Complete
	g) development of an action plan for the provision of e-TOD for area 2 and 3 as applicable	2009 – 2014	States	In progress
	h) provide necessary Terrain and Obstacle data for area 2 as applicable	2008 – 2016	States	In progress
	i) provide necessary Terrain and Obstacle data for area 3	2014 – 2017	States	In progress
	WGS-84			
	j) establish WGS-84 implementation goals in coordination with the national PBN implementation plan	2008-2012	States	In progress
	k) report requirements and monitor implementation status of WGS-84	2011- 2013	APIRG States	In progress
	l) completeWGS-84 implementation	2014	States	On going
	m) Monitor the maintenance of WGS-84	2013 - Ongoing	APIRG States	On going
Linkage to GPIs	GPI-5: Performance-based navigation; GPI/9: Situational awareness; GPI/11: RNP and RNAV SIDs and STARs; GPI/18: Aeronautical Information; GPI/20: WGS-84; GPI/21: Navigation systems			

AFI REGIONAL PERFORMANCE OBJECTIVE

10. FOSTER THE IMPLEMENTATION OF SIGMET AND QMS IN THE AFI REGION				
Benefits				
Environment	• contribution in the reduction in fuel consumption through optimized departure and arrival/ scheduling resulting in CO2 emissions reductions			
Efficiency	• Harmonize arriving and departing air traffic will translate to eliminate or minimize holding times and thus reduce fuel burn			
Safety	• improvement of efficiency of meteorological services to aircraft in flight			
	• ensure timely preparation and provision to airlines of aviation warnings for en-route meteorological hazards ensure timely preparation and provision to airlines of aviation warnings for en-route meteorological hazards			
	• ensure quality and timely provision of meteorological data for air navigation services through the quality management system (QMS) implementation			
	• minimize encounters by aircraft of hazardous meteorological conditions			
Strategy				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AOM, DCB, AO, TS, AUO	SIGMET			
	a) assessment on the current level of implementation through periodic SIGMET trials in the AFI Region	2014 - 2016	ICAO/WMO, States	Valid
	b) establishment of an updated list of deficiencies including States not compliant with SIGMET format	2014 - 2016		
	c) provision of details guidance to States not issuing SIGMET as required	2014		
	d) Establishment of an implementation project in terms of seminars through special implementation projects (SIPs) and Safety Fund-ICAO (SAFE) for Aviation Safety (IFFAS) projects for States not meeting their obligation	2014 – 2016	ICAO/WMO	
	QMS			
	e) establishment of an updated list of States not implementing or partially implemented the QMS	2014	ICAO/WMO, States	Valid
	f) Enhance the training of met personnel in States that have not implemented QMS	2014 – 2016		
	g) States to be encouraged to institute mechanism for cost recovery to support QMS maintenance	2014		
	h) Establishment of an implementation project in terms of seminars and consultancy services through projects during the initial stages of QMS implementation for States	2014 – 2016	ICAO/WMO	
Linkage to GPIs	GPI/19: Meteorological systems			

AFI REGIONAL PERFORMANCE OBJECTIVE

11. FOSTER THE IMPLEMENTATION OF TERMINAL AREA WARNINGS AND FORECASTS, PROVISION OF WAFS FORECASTS AND OPTIMIZATION OF OPMET DATA EXCHANGES IN THE AFI REGION				
Benefits				
Environment	contribution in the reduction in fuel consumption; the benefits will lead to reduction in greenhouse gases			
Efficiency	improvement of efficiency in meteorological services to aircraft in flight			
	ensure timely preparation and provision to airlines of aviation warnings for terminal area meteorological hazards			
	improvement in the efficiency of flight planning by airlines taking into account prevailing and expected meteorological conditions along the route based on WAFS forecasts			
Safety	minimize encounters by aircraft of hazardous meteorological conditions			
Strategy				
Short term (2010-2012) : Medium term (2012 - 2016)				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
AOM, DCB, AO, TS, AUO	Terminal area warnings and forecasts			
	a) Assessment of the current level of implementation of facilities at aerodromes for monitoring hazardous meteorological conditions	2014-Dec 2016	States/ICAO/WMO	Valid
	b) Mission to States with longstanding deficiencies not compliant with required facilities stipulated in Annex 3 and the AFI ANP	2014-2016	ICAO	
	c) For States to develop action plans to eliminate the MET related deficiencies	2014-2016	States	
	d) Provision of details guidance to States not issuing terminal area warnings and forecasts	2014	ICAO/WMO	
	e) Establishment of an implementation project in terms of seminars and consultancy services through special implementation projects (SIP) and Safety Fund-ICAO projects respectively for States not meeting their obligation	2014-2016	ICAO	
	f) a) Implementations of aerodrome warnings, wind shear warnings/alerts and water thickness on the runway to support safety Volcanic Ash contingency plans	2014-2016	States	
	g) provision of details guidance to States not issuing SIGMET as required			
	World area forecast system (WAFS)			
	h) Conduct seminars in French and English on new WAFS gridded forecasts			
	i) Establishment of an updated list of States not receiving WAFS products and areas of constraints in implementing SADIS VSAT and FTP service and States concerned to develop remedial action plans	2014 - 2016		
	j) Establishment of an implementation project in terms of seminars and consultancy services through SIPs and Safety Fund projects respectively	2014 - 2016	ICAO/WMO, States	

	Optimization of OPMET data, Exchange and implementation of OPMET databanks			
	k) Undertake an assessment of the availability and quality of OPMET data in the region and States not meeting the required levels of implementation to develop remedial action plans	2014-Dec 2016	ICAO/WMO, States	Valid
	l) Two seminars in French and English on AMBEX and OPMET AFI data banks procedures			
	m) Establishment of an implementation project in terms of seminars and consultancy services through SIPs and Safety Fund-ICAO (SAFE) projects respectively obligation			
Linkage to GPIs	GPI/19: Meteorological systems			

APPENDIX C
RELATIONSHIP BETWEEN AFI PFFS AND
ASBU BLOCK 0 MODULES SELECTED
FOR THE AFI REGION

APPENDIX D:

**DETAILED DESCRIPTION OF ASBU BLOCK 0 MODULES
(AS PER ICAO GLOBAL AIR NAVIGATION PLAN, DOC 9750, 4TH
EDITION)**

PERFORMANCE IMPROVEMENT AREA 1: AIRPORT OPERATIONS

B0-APTA Optimization of Approach Procedures including Vertical Guidance

The use of performance-based navigation (PBN) and ground-based augmentation system (GBAS) landing system (GLS) procedures to enhance the reliability and predictability of approaches to runways, thus increasing safety, accessibility and efficiency. This is possible through the application of basic global navigation satellite system (GNSS), Baro-vertical navigation (VNAV), satellite-based augmentation system (SBAS) and GLS. The flexibility inherent in PBN approach design can be exploited to increase runway capacity.

Applicability

This Module is applicable to all instrument, and precision instrument runway ends, and to a limited extent, non-instrument runway ends.

Benefits

Access and Equity: Increased aerodrome accessibility.

Capacity: In contrast with instrument landing systems (ILS), the GNSS-based approaches (PBN and GLS) do not require the definition and management of sensitive and critical areas. This results in increased runway capacity where applicable.

Efficiency: Cost savings related to the benefits of lower approach minima: fewer diversions, over flights, cancellations and delays. Cost savings related to higher airport capacity in certain circumstances (e.g. closely spaced parallels) by taking advantage of the flexibility to offset approaches and define displaced thresholds.

Environment: Environmental benefits through reduced fuel burn.

Safety: Stabilized approach paths.

Cost: Aircraft operators and Air Navigation Service Providers (ANSPs) can quantify the benefits of lower minima by using historical aerodrome weather observations and modelling airport accessibility with existing and new minima. Each aircraft operator can then assess benefits against the cost of any required avionics upgrade. Until there are GBAS (CAT II/III) Standards, GLS cannot be considered as a candidate to globally replace ILS. The GLS business case needs to consider the cost of retaining ILS or MLS to allow continued operations during an interference event.

B0-WAKE Increased Runway Throughput through Optimized Wake Turbulence Separation

Improves throughput on departure and arrival runways through optimized wake turbulence separation minima, revised aircraft wake turbulence categories and procedures.

Applicability

Least complex – Implementation of revised wake turbulence categories is mainly procedural. No changes to automation systems are needed.

Benefits

Access and Equity: Increased aerodrome

accessibility. Capacity:

- a) Capacity and departure/arrival rates will increase at capacity constrained aerodromes as wake categorization changes from three to six categories.
- b) Capacity and arrival rates will increase at capacity constrained aerodromes as specialized and tailored procedures for landing operations for on-parallel runways, with centre lines spaced less than 760 m (2 500 ft) apart, are developed and implemented.
- c) Capacity and departure/arrival rates will increase as a result of new procedures which will reduce the current two-three minutes delay times. In addition, runway occupancy time will decrease as a result of these new procedures.

Flexibility Aerodromes can be readily configured to operate on three (i.e. existing H/M/L) or six wake turbulence categories, depending on demand.

Cost: Minimal costs are associated with the implementation in this Module. The benefits are to the users of the aerodrome runways and surrounding airspace, ANSPs and operators. Conservative wake turbulence separation standards and associated procedures do not take full advantage of the maximum utility of runways and airspace. U.S. air carrier data shows that, when operating from a capacity- constrained aerodrome, a gain of two extra departures per hour has a major beneficial effect in reducing delays.

The ANSP may need to develop tools to assist controllers with the additional wake turbulence categories and decision support tools. The tools necessary will depend on the operation at each airport and the number of wake turbulence categories implemented.

B0-SURF Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)

Basic advanced-surface movement guidance and control systems (A-SMGCS) provides surveillance and alerting of movements of both aircraft and vehicles at the aerodrome, thus improving runway/aerodrome safety. Automatic dependent surveillance-broadcast (ADS-B) information is used when available (ADS-B APT).

Applicability

A-SMGCS is applicable to any aerodrome and all classes of aircraft/vehicles. Implementation is to be based on requirements stemming from individual aerodrome operational and cost-benefit assessments. ADS-B APT, when applied is an element of A-SMGCS, is designed to be applied at aerodromes with medium traffic complexity, having up to two active runways at a time and the runway width of minimum 45 m.

Benefits

Access and Equity: A-SMGCS improves access to portions of the manoeuvring area obscured from view of the control tower for vehicles and aircraft. Sustains an improved aerodrome capacity during periods of reduced visibility. Ensures equity in ATC handling of surface traffic regardless of the traffic's position on the aerodrome.

ADS-B APT, as an element of an A-SMGCS system, provides traffic situational awareness to the controller in the form of surveillance information. The availability of the data is dependent on the aircraft and vehicle level of equipage.

Capacity: A-SMGCS: sustained levels of aerodrome capacity for visual conditions reduced to minima lower than would otherwise be the case.

ADS-B APT: as an element of an A-SMGCS system, potentially improves capacity for medium complexity aerodromes.

Efficiency: A-SMGCS: reduced taxi times through diminished requirements for intermediate holdings based on reliance on visual surveillance only.

ADS-B APT: as an element of an A-SMGCS, potentially reduces occurrence of runway collisions by assisting in the detection of the incursions.

Environment: Reduced aircraft emissions stemming from improved efficiencies.

Safety: A-SMGCS: reduced runway incursions. Improved response to unsafe situations. Improved situational awareness leading to reduced ATC workload.

ADS-B APT: as an element of an A-SMGCS system, potentially reduces the occurrence of occurrence of runway collisions by assisting in the detection of the incursions.

Cost: A-SMGCS: a positive CBA can be made from improved levels of safety and improved efficiencies in surface operations leading to significant savings in aircraft fuel usage. As well, aerodrome operator vehicles will benefit from improved access to all areas of the aerodrome, improving the efficiency of aerodrome operations, maintenance and servicing.

ADS-B APT: as an element of an A-SMGCS system less costly surveillance solution for medium complexity aerodromes.

B0-ACDM Improved Airport Operations through Airport-CDM

Implements collaborative applications that will allow the sharing of surface operations data among the different stakeholders on the airport. This will improve surface traffic management reducing delays on movement and manoeuvring areas and enhance safety, efficiency and situational awareness.

Applicability

Local for equipped/capable fleets and already established airport surface infrastructure.

Benefits

Capacity: Enhanced use of existing infrastructure of gate and stands (unlock latent capacity). Reduced workload, better organization of the activities to manage flights.

Efficiency: Increased efficiency of the ATM system for all stakeholders. In particular for aircraft operators: improved situational awareness (aircraft status both home and away); enhanced fleet predictability and punctuality; improved operational efficiency (fleet management); and reduced delay.

Environment: Reduced taxi time; reduced fuel and carbon emission; and lower aircraft engine run time.

Cost: The business case has proven to be positive due to the benefits that flights and the other airport operational stakeholders can obtain. However, this may be influenced depending upon the individual situation (environment, traffic levels investment cost, etc.).

A detailed business case has been produced in support of the EU regulation which was solidly positive.

B0-RSEQ Improve Traffic Flow through Sequencing (AMAN/DMAN)

Manage arrivals and departures (including time-based metering) to and from a multi-runway aerodrome or locations with multiple dependent runways at closely proximate aerodromes, to efficiently utilize the inherent runway capacity.

Applicability

Runways and terminal manoeuvring area in major hubs and metropolitan areas will be most in need of these improvements.

The improvement is least complex – runway sequencing procedures are widely used in aerodromes globally. However some locations might have to confront environmental and operational challenges that will increase the complexity of development and implementation of technology and procedures to realize this Module.

Benefits

Capacity: Time-based metering will optimize usage of terminal airspace and runway capacity. Optimized utilization of terminal and runway resources.

Efficiency: Efficiency is positively impacted as reflected by increased runway throughput and arrival rates. This is achieved through:

- a) Harmonized arriving traffic flow from en-route to terminal and aerodrome. Harmonization is achieved via the sequencing of arrival flights based on available terminal and runway resources.
- b) Streamlined departure traffic flow and smooth transition into en-route airspace. Decreased lead time for departure request and time between call for release and departure time. Automated dissemination of departure information and clearances.

Predictability: Decreased uncertainties in aerodrome/terminal demand

prediction.

Flexibility: By enabling dynamic scheduling.

Cost: A detailed positive business case has been built for the time-based flow management programme in the United States. The business case has proven the benefit/cost ratio to be positive. Implementation of time-based metering can reduce airborne delay. This capability was estimated to provide over 320,000 minutes in delay reduction and \$28.37 million in benefits to airspace users and passengers over the evaluation period.

Results from field trials of DFM, a departure scheduling tool in the United States, have been positive. Compliance rate, a metric used to gauge the conformance to assigned departure time, has increased at field trial sites from sixty-eight to seventy-five per cent. Likewise, the EUROCONTROL DMAN has demonstrated positive results. Departure scheduling will streamline flow of aircraft feeding the adjacent center airspace based on that center's constraints. This capability will facilitate more accurate estimated time of arrivals (ETAs). This allows for the continuation of metering during heavy traffic, enhanced efficiency in the NAS and fuel efficiencies. This capability is also crucial for extended metering.

PERFORMANCE IMPROVEMENT AREA 2: GLOBALLY INTEROPERABLE SYSTEMS AND DATA

B0-FICE Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration

Improves coordination between air traffic service units (ATSUs) by using ATS interfacility data communication (AIDC) defined by ICAO's *Manual of Air Traffic Services Data Link Applications* (Doc 9694). The transfer of communication in a data link environment improves the efficiency of this process, particularly for oceanic ATSUs.

Applicability

Applicable to at least two area control centres (ACCs) dealing with en-route and/or terminal control area (TMA) airspace. A greater number of consecutive participating ACCs will increase the benefits.

Benefits

Capacity: Reduced controller workload and increased data integrity supporting reduced separations translating directly to cross sector or boundary capacity flow increases.

Efficiency: The reduced separation can also be used to more frequently offer aircraft flight levels closer to the flight optimum; in certain cases, this also translates into reduced en-route holding.

Interoperability: Seamlessness: the use of standardized interfaces reduces the cost of development, allows air traffic controllers to apply the same procedures at the boundaries of all participating centres and border crossing becomes more transparent to flights.

Safety: Better knowledge of more accurate flight plan information.

Cost: Increase of throughput at ATS unit boundary and reduced ATCO workload will outweigh the cost of FDPS software changes. The business case is dependent on the environment.

B0-DATM Service Improvement through Digital Aeronautical Information Management

The initial introduction of digital processing and management of information through, aeronautical information service (AIS)/aeronautical information management (AIM) implementation, use of aeronautical exchange model (AIXM), migration to electronic aeronautical information publication (AIP0 and better quality and availability of data.

Applicability

Applicable at State level with increased benefits as more States participate.

Benefits

Environment: Reducing the time necessary to promulgate information concerning airspace status will allow for more effective airspace utilization and allow improvements in trajectory management.

Safety: Reduction in the number of possible inconsistencies. Module allows reducing the number of manual entries and ensures consistency among data through automatic data checking based on commonly agreed business rules.

Interoperability: Essential contribution to interoperability.

Cost: Reduced costs in terms of data inputs and checks, paper and post, especially when considering the overall data chain, from originators, through AIS to the end users. The business case for the aeronautical information conceptual model (AIXM) has been conducted in Europe and in the United States and has shown to be positive.

The initial investment necessary for the provision of digital AIS data may be reduced through regional cooperation and it remains low compared with the cost of other ATM systems. The transition from paper products to digital data is a critical pre-requisite for the implementation of any current or future ATM or Air Navigation concept that relies on the accuracy, integrity and timeliness of data.

B0-AMET Meteorological Information Supporting Enhanced Operational Efficiency and Safety

Global, regional and local meteorological information:

- a) Forecasts provided by world area forecast centres (WAFCs), volcanic ash advisory centres (VAACs) and tropical cyclone advisory centres (TCAC).
- b) Aerodrome warnings to give concise information of meteorological conditions that could adversely affect all aircraft at an aerodrome, including wind shear.
- c) SIGMETs to provide information on occurrence or expected occurrence of specific en-route weather phenomena which may affect the safety of aircraft operations and other operational meteorological (OPMET) information, including METAR/SPECI and TAF, to provide routine and special observations and forecasts of meteorological conditions occurring or expected to occur at the aerodrome.

This information supports flexible airspace management, improved situational awareness and collaborative decision-making, and dynamically-optimized flight trajectory planning. This Module includes elements which should be viewed as a subset of all available meteorological information that can be used to support enhanced operational efficiency and safety

Applicability

Applicable to traffic flow planning, and to all aircraft operations in all domains and flight phases, regardless of level of aircraft equipage.

Benefits

Capacity: Optimized use of airspace capacity. Metric: ACC and aerodrome throughput.

Efficiency: Harmonized arriving air traffic (en-route to terminal area to aerodrome) and harmonized departing air traffic (aerodrome to terminal area to en-route) will translate to reduced arrival and departure holding times and thus reduced fuel burn. Metric: Fuel consumption and flight time punctuality.

Environment: Reduced fuel burn through optimized departure and arrival profiling/scheduling. Metric: Fuel burn and emissions.

Safety: Increased situational awareness and improved consistent and collaborative decision making. Metric: Incident occurrences.

Interoperability: Gate-to-gate seamless operations through common access to, and use of, the available WAFS, IAVW and tropical cyclone watch forecast information. Metric: ACC throughput.

Predictability: Decreased variance between the predicted and actual air traffic schedule. Metric: Block time variability, flight-time error/buffer built into schedules.

Participation: Common understanding of operational constraints, capabilities and needs, based on expected (forecast) meteorological conditions. Metric: Collaborative decision-making at the aerodrome and during all phases of flight.

Flexibility: Supports pre-tactical and tactical arrival and departure sequencing and thus dynamic air traffic scheduling. Metric: ACC and aerodrome throughput.

Cost: Reduction in costs through reduced arrival and departure delays (viz. reduced fuel burn). Metric: Fuel consumption and associated costs.

PERFORMANCE IMPROVEMENT AREA 3: OPTIMUM CAPACITY AND FLEXIBLE FLIGHTS

B0-FRTO Improved Operations through Enhanced En-route Trajectories

Allow the use of airspace which would otherwise be segregated (i.e. Special Use Airspace) along with flexible routing adjusted for specific traffic patterns. This will allow greater routing possibilities, reducing potential congestion on trunk routes and busy crossing points, resulting in reduced flight lengths and fuel burn.

Applicability

Applicable to en-route airspace. Benefits can start locally. The larger the size of the concerned airspace the greater the benefits, in particular for flex track aspects. Benefits accrue to individual flights and flows. Application will naturally span over a long period as traffic develops. Its features can be introduced starting with the simplest ones.

Benefits

Access and Equity: Better access to airspace by a reduction of the permanently segregated volumes. **Capacity:** The availability of a greater set of routing possibilities allows reducing

potential congestion on trunk routes and at busy crossing points. The flexible use of airspace gives greater possibilities to separate flights horizontally. PBN helps to reduce route spacing and aircraft separations. This in turn allows reducing controller workload by flight.

Efficiency: The different elements concur to trajectories closer to the individual optimum by reducing constraints imposed by permanent design. In particular the Module will reduce flight length and related fuel burn and emissions. The potential savings are a significant proportion of the ATM related inefficiencies. The Module will reduce the number of flight diversions and cancellations. It will also better allow avoidance of noise sensitive areas.

Environment: Fuel burn and emissions will be reduced; however, the area where emissions and contrails will be formed may be larger.

Predictability: Improved planning allows stakeholders to anticipate on expected situations and be better prepared.

Flexibility: The various tactical functions allow rapid reaction to changing conditions.

Cost: FUA: In the United Arab Emirates (UAE) over half of the airspace is military. Opening up this airspace could potentially enable yearly savings in the order of 4.9 million litres of fuel and 581 flight hours. In the United States a study for NASA by Datta and Barington showed maximum savings of dynamic use of FUA of \$7.8M (1995\$).

Flexible routing: Early modelling of flexible routing suggests that airlines operating a 10-hour intercontinental flight can cut flight time by six minutes, reduce fuel burn by as much as 2% and save 3,000 kilograms of CO₂ emissions. In the United States RTCA NextGen Task Force Report, it was found that benefits would be about 20% reduction in operational errors; 5-8% productivity increase (near term; growing to 8-14% later); capacity increases (but not quantified).

Annual operator benefit in 2018 of \$39,000 per equipped aircraft (2008 dollars) growing to \$68,000 per aircraft in 2025 based on the FAA Initial investment Decision. For the high throughput, high capacity benefit case (in 2008 dollars): total operator benefit is \$5.7B across programme lifecycle (2014-2032, based on the FAA initial investment decision).

B0-NOPS Improved Flow Performance through Planning based on a Network-wide view

Air traffic flow management (ATFM) is used to manage the flow of traffic in a way that minimizes delays and maximizes the use of the entire airspace. ATFM can regulate traffic flows involving departure slots, smooth flows and manage rates of entry into airspace along traffic axes, manage arrival time at waypoints or flight information region (FIR)/sector boundaries and reroute traffic to avoid saturated areas. ATFM may also be used to address system disruptions including crisis caused by human or natural phenomena.

Applicability: Region or subregion. Benefits

Access and Equity: Improved access by avoiding disruption of air traffic in periods of demand higher than capacity. ATFM processes take care of equitable distribution of delays.

Capacity: Better utilization of available capacity, network-wide; in particular the trust of ATC not being faced by surprise to saturation tends to let it declare/use increased capacity levels; ability to anticipate difficult situations and mitigate them in advance.

Efficiency: Reduced fuel burn due to better anticipation of flow issues; a positive effect to reduce the impact of inefficiencies in the ATM system or to dimension it at a size that would not always justify its costs (balance between cost of delays and cost of unused capacity). Reduced block times and times with engines on.

Environment: Reduced fuel burn as delays are absorbed on the ground, with shut engines; rerouting however generally put flight on a longer distance, but this is generally compensated by other airline operational benefits.

Safety: Reduced occurrences of undesired sector overloads.

Predictability: Increased predictability of schedules as the ATFM algorithms tend to limit the number of large delays.

Participation: Common understanding of operational constraints, capabilities and needs.

Cost: The business case has proven to be positive due to the benefits that flights can obtain in terms of delay reduction.

B0-ASUR Initial Capability for Ground Surveillance

Provides initial capability for lower cost ground surveillance supported by new technologies such as ADS-B OUT and wide area multilateration (MLAT) systems. This capability will be expressed in various ATM services, e.g. traffic information, search and rescue and separation provision.

Applicability

This capability is characterized by being dependent/cooperative (ADS-B OUT) and independent/cooperative (MLAT). The overall performance of ADS-B is affected by avionics performance and compliant equipage rate.

Benefits

Capacity: Typical separation minima are 3 NM or 5 NM enabling a significant increase in traffic density compared to procedural minima. Improved coverage, capacity, velocity vector performance and accuracy can improve ATC performance in both radar and non-radar environments. Terminal area surveillance performance improvements are achieved through high accuracy, better velocity vector and improved coverage.

Efficiency: Availability of optimum flight levels and priority to the equipped aircraft and operators. Reduction of flight delays and more efficient handling of air traffic at FIR boundaries. Reduces workload of air traffic controllers.

Safety: Reduction of the number of major incidents. Support to search and rescue.

Cost: Either comparison between procedural minima and 5 NM separation minima would allow an increase of traffic density in a given airspace; or comparison between installing/renewing SSR Mode S stations using Mode S transponders and installing ADS-B OUT (and/or MLAT systems).

B0-ASEP Air Traffic Situational Awareness (ATSA)

Two air traffic situational awareness (ATSA) applications which will enhance safety and efficiency by providing pilots with the means to enhance traffic situational awareness and achieve quicker visual acquisition of targets:

- a) AIRB (basic airborne situational awareness during flight operations).
- b) VSA (visual separation on approach).

Applicability

These are cockpit-based applications which do not require any support from the ground hence they can be used by any suitably equipped aircraft. This is dependent upon aircraft being equipped with ADS-B OUT. Avionics availability at low enough costs for GA is not yet available.

Benefits

Efficiency: Improve situational awareness to identify level change opportunities with current separation minima (AIRB) and improve visual acquisition and reduction of missed approaches (VSA).

Safety: Improve situational awareness (AIRB) and reduce the likelihood of wake turbulence encounters (VSA). **Cost:** The cost benefit is largely driven by higher flight efficiency and consequent savings in contingency fuel. The benefit analysis of the EUROCONTROL CRISTAL ITP project of the CASCADE Programme and subsequent update had shown that ATSAW AIRB and ITP together are capable of providing the following benefits over North Atlantic:

- a) Saving 36 million Euro (50K Euro per aircraft) annually.
- b) Reducing carbon dioxide emissions by 160,000 tonnes annually.

The majority of these benefits are attributed to AIRB. Findings will be refined after the completion of the pioneer operations starting in December 2011.

B0-OPFL Improved Access to Optimum Flight Levels through Climb/Descent Procedures using ADS B)

Enables aircraft to reach a more satisfactory flight level for flight efficiency or to avoid turbulence for safety. The main benefit of ITP is significant fuel savings and the uplift of greater payloads.

Applicability

This can be applied to routes in procedural airspaces.

Benefits

Capacity: Improvement in capacity on a given air route.

Efficiency: Increased efficiency on oceanic and potentially continental en-route.

Environment: Reduced emissions.

Safety: A reduction of possible injuries for cabin crew and passengers.

B0-ACAS Airborne Collision Avoidance Systems (ACAS) Improvements

Provides short-term improvements to existing airborne collision avoidance systems (ACAS) to reduce nuisance alerts while maintaining existing levels of safety. This will reduce trajectory deviations and increase safety in cases where there is a breakdown of separation.

Applicability

Safety and operational benefits increase with the proportion of equipped aircraft. Benefits

Efficiency: ACAS improvement will reduce unnecessary resolution advisory (RA) and then reduce trajectory deviations.

Safety: ACAS increases safety in the case of breakdown of separation.

B0-SNET Increased Effectiveness of Ground-Based Safety Nets

Monitors the operational environment during airborne phases of flight to provide timely alerts on the ground of an increased risk to flight safety. In this case, short-term conflict alert, area proximity warnings and minimum safe altitude warnings are proposed. Ground-based safety nets make an essential contribution to safety and remain required as long as the operational concept remains human centred.

Applicability

Benefits increase as traffic density and complexity increase. Not all ground-based safety nets are relevant for each environment. Deployment of this Module should be accelerated.

Benefits

Safety: Significant reduction of the number of major incidents.

Cost: The business case for this element is entirely made around safety and the application of ALARP (as low as reasonably practicable) in risk management.

Performance Improvement Area 4: Efficient Flight Paths

B0-CDO Improved Flexibility and Efficiency in Descent Profiles using Continuous Descent Operations (CDOs)

Performance-based airspace and arrival procedures allowing aircraft to fly their optimum profile using continuous descent operations (CDOs). This will optimize throughput, allow fuel efficient descent profiles, and increase capacity in terminal areas.

Applicability

Regions, States or individual locations most in need of these improvements. For simplicity and implementation success, complexity can be divided into three tiers:

- a) Least complex – regional/States/locations with some foundational PBN operational experience that could capitalize on near-term enhancements, which include integrating procedures and optimizing performance.
- b) More complex – regional/State/locations that may or may not possess PBN experience, but would benefit from introducing new or enhanced procedures. However, many of these locations may have environmental and operational challenges that will add to the complexities of procedure development and implementation.
- c) Most complex – regional/State/locations in this tier will be the most challenging and complex to introduce integrated and optimized PBN operations. Traffic volume and airspace constraints are added complexities that must be confronted. Operational changes to these areas can have a profound effect on the entire State, region or location.

Benefits

Efficiency: Cost savings and environmental benefits through reduced fuel burn. Authorization of operations where noise limitations would otherwise result in operations being curtailed or restricted. Reduction in the number of required radio transmissions. Optimal management of the top-of-descent in the en-route airspace.

Safety: More consistent flight paths and stabilized approach paths. Reduction in the incidence of controlled flight into terrain (CFIT). Separation with the surrounding traffic (especially free-routing). Reduction in the number of conflicts.

Predictability: More consistent flight paths and stabilized approach paths. Less need for vectors.

Cost: It is important to consider that CDO benefits are heavily dependent on each specific ATM environment. Nevertheless, if implemented within the ICAO CDO manual framework, it is envisaged that the benefit/cost ratio (BCR) will be positive. After CDO implementation in Los Angeles TMA (KLAX) there was a 50% reduction in radio transmissions and fuel savings averaging 125 pounds per flight (13.7 million pounds/year; 41 million pounds of CO2 emission).

The advantage of PBN to the ANSP is that PBN avoids the need to purchase and deploy navigation aids for each new route or instrument procedure.

B0-TBO Improved Safety and Efficiency through the Initial Application of Data Link En-route

Implements an initial set of data link applications for surveillance and communications in air traffic control (ATC), supporting flexible routing, reduced separation and improved safety.

Applicability

Requires good synchronization of airborne and ground deployment to generate significant benefits, in particular to those equipped. Benefits increase with the proportion of equipped aircraft.

Benefits

Capacity: Element 1: A better localization of traffic and reduced separations allow increasing the offered capacity.

Element 2: Reduced communication workload and better organization of controller tasks allowing increased sector capacity.

Efficiency: Element 1: Routes/tracks and flights can be separated by reduced minima, allowing flexible routings and vertical profiles closer to the user-preferred ones.

Safety: Element 1: Increased situational awareness; ADS-C based safety nets like cleared level adherence monitoring, route adherence monitoring, danger area infringement warning; and better support to search and rescue.

Element 2: Increased situational awareness; reduced occurrences of misunderstandings; solution to stuck microphone situations.

Flexibility: Element 1: ADS-C permits easier route change.

Cost: Element 1: The business case has proven to be positive due to the benefits that flights can obtain in terms of better flight efficiency (better routes and vertical profiles; better and tactical resolution of conflicts).

To be noted, the need to synchronize ground and airborne deployments to ensure that services are provided by the ground when aircraft are equipped, and that a minimum proportion of flights in the airspace under consideration are suitably equipped.

Element 2: The European business case has proved to be positive due to:

- a) the benefits that flights obtain in terms of better flight efficiency (better routes and vertical profiles; better and tactical resolution of conflicts); and
- b) reduced controller workload and increased capacity.

A detailed business case has been produced in support of the EU regulation which was solidly positive. To be noted, there is a need to synchronize ground and airborne deployments to ensure that services are provided by the ground when aircraft are equipped, and that a minimum proportion of flights in the airspace under consideration are suitably equipped.

B0-CCO Improved Flexibility and Efficiency Departure Profiles – Continuous Climb Operations (CCO)

Implements continuous climb operations (CCO) in conjunction with performance-based navigation (PBN) to provide opportunities to optimize throughput, improve flexibility, enable fuel-efficient climb profiles, and increase capacity at congested terminal areas.

Applicability

Regions, States or individual locations most in need of these improvements. For simplicity and implementation success, complexity can be divided into three tiers:

- a) Least complex – regional/States/locations with some foundational PBN operational experience that could capitalize on near-term enhancements, which include integrating procedures and optimizing performance.
- b) More complex – regional/State/locations that may or may not possess PBN experience, but would benefit from introducing new or enhanced procedures. However, many of these locations may have environmental and operational challenges that will add to the complexities of procedure development and implementation.
- c) Most complex – regional/State/locations in this tier will be the most challenging and complex to introduce integrated and optimized PBN operations. Traffic volume and airspace constraints are added complexities that must be confronted. Operational changes to these areas can have a profound effect on the entire State, region or location.

Benefits

Efficiency: Cost savings through reduced fuel burn and efficient aircraft operating profiles. Reduction in the number of required radio transmissions.

Environment: Authorization of operations where noise limitations would otherwise result in operations being curtailed or restricted. Environmental benefits through reduced emissions.

Safety: More consistent flight paths. Reduction in the number of required radio transmissions. Lower pilot and air traffic control workload.

Cost: It is important to consider that CCO benefits are heavily dependent on the specific ATM environment. Nevertheless, if implemented within the ICAO CCO manual framework, it is envisaged that the benefit/cost ratio (BCR) will be positive.

APPENDIX E:
ACRONYMS

A

ATFCM – Air traffic flow and capacity management

AAR – Airport arrival rate

ABDAA – Airborne detect and avoid algorithms

ACAS – Airborne collision avoidance system ACC – Area control centre

A-CDM – Airport collaborative decision-making

ACM – ATC communications management

ADEXP – ATS data exchange presentation

ADS-B – Automatic dependent surveillance—broadcast

ADS-C – Automatic dependent surveillance—contract

AFI – Africa-Indian Ocean Region

AFIS – Aerodrome flight information service

AFISO- Aerodrome flight information service officer

AFTN – Aeronautical fixed telecommunication network

AHMS – Air traffic message handling System

AICM – Aeronautical information conceptual model

AIDC – ATS inter-facility data communications

AIP – Aeronautical information publication

AIRB – Enhanced traffic situational awareness during flight operations

AIRM – ATM information reference model

AIS – Aeronautical information services

AIXM – Aeronautical information exchange model

AMA – Airport movement area

AMAN/DMAN – Arrival/departure management

AMC – ATC microphone check

AMS(R)S – Aeronautical mobile satellite (route) service

ANM – ATFM notification message

ANS – Air navigation services

ANSP – Air navigation services provider

AO – Aerodrome operations/Aircraft operators

AOC – Aeronautical operational control

AOM – Airspace organization management

APANPIRG – Asia/Pacific air navigation planning and implementation regional group

APIRG - Africa-Indian Ocean Planning and implementation group

ARNS – Aeronautical radio navigation Service

ARNSS – Aeronautical radio navigation Satellite Service

ARTCCs – Air route traffic control centers

AS – Aircraft surveillance

ASAS – Airborne separation assistance systems

ASDEX – Airport surface detection equipment

ASEP – Airborne separation

ASEP-ITF – Airborne separation in trail follow

ASEP-ITM – Airborne separation in trail merge

ASEP-ITP – Airborne separation in trail procedure

ASM – Airspace management

A-SMGCS – Advanced surface movement guidance and control systems

ASP – Aeronautical surveillance plan

ASPA – Airborne spacing

ASPIRE – Asia and South Pacific initiative to reduce emissions

ATC – Air traffic control

ATCO – Air traffic controller

ATCSCC – Air traffic control system command center

ATFCM – Air traffic flow and capacity management

ATFM – Air traffic flow management

ATMC – Air traffic management control

ATMRPP – Air traffic management requirements and performance panel

ATN – Aeronautical Telecommunication Network

ATOP – Advanced technologies and oceanic procedures

ATSA – Air traffic situational awareness

ATSMHS – Air traffic services message handling services

ATSU – ATS unit

AU – Airspace user

AUO – Airspace user operations

B

Baro-VNAV – Barometric vertical navigation

BCR – Benefit/cost ratio

B-RNAV – Basic area navigation

C

CSPO – Closely spaced parallel operations

CPDLC – Controller-pilot data link communications

CDO – Continuous descent operations

CBA – Cost-benefit analysis

CSPR – Closely spaced parallel runways

CM – Conflict management

CDG – Paris - Charles de Gaulle airport

CDM – Collaborative decision-making

CFMU – Central flow management unit

CDQM – Collaborative departure queue management

CWP – Controller working positions

CAD – Computer aided design

CTA – Control time of arrival

CARATS – Collaborative action for renovation of air traffic systems

CFIT – Controlled flight into terrain

CDTI – Cockpit display of traffic information

CCO – Continuous climb operations

CAR/SAM – Caribbean and South American region

COSESNA – Central American civil aviation agency.

D

DAA – Detect and avoid

DCB – Demand capacity balancing

DCL – Departure clearance

DFM Departure flow management

DFS – Deutsche Flugsicherung GmbH

DLIC – Data link communications initiation capability

DMAN – Departure management

DMEAN – Dynamic management of European airspace network

D-OTIS – Data link operational terminal information service

DPI – Departure planning information

D-TAXI – Data link TAXI

EAD – European AIS database

e-AIP – Electronic AIP

EGNOS – European GNSS navigation overlay service

ETMS – Enhance air traffic management system

EVS – Enhanced vision systems

F

FABEC Functional Airspace Block Europe Central

FAF/FAP – Final approach fix/final approach point

FANS – Future air navigation systems

FDP – Flight data processing

FDPS – Flight data processing system

FF-ICE – Flight and flow information for the collaborative environment

FIR – Flight information region

FIXM – Flight information exchange model

FMC – Flight management computer

FMS – Flight management system

FMTP – Flight message transfer protocol

FO – Flight object

FPL – Filed flight plan

FPS – Flight planning systems

FPSM – Ground delay program parameters selection model

FRA – Free route airspace

FTS – Fast time simulation

FUA – Flexible use of airspace

FUM – Flight update message

G

GANIS – Global Air Navigation Industry Symposium

GANP – Global air navigation plan

GAT – General air traffic

GBAS – Ground-based augmentation system

GBSAA – Ground based sense and avoid

GEO satellite – Geostationary satellite

GLS – GBAS landing system

GNSS – Global navigation satellite system

GPI – Global plan initiatives

GPS – Global positioning system

GRSS – Global runway safety symposium

GUFI – Globally unique flight identifier

H

HAT – Height above threshold

HMI – Human-machine interface

HUD – Head-up display

I

IDAC – Integrated departure/arrival capability

IDC – Interfacility data communications

IDRP – Integrated departure route planner

IFR – Instrument flight rules

IFSET – ICAO Fuel Savings Estimation Tool

ILS – Instrument landing system

IM – Interval Management

IOP – Implementation and Interoperability

IP – Internetworking protocol

IRR – Internal rate of return

ISRM – Information service reference model

ITP – In-trail-procedure

K

KPA – Key performance areas

L

LARA – Local and sub-regional airspace management support system

LIDAR – Aerial laser scans

LNAV – Lateral navigation

LoA – Letter of agreement

LoC – Letter of coordination

LPV – Lateral precision with vertical guidance OR localizer performance with vertical guidance

LVP – Low visibility procedures

M

MASPS – Minimum aviation system performance standards

MILO – Mixed integer linear optimization

MIT – Miles-in-trail

MLS – Microwave landing system

MLTF – Multilateration task force

MTOW – Maximum take-off weight

N

NADP – Noise abatement departure procedure

NAS – National airspace system

NAT – North Atlantic

NDB – Non-directional radio beacon

NextGen – Next generation air transportation system

NMAC – Near mid-air collision

NOP – Network operations procedures (plan)

NOTAM – Notice to airmen

NPV – Net present value

O

OLDI – On-line data interchange

OPD – Optimized profile descent

OSD – Operational service & environment definition

OTW – Out the window

P

P(NMAC) – Probability of a near mid-air collision

PACOTS – Pacific organized track system

PANS-OPS – Procedures for air navigation services - aircraft operations

PBN - Performance - based navigation

PENS Pan-European Network Service

PETAL – Preliminary EUROCONTROL test of air/ground data link

PIA – Performance improvement area

PRNAV – Precision area navigation

R

RA – Resolution advisory

RAIM – Receiver autonomous integrity monitoring

RAPT – Route availability planning tool

RNAV Area navigation

RNP – Required navigation performance

RPAS – Remotely-piloted aircraft system

RTC – Remote tower centre

S

SARPs – Standards and recommended practices

SASP – Separation and airspace safety panel

SATCOM – Satellite communication

SBAS – Satellite-based augmentation system

SDM – Service delivery management

SESAR – Single European sky ATM research

SEVEN – System-wide enhancements for versatile electronic negotiation

SFO – San Francisco international airport

SIDS – Standard instrument departures

SMAN – Surface management

SMS – Safety management systems

SPRs – Special programme resources

SRMD – Safety risk management document

SSEP – Self-separation

SSR – Secondary surveillance radar

STA – Scheduled time of arrival

STARS – Standard terminal arrivals

STBO – Surface trajectory based operations

SURF – Enhanced traffic situational awareness on the airport surface

SVS – Synthetic visualization systems

SWIM – System-wide information management

T

TBFM – Time-based flow management

TBO – Trajectory-based operations

TCAS – Traffic alert and collision avoidance system

TFM – Traffic flow management

TIS-B – Traffic information service-broadcast

TMA – Trajectory management advisor

TMIs – Traffic management initiatives

TMU - Traffic management unit

TOD – Top of Descent

TRACON – Terminal radar approach control

TS – Traffic synchronization

TSA – Temporary segregated airspace

TSO – Technical standard order

TWR – Aerodrome control tower

U

UA – Unmanned aircraft

UAS – Unmanned aircraft system

UAV – Unmanned aerial vehicle

UDPP – User driven prioritization process

V

VFR – Visual flight rules

VLOS – Visual line of sight

VNAV – Vertical navigation

VOR – Very high frequency (VHF) omnidirectional radio range

VSA – Enhanced visual separation on approach

W

WAAS – Wide area augmentation system

WAF – Weather avoidance field

WGS-84 – World geodetic system - 1984

WIDAO – Wake independent departure and arrival operation

WTMA – Wake turbulence mitigation for arrivals

WTMD – Wake turbulence mitigation for departures

WXXM – Weather exchange model

— — — — —

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 13/24	UPDATE OF NOTES IN TABLE ATS 1 OF THE AFI ANP	That the notes on ATS routes Table ATS 1 of ICAO's Air Navigation Plan — Africa Indian Ocean (Doc 7474) be updated as shown in Appendix G to this report.					Implemented To be deleted
CONCLUSION 13/25	TARGET DATE FOR IMPLEMENTATION OF ATS ROUTES	That the relevant ICAO regional Offices invite states concerned to implement the routes shown in Appendix H to this report as soon as possible, and ideally no later than 28 November 2002, and ensure that implementation is carried out in a harmonized manner.					Implemented To be deleted
CONCLUSION 13/26	COORDINATION MEETING BETWEEN ALGERIA, LIBYA AND TUNISIA	That the proposal for the deletion of ATS routes/ route segments of UR986 and UG623 be discussed within the framework of bilateral/multilateral meetings to be organized under the aegis of ICAO, pursuant to AFI/7 ran meeting conclusion 5/9.					Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 13/27	INFORMAL MEETING BETWEEN ALGERIA, MOROCCO AND SENEGAL	That an informal coordination meeting be organized under the aegis of ICAO between Algeria, morocco and Senegal to explore ways and means of addressing problems associated with aircraft straying into Alger FIR (prohibited area p64) at point "bulis".					Implemented To be deleted
CONCLUSION 13/28	IMPLEMENTATION OF ATS ROUTE UM 114	That Algeria, Nigeria, Ghana, ASECNA and IATA meet under the auspices of ICAO to finalize the implementation of RNAV route UM114.					Implemented To be deleted
CONCLUSION 13/29	AMENDMENT TO AFI ANP TABLE ATS-1	That the AFI ANP Table ATS-1 be amended to include: a) a requirement for ATS routes: i) Johannesburg Francistown— Victoria falls Livingstone; ii) Madera TIKAT; and iii) El Obeid AVONO; and b) extend UR982 (Lome Sao tome).					Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
DECISION 13/30 A&C	CRITERIA FOR THE ESTABLISHMENT OF NEW ATS ROUTES	That the ~~ATS/AIS/SAR Sub Group~~ develop criteria for the establishment of new ATS routes in the ~~AFI Region~~ .	~~ATS/AIS/SAR SG~~ develop criteria	~~ATS/AIS/ SAR SG~~			Superseded by Decision 17/50 To be deleted
CONCLUSION 13/31 A&C	IMPLEMENTATION OF THE AIR TRAFFIC CONTROL SERVICE	That States, which have not done so, implement area control service in accordance with the priorities set out in APIRG/12 Conclusion 12/20, not later than 28 November 2002. That States, which have not done so (a) implement air traffic control in the upper airspace; and (b) implement air traffic control service along all ATS routes contained in Table ATS 1 of the ~~AFI Air Navigation Plan as soon as possible, but in any case not later than the 31 January 2014~~	~~Implement air traffic control service as~~	States	Air Traffic control service implemented	~~28 Nov 2002~~ 31 March 2014	Consolidated under New Draft Conclusion 13/01 from SG/13 To be deleted
CONCLUSION 13/32 A	ALLOCATION OF ICAO FIVE LETTER NAME CODE	That: a) States ~~allocate Five Letter Name Code designators to all~~	~~States access the ICARD system and coordinate 5LNC waypoints for ATS routes~~	States	5LNC allocated to all significant points on ATS	2015	Overtaken by events To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
	DESIGNATORS FOR THE ATS ROUTE CROSSING POINTS	~~ATS routes crossing points, where such points are not marked by navigational aids; and~~ b) ~~While establishing significant and transfer of control and communications points, States follow the guiding principles governing the establishment and identification of significant points, transfer of control/communications points and allocation of Five-letter Name Code designators to such points.~~			routes		

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 13/33	ACAS II TRANSITION PERIOD AND EXEMPTION PROCESS IN THE AFI REGION	That: a) ~~the end of the transition period for the mandatory carriage of ACAS be fixed to 1 January 2003; and~~ b) ~~an ICAO regional office be designated to coordinate the elements of ACAS II exemptions in the AFI Region during the transition.~~					Overtaken by events. This Conclusion is a Standard To be deleted
CONCLUSION 13/34	CARRIAGE AND OPERATION OF PRESSURE- ALTITUDE REPORTING SSR TRANSPONDERS	That the AFI Regional Supplementary Procedures (Doc 7030) be amended to include the following procedure: “All aircraft intending to fly in airspace Classes B to E carry and operate an SSR pressure altitude reporting transponder by 1 January 2003”.					Implemented To be deleted
CONCLUSION	AIC ON THE USE OF	That ICAO invite States to publish	ICAO issue States letter	ICAO	AIC published		Implemented

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
13/35 A	SSR TRANSPONDERS	~~the specimen AIC indicated at Appendix I to this report on the use of pressure altitude reporting SSR transponders as soon as the relevant amendment to the Regional Supplementary Procedures (Doc 7030) is approved by the Council of ICAO.~~		States			To be deleted
CONCLUSION 13/36 A	TRAINING OF PILOTS AND AIR TRAFFIC CONTROLLERS ON THE USE OF ACAS	~~That States take appropriate action in order to provide the necessary training to pilots and air traffic controllers on the use of ACAS procedures.~~	~~States take action and provide necessary training~~ To be included in Training organizations' syllabus	States	Training provided to pilots and ATCOs		No longer necessary for Pilots. To be taken over by the ATS Competency Study Group. To be deleted
CONCLUSION 13/37 A	PUBLICATION OF ACAS AND SSR TRANSPONDER REQUIREMENTS IN NATIONAL LEGISLATION	~~That ICAO invite States, that have not done so, to publish in their national legislation the appropriate guidance material for enforcement of awareness on ACAS II and pressure altitude reporting SSR transponders requirements as soon as possible, but not later than 1 January 2002.~~	ICAO issue State letter	ICAO States	National legislation published, incorporating guidance material for ACAS II and SSR transponders requirements	1 Jan 2002	This Conclusion is being addressed under USOAP. To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 13/38	PUBLICATION OF A DRAFT AIC ON ACAS II IMPLEMENTATION	That ICAO urge AFI States, which have not done so, to publish as soon as possible, but no later than AIRAC date of 13 December 2001, the AIC on ACAS II implementation as indicated in Appendix J to this report.					
CONCLUSION 13/39 A	PROCEDURES ON THE USE OF ACAS II	~~That ICAO gives priority to the development of procedures on the use of ACAS II.~~	~~ICAO develop procedures~~	~~ICAO~~	~~ACAS II procedures developed~~		~~This Conclusion is considered obsolete. Refer to Doc 4444, Section 12.3 ATC Phraseologies. To be deleted~~
CONCLUSION 13/40	REVIEW OF AIRSPACE ORGANIZATION	~~That States be urged to take prompt action on the proposed changes to the airspace organization indicated at Appendix K to this report.~~					~~Overtaken by events. To be deleted~~
CONCLUSION 13/41 A & C	PROVISION OF AIR TRAFFIC SERVICES IN THE UPPER AIRSPACE	~~That, in order to improve the provision of air traffic services in the upper airspace, air traffic services be provided, where applicable, by the ACC/FIC responsible for that FIR.~~	~~States/ANSPs make provisions for ATS in upper airspace~~	~~States~~	~~ATS provided in upper airspace~~		~~Consolidated under New Draft Conclusion 13/01 from SG/13~~

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
							To be deleted
CONCLUSION 13/42 A	IMPLEMENTATION OF THE WORLD GEODETIC REFERENCE DATUM —1984 (WGS 84) IN THE AFI REGION	That: a) ~~States which have not done so, be invited to expedite action in order to implement the WGS 84 Coordinates in the Region;~~ b) ~~ICAO be invited to assist in the transformation of coordinates on the FIR boundary points in the AFI Region.~~	~~States expedite the implementation of WGS 84.~~ States allocate adequate resources	States	WGS 84 implemented in all AFI States		To be reviewed under AIM and consolidated with Conclusion 17/90 To be deleted
CONCLUSION 13/43 A&C	IMPLEMENTATION OF 10 MINUTE LONGITUDINAL SEPARATION	That: a) ~~Those States that have not implemented 10 minute longitudinal separation minima by 23 March 2000, as called for by APIRG/12 Recommendation 12/44, be reminded of the prerequisites for ensuring the safe implementation of this requirement; and~~	~~ICAO issue a State letter~~ ~~Affected States include non-implementation in the list of shortcomings/deficiencies~~	States	10 minute longitudinal separation implemented in AFI		This Conclusion to be consolidated with Conclusion. 14/24 To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		b) ~~Once the prerequisites referred to in a) above have been met, inclusion on the non-implementation of 10 minute longitudinal separation minima in the list of shortcomings/deficiencies as defined by ICAO be considered.~~					
CONCLUSION 13/55 A	PROVISION OF SEARCH AND RESCUE SERVICES	That: a) ~~The Secretariat follow, through missions, the implementation of SAR provisions within the AFI Region and keep APIRG apprised of developments;~~ b) ~~States accord high priority to the implementation of ICAO provisions in respect of search and rescue services;~~ e) ~~ICAO assist States through special implementation projects (SIPs) in order to promote the~~	~~ICAO organizes SAR missions to States as part of Regional Office activities and provides guidance and support.~~ States promote ICAO/IMO Protocols in SAR	ICAO States	Missions on SAR organized ICAO/IMO protocols used to enhance	APIRG/19	To be consolidated with Conclusions 14/28 , 15/48 and 17/68

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		implementation of SAR provisions; and d) States concerned in maritime SAR promote the existing ICAO/IMO protocols in order to enhance efficiency in the aeronautical maritime SAR.					
CONCLUSION 13/56	SEARCH AND RESCUE PROJECT INITIATED BY AFCAC	That States, in cooperation with ICAO, be encouraged to participate in the project initiated by AFCAC for the improvement of search and rescue services in the AFI region.					Project has been implemented and closed To be deleted
CONCLUSION 13/57 A	NEED FOR COOPERATION AGREEMENTS ON THE USE OF COSPAS-SARSAT	That States within the coverage of MCCS implemented in the AFI Region (Algeria, South Africa) conclude cooperation agreements with the COSPAS-SARSAT organization and host States in order to allow them to receive data from the COSPAS-SARSAT system.	Concerned States conclude agreements to receive data from COSPAS-SARSAT	States	Cooperation Agreements concluded	Dec 2013	On-going activity ICAO to coordinate with States in order to obtain number of current

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
DECISION 13/58	ESTABLISHMENT OF A TASK FORCE ON RVSM AND RNAV/RNP IMPLEMENTATION	That an APIRG Task Force dedicated to RVSM and RNAV/RNP implementation be established, with the terms of reference shown at Appendix Z7 to this report. <i>Note 1: The Task Force should maintain close coordination with the ATS/AIS/SAR/SG ASM Task Force, and its terms of reference should be harmonized with those of the ASM Task Force.</i> <i>Note 2: SATMA and Eurocontrol should be invited to assist the Task Force.</i>					Conclusion overtaken by events To be deleted
CONCLUSION 13/59 A&C	IMPLEMENTATION OF RNP/5 IN THE AFI REGION	That VHF coverage be improved in the Algiers, Brazzaville, Dakar, Khartoum, Kinshasa, Luanda, N'djamena, Niamey and Tripoli FIRS to facilitate early introduction of RNP 5.	Concerned FIRs improve VHF coverage	Concerned FIRs	RNP 5 introduced in the concerned FIRs	APIRG/19	Status to be reviewed by SG/13 Superseded by Decision 17/50
CONCLUSION	COORDINATION	That regular interface meetings be					Conclusion

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
~~13/60~~	~~MEETING BETWEEN LIBYA AND ADJACENT STATES~~	~~organized under the aegis of ICAO, between Libya and adjacent States, in order to address issues relating to ATS coordination procedures and communications.~~					~~overtaken by events To be deleted~~
~~CONCLUSION 13/76 A~~	~~PROMULGATION OF NATIONAL AIRBORNE COLLISION AVOIDANCE SYSTEM (ACAS) POLICIES~~	~~That each AFI/EUR interface State promulgate without delay an AIC clearly stating its national ACAS II exemption policy, including minimum equipment list (MEL) exemption.~~	~~States promulgate AIC~~	~~States~~	~~AIC promulgated~~	~~APIRG/19~~	~~Conclusion being addressed under USOAP To be deleted~~
~~CONCLUSION 13/85:~~	~~INITIAL IMPLEMENTATION OF RVSM IN THE AFI REGION~~	~~That RVSM be implemented in the AFI region concurrently with or soon after its implementation in the EUR Region, and initially between FL 350 and FL 390.~~					~~Implemented To be deleted~~
~~CONCLUSION 13/86~~	~~SEMINARS/ WORKSHOPS ON RVSM AND RNAV/RNP~~	~~That ICAO, as well as States and international organizations in a position to do so, organize seminars/workshops on RVSM and RNAV/RNP in the AFI Region.~~					~~Implemented To be deleted~~

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 13/87	AMENDMENT OF THE AFI CNS/ATM IMPLEMENTATION PLAN (DOC 003)	That the <i>AFI CNS/ATM Implementation Plan</i> (Doc 003) be amended as shown at Appendix S to this report.					To be reviewed in consultation with CNS SG
CONCLUSION 14/18	AMENDMENT TO AFI ANP TABLE ATS 1	That ICAO AFI ANP Table ATS 1 be amended to include a requirement for ATS routes: a) ~~Geneina – Port Sudan (RNAV);~~ and b) ~~Cotonou – Malabo.~~					Conclusion overtaken by events To be deleted
CONCLUSION 14/19	IMPLEMENTATION OF ATS ROUTES, INCLUDING RNAV ROUTES	That States that have not yet done so implement, as soon as possible and in any case not later than the AIRAC date of 10 June 2004, ATS routes in their fir as shown in Appendix E to this report.					Conclusion consolidated with similar other Conclusions To be deleted
CONCLUSION 14/20 A	IMPLEMENTATION OF ATC SERVICE	That States that have not yet done so implement ATC service along all ATS routes contained in Table ATS 1 of the AFI Air Navigation Plan as soon as possible, but in any case not	States implement ATC service As per AFI/7 RAN Rec 5/21	States	ATC service implemented along all ATS routes	10 June 2010	Consolidated under New Draft Conclusion 13/01 from SG/13

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		later than the AIRAC date of 10 June 2004 in the spirit of AFI/7 Recommendation 5/21.					To be deleted
CONCLUSION 14/21	IMPLEMENTATION OF RVSM IN THE AFI REGION	That: a) ~~the RVSM implementation task force finalize the development of a comprehensive implementation strategy/action plan, taking into consideration work so far done and that of the expert groups (RGSP Panel, NATSPG, Eurocontrol, SAT meeting and MECMA), as well as the material at Appendix F, as soon as possible and not later than 31 December 2003;~~ b) ~~the implementation strategy/ action plan be circulated to States and international organizations for comments, which should be received not later than 31 march 2004;~~ c) ~~States do their utmost to implement RVSM in selected airspace by the AIRAC cycle date of~~					Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		January 2005, concurrently with the CAR/SAM region; and d) ~~a coordination meeting be convened in September 2004 to make a go/no go decision regarding the implementation of RVSM.~~					
CONCLUSION 14/22	IMPLEMENTATION OF RNAV ROUTE UM114	That the Ghana ATS Authority implement and delegate to Kano/Lagos ATS Authorities the portion of UM114 within its airspace.					Implemented To be deleted
CONCLUSION 14/23	DELINEATION OF FIR BOUNDARIES	That ICAO convene a meeting between Algeria and Tunisia to harmonize the publication, in their respective AIPs, of the delineation of the FIR boundaries pursuant to AFI/7 recommendations 5/1 and 5/9 and APIRG Conclusion 13/26.					Implemented To be deleted
CONCLUSION 14/24 A & C	IMPLEMENTATION OF 10 MINUTE LONGITUDINAL SEPARATION MINIMUM	That: a) ~~States that have not already done so urgently implement the 10 minute longitudinal~~	~~States implement 10 minute longitudinal separation on all ATS routes~~	States	Harmonized implementation of 10 minute longitudinal separation	As soon as possible	Consolidate with Conclusion 13/43 To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		~~separation minimum, taking into cognizance the relevant requirements in APIRG Conclusion 3/43 and the provisions of ICAO PANS-ATM (Doc 4444/501) and AFI CNS/ATM System Plan (Doc.003);~~ b) ~~ICAO amend Doc 7030 to harmonize with the provisions in the PANS-ATM (Doc 4444/501); and~~ e) ~~ICAO, through its regional offices, ensure adequate coordination with the neighbouring regions that have not yet implemented the 10-minute longitudinal separation minimum, in particular the ASIA Region.~~					
CONCLUSION 14/25 A	DEVELOPMENT OF CHART ATM 1 (PART V - ATM OF	That the SSR code allotment plan (Chart ATM 1 for Part V - ATM FASID) as contained in Appendix G	Publication of SSR code allotment as per Attachment G	ICAO	Code allotment for AFI States published in the	APIRG/15	Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
	~~THE AFI FASID)~~	to this report be published in the AFI FASID.			AFI FASID		
CONCLUSION 14/26	CLASSIFICATION OF AIRSPACES	That ICAO expedite the revision of the current airspace classification of airspaces with a view to reducing and simplifying them for uniform application.					Consolidated under New Draft Conclusion 13/01 from SG/13 To be deleted
CONCLUSION 14/27	DEVELOPMENT OF AIS/MAP SIP	That ICAO initiate a Special Implementation Project (SIP) to assist States with the production of the AIP in the new format, publication of WGS 84 information charts and publication of World Aeronautical Chart ICAO 1:1 000 000.					Overtaken by events To be coordinated with AIM and deleted
CONCLUSION 14/28 A	ORGANIZATION OF REGIONAL SAR SEMINARS/ WORKSHOPS	That ICAO organizes regional SAR seminars/workshops in order to sensitize States to the need to take remedial action to implement the ICAO provisions relating to SAR.	Organize SAR seminars/workshops and invite States and SAR organizations	ICAO	SAR seminars/workshops organized on a yearly basis	Annual event	SAR workshops are being convened annually with the ASSI TF meetings

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 14/29 A	ATM SAFETY MANAGEMENT SYSTEMS	That, in order to enhance safety, security and efficiency in air navigation services, States that have not done so expedite the implementation of relevant ICAO provisions relating to safety management systems, taking into account the provisions of Annex 11, 2.26 and the PANS-ATM (Doc 4444).	States implement SMS	States	Implementation of ICAO SMS	2010	Overtaken by events. Consolidated with Con 17/64 To be deleted
CONCLUSION 14/30 A&C	“SINGLE SKY” CONCEPT IN AIR TRAFFIC MANAGEMENT IN THE AFI REGION	That : a) the vision of the AFI Region on the “single sky” be aligned with ICAO concept of “global air traffic management”; and b) ICAO develop the definition of the “single sky” concept and provide to the States of the AFI Region guidance material and the orientation for a progressive implementation of the “single sky” in Africa, taking into	Alignment of Single Sky concept vision with ICAO global air traffic management concept. Provide guidance to States on implementation	ICAO	ICAO Single Sky Concept in Africa developed and implemented	2010	Overtaken by events To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		account the global ATM operational concept.					
CONCLUSION 14/31 A	CARRIAGE AND OPERATION OF AIRBORNE COLLISION AVOIDANCE SYSTEM (ACAS) AND PRESSURE ALTITUDE REPORTING TRANSPONDERS	That States that have not done so expedite the implementation of mandatory carriage and operation of ACAS II and carriage and operation of pressure altitude reporting transponders by aircraft in conformity with ICAO Annex 6, Part I, paragraphs 6.18 and 6.19, Annex 6, Part II, paragraph 6.13.1, Annex 10, Vol. IV, Doc 8168, Volume I, Part VIII and the PANS ATM (Doc 4444), Chapter 8, paragraph 8.5.	States Regulators ensure operators implement mandatory carriage of ACAS-11 transponders and pressure altitude reporting transponders	States	Carriage of ACAS-11 and pressure altitude reporting transponders by all operators in accordance with ICAO SARPs and guidance material	APIRG/19	Overtaken by events. To be deleted
CONCLUSION 15/27 A&C	AIR TRAFFIC MANAGEMENT AND AIR ROUTE STRUCTURE IMPROVEMENTS	That ICAO develop a comprehensive planning document for overall ATM and air route structure improvements in the AFI Region; through the special implementation project (SIP) mechanism, use the planning document as the basis for obtaining	Develop a planning document on air route structure implementation in AFI Region	ICAO	Comprehensive planning document on air route structure developed	2005-2010	Overtaken by events To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		~~the funds from the donor organizations to fund the project.~~					
CONCLUSION 15/28 C	FUEL EFFICIENCY MEASURES	That States: a) ~~identify, with IATA and local airlines, actions that would provide fuel efficiency;~~ ~~establish and promulgate a program to implement fuel efficiency measures; and~~ ~~nominate a “fuel champion” who would liaise with IATA, airlines, ANS providers and other stakeholders to ensure that all possible fuel conservation strategies are evaluated and implemented.~~	~~Develop measures and a strategy that would provide for long term fuel efficiency in AFI Region~~	States	Fuel efficiency measures in place	2005-2015	Overtaken by events. Incorporated in the implementation of PBN To be deleted
CONCLUSION 15/29 A	REPORTING AND ANALYSIS OF ATS INCIDENTS	That, in compliance with Assembly Resolution A31-10 (Improving accident prevention in civil aviation), the provisions in the ICAO Annex 13	States establish incident reporting systems to maximum number of incidents.	States	All incidents and accidents are properly investigated and	2012	Incorporated in the implementation of SMS

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		(Aircraft Accident and Incident Investigation), paragraph 7.3, and AFI/7 Recommendation 5/26 (Reporting and analysis of ATS incidents), States establish incident reporting systems which should be non-punitive and educational in order to register the maximum number of incident reports.			reported. Non-punitive and educational reporting systems established		To be deleted
CONCLUSION 15/30 A	ATS OPERATIONAL AUDITING AND PROFICIENCY MAINTENANCE	~~That, in the spirit of AFI/7 Conclusion 5/27 (ATS operational auditing and proficiency maintenance), the lack of standard auditing and proficiency maintenance procedures in ATS units of States be included in the APIRG list of deficiencies relating to the ATM field.~~	~~Include lack of standard auditing and proficiency in ATS units as in APIRG list of ATM deficiencies~~	ICAO States	Lack of standard auditing and proficiency included in APIRG list of deficiencies related to ATM	APIRG/16	Incorporated in the implementation of SMS To be deleted
CONCLUSION 15/31 A&C	APPLICATION OF FLEXIBLE USE OF AIRSPACE (FUA)	That: a) States adopt a FUA approach in establishing prohibited, restricted or danger areas such	Adopt FUA approach when establishing prohibited, restricted or danger areas.	States	FUA adopted	APIRG/18	On-going activity

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		that these areas are established on a temporary basis, taking into account the needs of civil aviation; and b) States constantly review the existence of prohibited, restricted or danger areas pursuant to LIM/AFI (1988) Recommendation 2/21.					
CONCLUSION 15/32 A	ATS SAFETY MANAGEMENT	~~That States which have not done so, implement a systematic and appropriate ATS Safety Management Programme to ensure safety is maintained in the provision of ATS within airspace and at aerodromes (Annex 11 – Air Traffic Services refers).~~	~~Implement SMS as per Annex 11~~	~~States~~	~~SMS programme implemented~~	~~2012~~	~~Incorporated in the implementation of SMS – Annex 19 To be deleted~~
CONCLUSION 15/45	IMPLEMENTATION OF ATC SERVICE	~~That States which have not yet done so implement air traffic control (ATC) service along all ATS routes contained in Table ATS 1 of the Air Navigation Plan – Africa Indian~~					~~Consolidated under New Draft Conclusion 13/01 from SG/13~~

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		~~Ocean Region (Doc 7474), as soon as possible, but not later than 28 September 2006, in the spirit of AFI/7 Recommendation 5/21 (Provision of area control service).~~					To be deleted
CONCLUSION 15/46	AMENDMENT TO AFI ANP TABLE ATS 1	That, a) the ICAO AFI ANP Table ATS 1 be amended to include a requirement for ATS routes, at Appendix L. b) the ATS routes, at Appendix M, be deleted from the AFI ANP; and c) that ATS routes, at Appendix N, be realigned as shown.					Overtaken by events To be deleted
CONCLUSION 15/47 A&C	IMPLEMENTATION OF ATS ROUTES, INCLUDING RNAV ROUTES	That: a) States which have not yet done so expedite the implementation of ATS routes shown in Appendix O as soon as possible but not later than 28 September	~~Prepare and coordinate for harmonized implementation of RNAV routes~~	States	RNAV routes implemented	28 September 2008	Consolidated with Conclusion 16/46 To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		~~2006.~~ b) ~~the realigned RNAV routes UM998 (Gaborone, Maun, Luena and Maiduguri) and UM731 (Johannesburg, Saurimo and N'Djamena) through Angola, Botswana, Central African Republic, Chad, Congo, D.R. Congo, Libya, Nigeria, South Africa and Zambia be implemented on the common aeronautical information regulation and control (AIRAC) date of 19 January 2006; and~~ ~~Angola, Botswana and D.R. Congo implement segments of RNAV routes UM998 at the common AIRAC date of 19 January 2006.~~					
CONCLUSION 15/48 A&C	SAR COOPERATION AGREEMENTS AMONGST STATES	That, in order to promote a more effective and economic utilization of SAR facilities, States should enter	Coordinate for signing of SAR Agreements in order to promote economic utilization	States	SAR Agreements between States	2012	On-going activity. States that have not

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		into and operationalize precise agreements with other States in order to pool their resources and provide mutual assistance in SAR operations, using the specimen agreement in Appendix I of the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual, Volume I — Organization and Management (Doc 9731).	of SAR facilities				done so are urged to conclude and sign SAR agreements
CONCLUSION 15/49 A	IMPLEMENTATION OF SAR LEGISLATION	That, as a matter of priority, States undertake to: a) enact the SAR legislation that will make SAR operations legal, and empower the SAR mission coordinator to request external assistance when the available facilities and personnel are unable to cope with an emergency or are deemed inadequate to cope with a distress situation; and	~~Make provisions for SAR legislation to be enacted and published as part of CE1~~	States	~~SAR Legislation enacted in all AFI States~~	2012	To be deleted Adequately addressed under the ICAO USAOP

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		b) ~~ensure that the request referred to in a) is not delayed by any approval requirements from high level authorities, and that a notification should be sufficient.~~					
CONCLUSION 15/50	AFCAC PROJECT IN THE SAR FIELD	~~That, because of persistent problems that still hinder the implementation of ICAO's requirements in the SAR field, States be urged to support the AFCAC SAR project, the objective of which is to accelerate the implementation of ICAO SAR requirements and emphasizing, in particular, related legislation, organizational matters and agreements.~~					~~To be deleted.~~ ~~This project ran its full course culminating in the La Reunion SAR conference in 2008~~
CONCLUSION 15/51	SAFETY ASSESSMENT DATA, REMEDIAL ACTIONS AND TARGET DATE FOR AFI RVSM IMPLEMENTATION	That: a) ~~States pursue stringent incident reporting measures and take appropriate remedial actions in order to comply with the total TLS;~~ b) ~~States intensify their efforts~~					~~Implemented~~ ~~To be deleted~~

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		~~in reducing the incident rates to support positive CRA results;~~ e) ~~States continue to provide the required safety assessment data to ARMA on a monthly basis using Forms 1, 2, 3 and the revised Form 4;~~ d) ~~the actual date/time of implementation of RVSM will be determined taking into account:~~ ~~i) the completion of the activities in the AFI RVSM, Strategy/Action Plan;~~ ~~ii) the development of an acceptable PISC and its subsequent approval by the Commission;~~ ~~iii) the approval by Commission of <i>Regional Supplementary</i>~~					

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		<i>Procedures</i> (Doc 7030/4) relating to RVSM; and e) the target date for implementation of RVSM in the AFI Region will be the AIRAC date of 28 September 2006.					
CONCLUSION 15/52	CIVIL/MILITARY COORDINATION	That, in order to ensure the safe and coordinated implementation of RVSM in the AFI Region, States ensure that the military aviation authorities are fully involved in the planning and the implementation process.					Implemented To be deleted
DECISION 15/53	NOMINATION OF A NATIONAL RVSM PROGRAMME MANAGER	That States which have not done so, as a matter of urgency, nominate a national RVSM programme manager who will be responsible for ensuring that the proper mechanisms are put in place for the safe implementation of the RVSM Programme and will also act as the focal point or contact					Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		person. Additionally, national programme managers will keep this information up to date.					
CONCLUSION 15/54	REPORTING OF DATA FOR MONITORING AND/OR CARRYING OUT SAFETY ASSESSMENT	That: a) all States institute the procedures for reporting of data, incidents and conditions necessary for performing the collision risk calculations prerequisite for RVSM implementation to the ARMA. The data will include, but not necessarily be limited to: ▪ height deviations of 300 ft or more; ▪ total number of instrument flight rules (IFR) movements for each month; ▪ average time per movement spent in the level band FL 290 to FL 410;					Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		▪ ~~ATC — coordination failures;~~ ▪ ~~turbulence;~~ ▪ ~~traffic data; and~~ b) ~~Global positioning system monitoring unit (GMU) will be used and, where appropriate, height monitoring units (HMU) (multilateration) for height monitoring in AFI Region, both of which will be coordinated by ARMA.~~					
CONCLUSION 15/55	IMPLEMENTATION OF RVSM IN THE AFI REGION	That: a) ~~all RVSM implementation preparatory work (i.e. safety, assessment, training) be completed, taking into consideration the FL band 290 and 410 inclusive, being the AFI RVSM airspace.~~ b) ~~implementation of RVSM in the AFI Region be harmonized and coordinated within the AFI Region as well as with the adjacent~~					Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		regions.					
CONCLUSION 15/56	IMPLEMENTATION OF ATS/DS CIRCUITS	That: a) States which have not done so implement, as soon as possible, ATS/DS circuits in order to foster the implementation of RVSM; and; b) States be urged to implement contingency measures with regard to correcting the ATS/DS deficiencies in accordance with FHA requirements.					To be deleted RVSM implemented. Remaining deficiencies being addressed by the CNS Sub-Group
CONCLUSION 15/57	TRAINING OF ALL PERSONNEL INVOLVED WITH THE IMPLEMENTATION OF RVSM IN THE AFI REGION	That: a) seminars continue to be organized in the Region to train all personnel involved in the implementation of RVSM; b) States having difficulties in implementing the RVSM implementation					Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		~~programme may either individually or in group explore the possibility of seeking outside expertise;~~ e) ~~on-site training courses be conducted to expedite the training process; and~~ d) ~~in order to ensure uniformity of the training, States use the AFI RVSM training material.~~					
CONCLUSION 15/58	~~GUIDANCE MATERIAL FOR AIRWORTHINESS AND OPERATIONAL APPROVAL~~	~~That States in the AFI Region be urged to include in their national legislation and regulations the airworthiness and operational approval process for aircraft and operators intending to operate within the RVSM airspace, based on provisions of Annex 6 – Operation of Aircraft, Part I – International Commercial Air Transport – Aeroplanes, Chapter 15, para. 15.2.3 and the guidance material contained in Joint Aviation Authorities (JAA)~~					Implemented Remaining deficiencies being addressed through the USOAP To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		~~Temporary Guidance Leaflet (TGL) N°6.~~					
CONCLUSION 15/59	RVSM ENFORCEMENT IN NATIONAL LEGISLATION	~~That States which have not done so take the appropriate measures in order to: a) publish, as a matter of urgency, an aeronautical information circular (AIC), informing users of their intention to implement RVSM; and b) include the necessary provisions in their national legislation.~~					Implemented To be deleted
CONCLUSION 15/60	FUNDING OF THE RVSM IMPLEMENTATION PROGRAMME	~~That governments, regulatory bodies, operators, service providers and other stakeholders be granted budgetary allocations for acquisitions and other activities necessary for ensuring that all the requirements are met in a timely manner in order to safely implement RVSM in the AFI Region.~~					Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 15/61	MONITORING OF HEIGHT DEVIATIONS	That: a) States having radar establish a unit at the ACC to conduct monitoring of aircraft height deviations in the AFI RVSM airspace; and b) data collected at a) above be forwarded to ARMA for action.					Implemented ARMA engaged in monitoring of height deviations To be deleted
CONCLUSION 15/62	AFI RVSM SAFETY POLICY	That States expedite the publication of an AIC on the AFI RVSM safety policy at Appendix P to this report.					Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 15/63	RVSM NSP	That: a) ~~the States of Burundi, Cape Verde, D. R. Congo, Djibouti, Lesotho, Libya Arab Jamahiriya, Morocco, Réunion (France) and Swaziland submit to the AFI RVSM Programme Office (ARPO) their NSP as soon as possible but not later than 30 November 2005; and~~ b) ~~States that had submitted their NSPs to the NSP Validation Panel send their revised NSPs to ARPO as soon as possible but not later than 30 November 2005.~~					Overtaken by events To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 15/64	STATE RVSM READINESS ASSESSMENT	That: a) ICAO urge States which have not done so to provide the State RVSM readiness assessment; and b) ICAO urge States to update “the State RVSM Readiness Survey”.					Implemented To be deleted
DECISION 15/65	PRE- IMPLEMENTATION SAFETY CASE (PISC)	That the date of submission of PISC to the Commission will be determined by the Task Force.					Implemented To be deleted
DECISION 15/66	CONTINUATION OF AFI RVSM PROGRAMME OFFICE (ARPO)	That the ARPO, located at the ICAO ESAF Office, continue the coordination activities relating to RVSM implementation.					Implemented To be deleted
CONCLUSION 15/67	ADOPTION OF THE FUNCTIONAL HAZARD ASSESSMENT (FHA) FINAL REPORT	That the results of the AFI RVSM FHA of the AFI RVSM Implementation at Appendix G to the report of the sixth meeting of the RVSM Task Force (RVSM/TF/6) (available at ICAO website: http://www.icao.int/ESAF/RVSM)					Overtaken by events To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		will be used for the development of NSPs and PISC.					
DECISION 15/68	AFI RVSM CORE AIRSPACE	That: a) for Req core 12 (AFI FHA report refers) “Air/Ground Communication system shall be designed to ensure a total coverage of the RVSM Airspace with a minimum MTBF (Mean Time Between Failure) of two months for a given FIR”; and b) for Req core 88 (FHA report at Appendix G to the RVSM/TF/6 Report refers; available at ICAO website: http://www.icao.int/ESAF/RVSM) “Aircraft shall be equipped with ACAS II version 7”.					Overtaken by events To be deleted
DECISION 15/69	AFI RVSM SWITCH- OVER PERIOD	That: a) for Req swit 24 (AFI FHA report at Appendix G to the					Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		RVSM/TF/6 Report refers; at ICAO website: http://www.icao.int/ESAF/RVSM “Use of Eastbound RVSM FL (FL310, FL350 and FL390) shall be suspended for a period of Two (2) hours after the Time Zero (T0)”; b) for Req swit__40 (AFI FHA report at Appendix G to the RVSM/TF/6 Report refers; at ICAO website: http://www.icao.int/ESAF/RVSM) “Traffic density shall be limited during switch over period as appropriate”;					
DECISION 15/70	SHARING RVSM READINESS PROGRAMMES AND EXPERIENCE	That ICAO explore further means of encouraging States to share their readiness programmes, experience, and available expertise/resources amongst themselves for an economic implementation of RVSM in AFI Region.					Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 15/71	REGIONAL AIRWORTHINESS CERTIFICATION AND CERTIFICATION AGENCY FOR RVSM OPERATION	That: a) States having difficulties with the implementation of operational airworthiness certification on the RVSM implementation should seek assistance from other States having this expertise; and b) seminars/workshops be conducted for airworthiness /operations personnel on issues relating to RVSM certification.					Implemented To be deleted
DECISION 15/72	STUDIES ON RVSM CERTIFICATION AGENCIES	That studies be conducted by IATA, in cooperation with ICAO, relating to the establishment of RVSM Certification Agencies for the AFI Region and results be forwarded to the RVSM/TF for consideration.					Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 15/73	AFI RVSM IMPLEMENTATION— COST RECOVERY	That: a) IATA airlines continue to financially support RVSM implementation effort in order to improve safety and economy of air traffic across the AFI Region; b) IATA put in place an RVSM cost recovery scheme based on a charge imposed on all international jet flights in the Region that participate in the IATA Clearing House (ICH); and c) IATA reports to the RVSM Task Force on the progress of the AFI RVSM implementation.					Implemented To be deleted
CONCLUSION 15/74	CAMPAIGN TO ENHANCE RVSM IMPLEMENTATION	That Chief Executive Officers (CEOs) of ANS providers and Directors General of Civil Aviation (DGCAs) be sensitized by ICAO Regional Directors and IATA on the					Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		~~importance of RVSM and the need for its early implementation in the AFI Region be accorded priority during ICAO and IATA missions to States.~~					
CONCLUSION 15/75	AFI RVSM STRATEGY/ACTION PLAN	~~That the updated RVSM Strategy/Action Plan at Appendix Q be circulated to States for action.~~					Implemented To be deleted
DECISION 15/76	AIRCRAFT/ OPERATORS READINESS SURVEY	~~That the results of ICAO/ARMA surveys be updated and presented at the RVSM Task Force meetings for their consideration.~~					Implemented To be deleted
DECISION 15/77	AMENDMENT TO ICAO DOC 7030/4	~~That the RVSM/RNAV/RNP Task Force continues developing appropriate RVSM material to be incorporated in the amendment proposal for the ICAO Regional supplemental procedures for the AFI Region (Doc.7030/4 refers).~~					Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
DECISION 15/78	RVSM OPTIMAL SWITCH-OVER TIME	That: a) the TF Secretariat Support Team, composed of Nigeria, South Africa, Tanzania, ASECNA and IATA, coordinate and research all the associated elements, including weather and human factors, that will have an effect on the switch over, taking into account Decision 15/80 below and; b) considering that the switch-over period remains one of the most critical in the management of the implementation of RVSM, the RVSM Task Force consider the ASECNA conventional vertical separation minimum (CVSM) RVSM switch-over Plan at Appendix R be amended by the Task Force and distributed to States.					Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
DECISION 15/79	EXCHANGE OF RVSM DATA BETWEEN ASECNA AND ARMA	That ~~ASECNA~~ sub regional monitoring unit continue to forward to ARMA the RVSM data collected from their Member States.					Implemented To be deleted
DECISION 15/80	FHA SAFETY REQUIREMENTS NEEDING APPROPRIATE ACTIONS BY THE RVSM PROGRAMME	That the following FHA safety requirements are allocated to the RVSM Programme: a) Req Swit_31 "The switch- over period shall be performed during an appropriate low traffic density period". b) Req Swit_39 "The switch- over period shall be determined out of Hajj period".					Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 15/97	SEARCH AND RESCUE (SAR)	That States: a) ~~participate in the ICAO/AFCAC SAR evaluation programme;~~ b) ~~after having received a SAR evaluation mission, implement the evaluation recommendations, either with their own resources, or with technical assistance offered by the project;~~ e) ~~organize regular SAR exercises; and~~ d) ~~implement the SAR management principles adopted by the conference on SAR funding held in Saly-Portudal, Senegal, from 25 to 28 October 2004 and reflected in the Saly Declaration on SAR.~~					To be deleted This conclusion has been overtaken by events

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
DECISION 15/98	SAR FUNDING	~~That APIRG endorse the Declaration on Search and Rescue (SAR) Funding adopted by the Conference on SAR Funding held in Saly Portudal, Senegal, from 25 to 28 October 2004 (Appendix W refers).~~					~~To be deleted This conclusion has been overtaken by events~~
DECISION 16/2 A & C	ESTABLISHMENT OF AN APIRG PERFORMANCE-BASED NAVIGATION TASK FORCE (APIRG/PBN/TF)	~~That an APIRG PBN Task Force, with terms of reference as outlined in Appendix D to this report, be established to develop a PBN implementation plan for the AFI Region and address related regional PBN implementation issues.~~					~~Overtaken by events To be deleted~~
CONCLUSION 16/3 A & C	DEVELOPMENT OF STATES PBN IMPLEMENTATION PLANS	~~That the Regional Offices encourage States to begin development of their State PBN implementation plans in harmony with the development of the AFI Regional PBN implementation plan being coordinated by the AFI PBN Task Force for submission to APIRG.~~					~~Consolidated with Conclusion 18/09 To be deleted~~

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 16/4 A	DESIGNATION OF CONTACT PERSON FOR PBN IMPLEMENTATION	That, by 28 February 2008, States designate a focal contact person responsible for Performance Based Navigation implementation and provide details of the contact person to ICAO Regional Offices for the AFI Region.					Overtaken by events To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 16/5 A	IMPLEMENTATION OF THE ICAO PROVISIONS ON LANGUAGE PROFICIENCY	That: a) ~~as a matter of urgency, the States concerned implement the intent of Assembly Resolution A36-11 and the Standards of Annex 1, Annex 6, Annex 10 and Annex 11 in response to the ICAO State Letter AN-12/44.6-07/68 dated 26 October 2007;~~ b) ~~States implement the language provisions with a high level of priority and ensure that flight crews, air traffic controllers and aeronautical station operators involved in international operations maintain language proficiency at least at ICAO Operational Level 4; and~~ e) ~~States provide data concerning their level of implementation of the Language Proficiency Requirements to ICAO.~~					Implemented Being monitored under USOAP To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
DECISION 16/29 A & C	ACTIVITIES OF AFI CNS/ATM IMPLEMENTATION COORDINATION GROUPS (ICGs)	~~That the CNS/ATM Implementation Coordination Groups (ICGs) established by APIRG for each area of routing should pursue their assigned work in accordance with~~					To be replaced by a NEW Decision from SG/13 meeting outcome

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		~~Doc 003 provisions.~~					To be deleted
CONCLUSION 16/31 A & C	COLLECTIVE APPROACH FOR THE MANAGEMENT OF CNS/ATM SYSTEM ELEMENTS	~~That the air navigation service providers (ANSPs) adopt a collective approach and speak in a single voice on issues of common interest related to the implementation of CNS elements of the CNS/ATM systems (such as service level agreements with ATN service providers, system availability, etc.).~~					To be replaced by new Conclusion developed during the joint meeting of CNS and ATM/AIM/SAR Sub-groups To be deleted
CONCLUSION 16/33 A & C	FANS 1/A OPERATIONAL MANUAL FOR APPLICATION IN THE AFI REGION	~~That: a) The FANS 1/A Operational Manual for application in the AFI Region at Appendix E be applied in the AFI Region; and b) South Africa manages the FANS 1/A Operational Manual for the AFI Region.~~					Overtaken by events To be deleted
DECISION	APPELLATION OF	~~That the appellation of the current~~					Superseded by

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
~~16/34 A & C~~	~~THE CURRENT ATM SUB-GROUP TO BE REVERTED TO THE ATS/AIS/SAR SUB-GROUP~~	~~ATM Sub-Group be reverted to the ATS/AIS/SAR Sub-Group. Its revised Terms of Reference are at Appendix R.~~					~~Decision 17/107 To be deleted~~
~~DECISION 16/35 A & C~~	~~RENAMING THE APIRG/RVSM/ RNAV/RNP/TF~~	~~That the existing APIRG RVSM/RNAV/RNP Task Force shall be re-named the APIRG RVSM Task Force with the revised Terms of Reference at Appendix F to this report.~~					~~Implemented To be deleted~~
~~CONCLUSION 16/36 A & C~~	~~AFIRVSM IMPLEMENTATION FUNDING~~	~~That IATA member airlines continue to finance within the available funds to support specific projects relating to the RVSM implementation effort in order to improve safety and economy of air traffic in the AFI region and keep the task force informed accordingly.~~					~~Implemented To be deleted~~
~~CONCLUSION 16/37 A & C~~	~~AFIRVSM STRATEGY/ACTION PLAN~~	~~That the updated AFI RVSM strategy/action plan at Appendix G be circulated to States for quality~~					~~Implemented To be deleted~~

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		assurance.					
CONCLUSION 16/38: A & C	IMPLEMENTATION OF THE REQUIRED CNS INFRASTRUCTURE TO SUPPORT THE IMPLEMENTATION OF RVSM IN THE AFI REGION	That in view of the implementation of RVSM and provision of ATC service, States are urged to implement the required supportive CNS infrastructure namely; ATS DS circuits, AMS and appropriate NAVAIDS as soon as possible, but not later 3 July 2008.					To be replaced by New Draft Conclusion below. To be coordinated with the CNS Sub-Group
DRAFT CONCLUSION 13/XX	IMPLEMENTATION OF THE REQUIRED CNS INFRASTRUCTURE IN THE AFI REGION	States that have not done so are urged to implement the required supportive CNS infrastructure including but not limited to ATS DS circuits, AMS and appropriate NAVAIDS.	Deficient State to expedite implementation	Deficient State	CNS infrastructure implemented	Not met by States	Implementation outstanding in many States/FIRs Forwarded to CNC SG for follow-up
CONCLUSION 16/39:	TARGET DATE FOR AFI RVSM IMPLEMENTATION	That the target date for implementation of RVSM in the AFI Region will be 25 September 2008.					Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 16/45	IMPLEMENTATION OF ATC SERVICE	That States which have not yet done so, implement ATC service along all ATS routes contained in Table ATS 1 of the AFI Plan (Doc 7474) as soon as possible, but not later than 3 July 008 in the spirit of AFI/7 Rec. 5/21.					Consolidated under New Draft Conclusion 13/01 from SG/13 To be deleted
CONCLUSION 16/46:	IMPLEMENTATION OF THE NON- IMPLEMENTED ROUTES INCLUDING RNAV ROUTES	That States concerned implement the ATS routes at Appendix I as soon as possible, but not later than AIRAC date of 3 July 2008.	Start implementation process for the ATS routes	States	All ATS routes as at Appendix I implemented in AFI	3 July 2008	Implemented To be deleted
CONCLUSION 16/47 A & C	PARTICIPATION OF SAR EXPERTS IN THE ATS/AIS/SAR SUB-GROUP AND INCLUSION OF SAR ACTIVITIES IN THE COMPREHENSIVE REGIONAL	That: a) States, which have not done so, include SAR experts to participate in the work programme of the APIRG ATS/AIS/SAR Sub Group;	States ensure adequate resources to support participation of SAR Experts in the work of ATS/AIS/SAR Sub Group.	States	SAR Experts included in APIRG SG meetings	Yearly event	To be replaced by a New Draft Conclusion below from SG/13 To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
	IMPLEMENTATION PLAN FOR AVIATION SAFETY IN AFRICA (AFI PLAN)	b) States, which have not yet done so, establish permanent SAR structures within national civil aviation authorities as a priority; and e) ICAO and AFCAC ensure that the Conclusions of the SAR Conference in La Réunion, be taken into account in the AFI Plan as far as possible.					
DRAFT CONCLUSION 13/XX A & C	PARTICIPATION OF SAR EXPERTS IN THE ATS/AIS/SAR SUB-GROUP	That: d) States, which have not done so, include SAR experts to participate in the work programme of the APIRG ATS/AIS/SAR Sub-Group; e) States, which have not done so, establish permanent SAR structures within national civil aviation authorities as a priority;	States ensure adequate resources to support participation of SAR Experts in the work of ATS/AIS/SAR Sub-Group.	States	SAR Experts included in APIRG SG meetings AFI Plan to include Conclusions emanating from SAR Conference in Reunion	Yearly event	On-going activity

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		and f) ICAO and AFCAC ensure that the Conclusions of the SAR Conference in Reunion Island, be taken into account in the AFI Plan as far as possible.					
CONCLUSION 16/67	ELIMINATION OF AIR NAVIGATION DEFICIENCIES	~~That States be reminded to adopt a step by step approach when implementing air navigation system elements, by giving priority to solving the deficiencies affecting all elements of the system.~~					Superseded by Conclusion 17/99 To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 17/1:	STRATEGIES FOR IMPROVED REPORTING AND EFFECTIVE IMPLEMENTATION OF APIRG CONCLUSIONS AND DECISIONS	That: a) The template used to review and report the status of implementation of APIRG Conclusions and Decisions be amended to reflect the impact, results or effect on the air navigation system of the actions taken; b) The activities of the task forces be enhanced through regular meetings/communications with States to reinforce implementation of outstanding conclusions and decisions; and c) States be more responsive to requests by the Regional Offices for reports on progress made in implementing these conclusions and decisions in order to develop business cases to support States as appropriate.					On-going activity

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
DECISION 17/2 A & C	PROPOSALS FOR SOLUTIONS TO LONG OUTSTANDING CONCLUSIONS AND DECISIONS OF APIRG	That, the Sub-Groups, when presenting their reports to the group, make proposals on strategies for addressing the long outstanding Conclusions and Decisions.					On-going activity
CONCLUSION 17/4 A	MECHANISM FOR DATA COLLECTION TO SUPPORT REGIONAL PERFORMANCE METRICS	That, States that have not done so, are requested to establish, when possible, a mechanism for data collection, processing and storage and provide the information to the corresponding Regional Office for the identified regional performance metrics.				June 2014	On-going activity
CONCLUSION 17/41 A&C	ATM PERFORMANCE FRAMEWORK	That, the AFI performance framework forms formulated by the Special AFI/08 RAN Meeting regarding performance objectives in the fields of ATM and SAR are updated as at Appendix 3.4A to this report. <i>Appendix 3.4A (1)</i>	Update ATM/SAR performance objectives and PFFs. Align National PFF	ICAO ROs States	Updated ATM/SAR performance objectives and PFFs. Harmonized planning	31 Mar 2011 31 Mar 2011	ICAO FPL successfully implemented PFFs to be updated in the Air Navigation Reporting Forms (ANRFs) aligned with ASBUs

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		~~Implementation of the new ICAO Flight Plan Provisions; Appendix 3.4A (2) Optimization of the ATS route Structure in en route airspace; Appendix 3.4A (3) Optimization of the ATS route Structure in terminal airspace; Appendix 3.4A (4) Optimization of vertically guided RNP approaches; Appendix 3.4A (5) Search and Rescue.~~					~~modules To be deleted~~
CONCLUSION 17/42 A	RESOLUTION OF MISSING FLIGHT PLANS PROBLEM	That, in order to effectively address the problem of missing flight plans between AFI ACCS, AFI states: (a) Take immediate measures to ensure that standard requirements for flight plan <u>filing</u> and processing are adhered to; (b) Ensure that all FIRs collect/record information on missing flight plans and	ACCs coordinate data on missing FPLs	States & ANSPs	All FPL to be accounted for	APIRG/19	On-going activity Refer to amended text

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		exchange such information/data with other FIRs; (c) Ensure that ACCs/FICs respond to queries from other ACCs/FICs regarding missing flight plans on a timely basis, providing details that might assist not just the affected firms but others in resolving the causes for missing flight plans; and (d) Bring the trend information/data on missing flight plans to the attention of the TAG for further action.					

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 17/43 A&C	IMPLEMENTATION OF STRATEGIC LATERAL OFFSETS (SLOP) IN THE AFI REGION	That, AFI States implement SLOP within their areas of responsibility, by AIRAC effective date 30th November 2010, in line with provisions in PANS ATM Doc 4444 Chapter 16 and the following guidance: a) SLOP will be applied in those oceanic FIRs where fixed routes are established; b) SLOP will be applied in all areas of the continental AFI Region except in those areas where ATC separation is provided by surveillance, unless approved by the State; and c) SLOP will be applied in oceanic random routing areas (AORRA and IORRA) with effect from the target date of AIRAC date of 2 June 2011.	Issue State Letter Coordinate Implementation	ESAF & WACAF Offices States	SLOPs in AFI Region	30 Nov 2010	To be replaced by New Draft Conclusion below

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
DRAFT CONCLUSION 13/XX A&C	IMPLEMENTATION OF STRATEGIC LATERAL OFFSETS (SLOP) IN THE AFI REGION	That, AFI States which have not implemented SLOP within their areas of responsibility, ensure implementation in line with the provisions in PANS-ATM Doc 4444 Chapter 16.	Issue reminder State Letter Coordinate Implementation	ESAF & WACAF Offices States	SLOPs fully implemented in AFI Region	30 Nov 2010	States that have not done so to implement before end of November 2013
DECISION 17/44	DISSOLUTION OF APIRG RVSM TASK FORCE AND RE- ASSIGNMENT OF ACTIVITIES	That, taking into consideration the successful implementation of RVSM in the AFI Region on 25 September 2008, and the establishment of the Tactical Action Group (TAG) by the Special AFI RAN Meeting, 2008: (a) The AFI RVSM Task Force established under APIRG Decision 13/58 is dissolved and; (b) The ATS/AIS/SAR Sub-group review and adjust its terms of reference accordingly in order to address issues related to RVSM implementation.					Implemented To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
DECISION 17/45	ARMA SCRUTINY GROUP	That, the ARMA Scrutiny Group is established with the Terms of Reference at Appendix 3.4C to this report.	ICAO	ICAO	ARMA Scrutiny Group established Convene activities of the Group		Implemented Annually and on-going
CONCLUSION 17/46 A&C	AFI PBN IMPLEMENTATION REGIONAL PLAN	That: a) The AFI Regional PBN implementation plan is updated and endorsed as at Appendix 3.4D to this report, to more accurately reflect PBN implementation goals in Assembly Resolution A36-23, guidance in the PBN Manual (9613), and Regional planning guidance provided by APIRG; and b) The Regional PBN Implementation Plan be included in the AFI Doc 003.	Implementation of PBN Regional plan Update Doc003	States ICAO ROs	Updated AFI Regional PBN implementation plans Updated Doc003	According to the PBN plan 31Mar 2011	To be replaced by New Draft Conclusion below To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
DRAFT CONCLUSION 13/XX A&C	AFI PBN IMPLEMENTATION REGIONAL PLAN	That: The AFI PBN Regional Implementation Plan is updated as at Appendix 2C to the report under agenda item 2.	Development of PBN Regional plans	States	Development of PBN Regional plans	As soon as possible (without further delay)	
CONCLUSION 17/47	NATIONAL PBN IMPLEMENTATION PLAN	That States: (a) ~~Use the Regional PBN implementation plan template at Appendix 3.4E to this report, for the development of a national PBN implementation plan and consider the action planning provided by the Joint PBN/GNSS/I Task Forces Meeting to support planning;~~ (b) ~~Provide feedback to the~~	~~States~~	~~States~~	~~Updated information on PBN Plans for all AFI States~~		Consolidated with Conclusion 18/09 To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		ESAF and WACAF Regional Offices by 30 October 2010 regarding progress in the development of their national plans, indicating any challenges, if any, that are delaying the development of the plan, as well as measures taken or to be taken to overcome such challenges; and (c) Complete their National PBN plans as soon as possible.					

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 17/48 A	PBN IMPLEMENTATION TOOLS	That States:	Issue State Letter	ESAF & WACAF Offices	Standard use of PBN implementation tools	APIRG/17	On-going activity
		(a) Use project management plans and implementation action plans provided by the PBN Task Force, as well as project management soft wares (such as Microsoft project or freely available applications), to support PBN implementation activities; and (b) Carry out a gap analysis using the project plan template attached to the report, or similar approach, in order to more accurately develop their PBN implementation plans.	Initiate gap analysis	States	Updated gap analysis	APIRG/17	
DECISION 17/49 A&C	DISSOLUTION OF THE GNSS IMPLEMENTATION AND PBN TASK FORCES AND ESTABLISHMENT OF	That, the GNSS implementation and PBN Task Forces are dissolved and the PBN/GNSS Task Force is established with the terms of reference in Appendix 3.4F to this report.	Initiate process for establishment of the PBN/GNSS TF	APIRG	Establishment of PBN/GNSS TF as per its TOR Conduct activities	APIRG/17	Completed PBN/GNSS TF established On-going activity

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
	THE PBN/GNSS TASK FORCE				in accordance with its work programme		
DECISION 17/50 A&C	PBN ROUTE NETWORK DEVELOPMENT WORKING GROUP (PRND WG)	That, the AFI PBN Route Network Development Working Group (PRND WG) is established with the terms of reference, composition and working arrangements as at Appendix 3.4G to this report.	Initiate process for establishment of the PRND WG	APIRG	Establishment of PRND WG as per its TOR Conduct activities in accordance with its work programme	APIRG/17	Completed On-going activity
CONCLUSION 17/51	~~LOWERING OF RNAV / RNP ROUTES UM214 AND UM215~~	~~That, the ICAO Regional Offices carry out further consultations with the States concerned about the lowering of RNAV / RNP routes UM214 and UM215 from FL330 down to FL320, taking into account operational considerations.~~					~~Superseded by Conclusion 18/10 To be deleted~~
CONCLUSION	DISSEMINATION OF A LETTER INVITING	~~That, pursuant to special AFI/08~~					Implemented

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
~~17/52~~	~~PROPOSALS FOR ESTABLISHMENT OF THE AFI FLIGHT PROCEDURES PROGRAMME (FPP)~~	~~RAN meeting Recommendation 6/10, ICAO disseminate, as a matter of urgency, the letter inviting interested States and international organizations to submit proposals for establishment and hosting of the AFI FPP.~~					~~To be deleted~~
CONCLUSION 17/53 A&C	TRAINING IN SUPPORT OF PBN IMPLEMENTATION	That, in order to support the implementation of PBN in the AFI Region: a) PBN Task Force identify priority training needs for implementation for PBN; b) AFI Regional Offices organize seminars/workshops for training of relevant personnel directly involved in the implementation of PBN	Provide guidance Organize seminars & workshops for training in PBN implementation	PBN/GNSS TF ESAF & WACAF Offices	Training needs identified and supported PBN W/Shops & seminars convened regularly	2009 -2016 2009-2016	Training being provided on yearly basis Training seminars/workshops being organized by ICAO
CONCLUSION 17/54 A	PBN ENABLING LEGISLATION	~~That, AFI States that have not already done so, include in their legislation and/or regulations provisions to enable the implementation of PBN.~~	~~Develop PBN Legislation~~	~~States~~	~~Legislation for PBN implementation~~	~~31 Jul 2011~~	~~To be replaced by New Draft Conclusion below~~

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
DRAFT CONCLUSION 13/XX A & C	PBN ENABLING LEGISLATION	That, a) AFI States that have not already done so, include in their legislation and/or regulations provisions to enable the implementation of PBN; and	Promulgate PBN Legislation	States	PBN enabling legislation	31 March 2014	
		b) ICAO carry out surveys to update information on promulgation of PBN enabling legislation.	Survey to assess status of promulgation of regulations	ESAF & WACAF Offices	Information on status of promulgation of regulations	31 March 2014	
CONCLUSION 17/55	PARTICIPATION OF REPRESENTATIVES OF STATES INVOLVED IN PBN APPROVAL PROCESS	That, in order to support the PBN planning and implementation processes, AFI States are urged to include in their delegations to meetings of the PBN Task Force, experts and officials involved in the PBN approval process of aircraft operators.	States	States	States' participation	Annual events	On-going activity

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 17/56 A&C	FUNDING OF THE PBN IMPLEMENTATION PROGRAMME	That, regulatory bodies, operators, service providers and other stakeholders be granted budgetary allocations for acquisitions and other activities necessary for ensuring that all the requirements be met in a timely manner in order to safely implement PBN in the AFI Region.	States provide for budgetary allocation for safe and timely implementation of PBN	States, ANSPs, Regulatory bodies, Operators, Stakeholders	Sufficient funds available	2010-2016	On-going activity
CONCLUSION 17/57	IATA GUIDELINES FOR OPERATIONAL APPROVALS	~~That, IATA facilitates stakeholders' access to its guidelines developed to assist operators in obtaining airworthiness and operational approvals for PBN, for guidance and reference as required.~~					Implemented To be deleted
CONCLUSION 17/58 A	NATIONAL PBN PROGRAMME MANAGER (NPPM)	That, in order to facilitate the implementation of PBN and Regional coordination ~~AFI States:~~ a) that have not already done so nominate/designate NPPMs as soon as possible and assign them the terms of reference as	States to nominate/designate NPPMs and update their contacts	States	NPPMs nominated /designated by all AFI States NPPM contacts are regularly updated by States	30 Nov 2010	To be replaced by New Conclusion below

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		at Appendix 3.4H to this report and provide ICAO with contact de States update the NPPMs contact information provided to ICAO whenever changes have been made tails of the NPPMs; and b) States update the NPPMs contact information provided to ICAO whenever changes have been made.					
DRAFT CONCLUSION 13/XX A	NATIONAL PBN PROGRAMME MANAGER (NPPM)	That, in order to facilitate the implementation of PBN and Regional coordination AFI States that have not already done so nominate/designate NPPMs as soon as possible and assign them the terms of reference as at Appendix 2D to the report on agenda item 2.	States nominate/designate NPPMs and update their contacts	States	NPPMs nominated /designated by all AFI States NPPM contacts are regularly updated by States	2013-2016	On-going activity

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 17/59 A	AIRSPACE PLANNING AND AIRCRAFT EQUIPMENT SURVEY	That, in order to facilitate airspace planning and decisions related to air navigation infrastructure:	State letter issued on survey	ICAO	Survey conducted		To be consolidated with Con 18/23 Consolidated with Conclusion 18/23
		a) ICAO in coordination with IATA and AFRAA conduct regular surveys on aircraft equipage within the AFI Region;	States to support survey and provide data to ICAO	States	Updated surveys on aircraft equipage	2013-2015 ~~31 Mar 2011~~	
		b) AFI States and air navigation service providers (ANSPs) are urged to support the ICAO/IATA global survey. ~~on aircraft equipment aimed at developing a database with accurate information on present and future avionics capabilities of airline fleets;~~	Support the ICAO/IATA global survey on aircraft equipment	~~States ANSPs~~	~~Updated data on global survey on aircraft equipage~~	~~31 Mar 2011~~	
		c) AFI States make efforts to bring awareness to the aircraft operators regarding the ICAO efforts on aircraft equipage data,	~~State letter issued to concerned States~~ Bring awareness to the aircraft operators regarding the ICAO efforts on aircraft equipage.	~~ESAF & WACAF Offices~~ States	Awareness to Operators on acft equipage	~~31 Mar 2011~~	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		and that joint efforts between civil aviation authorities and ANSPs be embarked upon to bring quicker results; and d) AFI States ensure that initiatives for air navigation system enhancements are matched with fleets capabilities and readiness.	Ensure that initiatives for air navigation system enhancements are matched with fleets capabilities and readiness.	States	Matching of air navigation systems with fleet capabilities and readiness	~~March 2011~~	
CONCLUSION 17/60	DIRECT TRANSITIONS TO/FROM AORRA AIRSPACE	~~That, the ICAO Regional Offices facilitate coordination, publication and implementation by Angola, Ghana, Sao Tome and Principe, ASECNA and Roberts FIR, with regard to the AORRA airspace to/from transition points in Appendix 3.4I (as amended) to this report.~~					Implemented To be deleted
DECISION 17/61	ESTABLISHMENT OF THE AFI FLIGHT PLAN TRANSITION TASK FORCE (FPLT TF)	~~That, in order to enable a harmonized regional implementation of Amendment 1 to the Fifteenth edition of PANS-ATM (Doc 4444) in coordination with other ICAO~~					To be replaced by a New Draft Decision from SG13 meeting To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		Regions: (a) ~~The AFI Flight Plan Transition Task Force (FPLT TF) is established with the terms of reference (TOR) at Appendix 3.4J to this report.~~ (b) ~~The Task Force should, if practical hold its first meeting as soon as possible but no later than September 2010;~~ (c) ~~AFI States are urged to provide to the Task Force information requested with regard to its studies and assessments, with minimum delay; and~~ (d) ~~APIRG noting that its next regular meeting could be in late 2011, directed the ATS/AIS/SAR SG to endorse the Regional~~					

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		strategy and plan including changes thereto, on its behalf.					
CONCLUSION 17/62	CONVENING OF A WORKSHOP ON IMPLEMENTATION OF NEW ICAO FLIGHT PLAN MODEL PROVISIONS	That, in order to enable the optimum contribution of relevant stakeholder in the transition to and implementation of the new ICAO flight plan mode provisions, Regional Offices arrange workshops to sensitize and inform States, ANSPs and related entities.					Overtaken by events To be deleted
CONCLUSION 17/63 A	DISSEMINATION OF AIAG REPORTS	That, the ICAO Regional Offices ensure that the final reports of the ATS Incidents Analysis Group (AIAG) are made available to all concerned States and air navigation service providers for remedial action.	ICAO to compile and disseminate AIAG reports	ESAF & WACAF Offices IATA	AIAG reports disseminated	After each AIAG annual meeting	Reports are being disseminated to stakeholders following yearly meetings
CONCLUSION 17/64 A	IMPLEMENTATION OF SAFETY MANAGEMENT IN THE	That, AFI States are urged to take necessary measures including the development and promulgation of	~~ICAO to issue State letter to~~ States	ESAF & WACAF Offices	Safety management awareness	~~Jul — 2010~~ 2013-2015	On-going activity Being implemented

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
	AFI REGION	legislative/regularity provisions in order to: (a) Implement the safety management provisions of Annex 11; (b) Prioritize giving effect to Assembly Resolutions A36-8, A36-9 and A36-10 regarding collection and protection of safety information, and improving accident prevention; (c) Take full advantage of the Make use of training opportunities availed by ICAO under the ACIP and other programmes; (d) Make use of guidance material provided by ICAO including the Safety Management Manual (SMM) (Doc 9859) taking into consideration ICAO improvements on such guidance material from time to time.	ICAO to support and provide guidance to States on SMM	States States ESAF & WACAF Offices	achieved ~~Implementation of safety management provisions of Annex 11 by AFI States~~ Effective collection and protection of safety information and improved accident prevention Effective implementation of safety management	2012 2012	in accordance with Annex 19

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 17/65 A	STATUS OF IMPLEMENTATION OF SAFETY MANAGEMENT PROVISIONS IN THE AFI REGION	That, in order to establish the status of ~~implementation of Annex 11~~ safety management provisions in the AFI Region, and in order to facilitate Regional ~~planning~~ and implementation strategies: (a) The Regional Offices circulate a questionnaire aimed at collecting detailed information on the status of implementation in the AFI Region; and (b) States are urged to cooperate with the efforts of the Regional Offices and to respond to the questionnaires with minimum delay.	Circulate questionnaire	ESAF & ~~WACAF~~ Offices States	Updated status of safety management implementation in the AFI Region	Dec 2010	To be monitored through USOAP activities To be deleted
CONCLUSION 17/66 A	DEVELOPMENT AND PROMULGATION OF CONTINGENCY PLANS	That: a) AFI States develop/update and promulgate contingency plans in accordance with Annex 11	States develop & promulgate their contingency plans without delay	States	ATM Contingency plans developed,	APIRG/17	On-going activity, noting new requirements related

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		and Annex 15 provisions; b) AFI States use available ICAO guidance material for the development and promulgation of ATM contingency plans including the amended template at Appendix 3.4K 2E to this the report on agenda item 2. c) ~~ICAO Regional Offices carry out a survey on the status of development of contingency plans in the AFI region in order to take remedial actions as necessary; and~~ d) ~~ICAO Regional Offices expedite responses to States on matters related to development of contingency plans, as well processes for approval of contingency plans submitted by States.~~	~~ICAO to conduct survey on status of implementation~~ ~~ICAO to coordinate with States on approval matters~~	~~ESAF & WACAF Offices~~ ~~ESAF & WACAF Offices~~	approved by ICAO and promulgated ~~Updated status on AFI States contingency plan implementation~~ ~~Approved contingency plans for all AFI States~~	~~APIRG/17~~ ~~APIRG/17~~	to VACP inclusion in ATM CP

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
DECISION 17/67 A & C	AFI SAR SERVICES INTEGRATION TASK FORCE (ASSI TF)	That, in order to progress the initiatives taken at the Port Elizabeth Consultative Conference of October 2007 on integration of SAR services and similar other initiatives in the AFI Region, and to support the implementation of SAR provisions, the AFI SAR Services Integration Task Force (ASSI TF) is established with the terms of reference at Appendix 3.4L to the report on agenda item 3.4.	ICAO to initiate process for establishment of the ASSI TF	ESAF & WACAF Offices	ASSI TF established, as per its TOR Convene meetings and workshops annually	March 2011 Yearly event	Completed On-going activity
CONCLUSION 17/68 A&C	SEARCH AND RESCUE SERVICES	That, with the objective to foster the implementation of SAR services and improvement of SAR systems in the Region, AFI states are: (a) Urged to establish joint aviation/maritime rescue coordination centres (RCCs) in order to optimize usage of resources and coordination;	ICAO urge States to implement SAR provisions ICAO to support coordination protocols between States' RCCs	ESAF & WACAF Offices ESAF & WACAF Offices	More efficient and effective SAR services through sub-regional and regional cooperation Joint Aeronautical and Maritime RCC established where practicable	APIRG/17 2010-2011	On-going activity as States are slow to in implementing due constraints Items © and (d) consolidated with Conclusions 14/28 and 15/48

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		(b) Encouraged to establish sub-regional task forces to progress the development SAR cooperative arrangements and integration of SAR services; (c) ~~Urged to consider entering into agreements with States that have adequate facilities (within or outside the sub region) to assist in SAR operations; and~~ (D) ~~Encouraged to include officials from other State organs who are part of the States SAR organization, in their delegations to relevant ICAO meetings and workshops.~~		States	Effective SAR cooperation agreements established		
CONCLUSION 17/69 A	TIMELY RESPONSE TO TAG QUERIES	That, States when responding to TAG queries, make every effort to do so in a timely manner, preferably within 14 days, in compliance with the recommendation of the Special AFI/	ICAO urge States to response to TAG queries	States	Updated information on TAG issues	2013-2015	On-going activity

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		RAN Meeting of 2008.					
CONCLUSION 17/70 A	COMMUNICATION OF TAG FOCAL POINTS	That, States that have not already done so, update ~~provide~~ their respective ICAO Regional Offices with a TAG point of contact within their State.	States provide updated information on TAG POC to ICAO Regional Offices	States	Updated list of TAG POC	~~30 Sep 2010~~ 2013-2015	Regular updates to be provided by States
CONCLUSION 17/71 A	APPROVAL OF TAG VISITS	That, AFI States: a) Make every effort to approve TAG requests for technical visits to the State at the earliest available opportunity and that the visits be held during regular work days; and b) Update the TAG contact list when requested and whenever there are changes of the contact points in the States.	ICAO urge AFI States to support the process	States	TAG technical visits are effectively coordinated and implemented	~~APIRG/17~~ 2013-2015	Visits to be approved on a case by case basis
CONCLUSION 17/99	ELIMINATION OF AIR NAVIGATION DEFICIENCIES IN THE ATM	That, in order to facilitate the updating of the deficiency database by the Regional offices, and to	States	States	Identified air navigation deficiencies	2013-2015	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
	AIS/MAP AND SAR FIELDS	foster the elimination of deficiencies in the AFI Region: a) APIRG subsidiary bodies and secretariat establish a comprehensive list comprising all air navigation deficiencies consistent with the ICAO definition of deficiency as approved by Council, for necessary attention; b) States and International Organizations (including IATA, IFALPA, IFATCA) are urged to actively contribute towards updating the deficiency database, by providing to the Regional Offices, information on the implementation status of SARPs and Air Navigation Plan (ANP) requirements and; c) States provide copies of action plans developed in pursuant to			eliminated		

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		SP AFI/08 RAN Recommendation 6/25 to the concerned APIRG subsidiary bodies and the Regional Offices.					
CONCLUSION 17/100	DEVELOPMENT OF THE AFIWEB-BASED AIR NAVIGATION DEFICIENCY DATABASE	~~That, in order to enable States and International Organizations to contribute directly to the Deficiency database on a continuous basis, ICAO Regional Offices expedite the development of a web-based AFI Air Navigation Deficiencies Data Base (AANDD).~~					Superseded by Conclusion 18/61 To be deleted
DECISION 17/107	APPELLATION AND TERMS OF REFERENCE OF THE ATM/AIS/SAR SUB-GROUP	That, in order to facilitate consistency in the use of terminology and associated developments, the APIRG ATS/AIS/SAR Sub-Group is re-titled Air Traffic Management/ Aeronautical Information Management/ Search and Rescue/ Sub-Group (ATM/AIM/ SAR SG) with the Terms of Reference as at Appendix 7B to this report.	ICAO	ICAO	ATS/AIS/SAR SG re-titled ATM/AIM/SAR SG Convene activities in accordance with its work programme	APIRG/17	Completed On-going activity

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
DECISION 18/01	REVIEW AND UPDATE OF APIRG CONCLUSIONS AND DECISIONS	That APIRG Sub-Groups: a) review all APIRG Conclusions and Decisions from APIRG/13 to APIRG/17 and identify those which are no longer valid; b) adopt a system of reviewing the validity of Conclusions and Decisions every two successive APIRG meetings; and c) transfer Conclusions and Decisions which have reached maturity and still relevant to appropriate guides, handbooks and manuals for the AFI Region.	ATM/AIM/SAR Sub-Group	APIRG	Conclusions and Decisions reviewed and consolidated System adopted	SG/13 meeting Every two years	Implemented and included in the work programme of the ATM/AIM/SAR Sub-Group On-going activity
DECISION	PERFORMANCE-	That,	ICAO develop indicators	APIRG and its	PFFs to	APIRG/19	PFFs to be updated

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
18/06 A&C	BASED APPROACH METRICS	a) APIRG sub-groups develop indicators that are specific, measurable, achievable, realistic and time bound and attach them to the performance framework forms (PFFs) in the appropriate box, using the metrics recommended under SP AFI RAN/08 Recommendation 3/3 and/or others determined to be appropriate indicators for the AFI Region; b) States use the regionally agreed indicators; and c) ICAO organizes regional workshops on performance-based approach to assist States in the development and implementation of performance-based approach related processes.		Subsidiary groups	incorporate indicators		in the Air Navigation Reporting Forms (ANRFs) aligned with ASBUs modules

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 18/09 A&C	NATIONAL PBN IMPLEMENTATION PLANS	That, in accordance with Assembly Resolution A37-11 on PBN Implementation, States: a) That have not already done so, complete preparation of their national PBN implementation plans as a matter of urgency, based on the Regional PBN Plan using the template provided by the PBN GNSS Task Force; b) Consider the use of planning tools provided by the PBN/GNSS Task Force, as well as project management software; and c) Provide updates to Regional Offices.	Develop National PBN implementation plan Focus efforts and resources on finalizing the National PBN implementation Plan	States	Completed national PBN plans ~~Use of planning tools by States~~ Updates on PBN plans and implementation progress provided to Regional Offices	Dec 2012	Consolidated with Conclusion 17/47
CONCLUSION 18/10 A&C	LOWERING OF RNAV/RNP ROUTES UM214 AND UM215	That States that have not already done so, be urged to establish the lowest usable flight level on the RNAV routes UM214 and UM215 as	States/IATA to coordinate implementation and publish in their AIPs	States	FL 250 implemented	Dec 2012	As of August 2013 Lusaka FIR (Zambia) had still not implemented

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		flight level 250 for operational reasons.					
CONCLUSION 18/11 A	AFI PBN REGIONAL PERFORMANCE FRAMEWORK FORMS	That the AFI PBN Regional Performance Framework Forms be in the format as at Appendix 3.2A1 to 3.2A3 to the report on agenda item 3.2.	PFFs to be aligned with new format	ICAO and States	New PFFs format adopted	Dec 2012	PFFs to be updated in the Air Navigation Reporting Forms (ANRFs) aligned with ASBUs modules
CONCLUSION 18/12 A&C	AFI ATS ROUTE CATALOGUE TEMPLATE	That, in order to support the process of ATS route development in the AFI Region, including the keeping of a record of ATS routes proposed for development and facilitating follow-up on the actions pertaining to the routes' development: a) the AFI ATS Route Catalogue (AARC template) is adopted as at Appendix 3.2C to the report on agenda item 3.2; and b) AFI States and concerned international organizations are urged to periodically review the	Use of AARC to compile and submit new routes to ICAO	IATA	Effective use of AARC to submit and process new routes	2013-2015	On-going activity

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		Catalogue once completed, note developments and take action as applicable.					
DECISION 18/13 A	ESTABLISHMENT OF THE AFI ATM/MET TASK FORCE	That the Core Team of experts established under APIRG Decision 17/84 is dissolved, and the AFI ATM/MET Task Force be established with the terms of reference and work programme as at Appendix 3.2H to the report on agenda item 3.2.	ICAO initiate process for establishment of the AFI ATM/MET TF	APIRG	AFI ATM/MET TF established Convene activities in accordance with its work programme	APIRG/18 Yearly activities	Completed On-going activity

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 18/14	ESTABLISHMENT OF THE AFI VOLCANIC ASH CONTINGENCY PLAN	That: a) the ATM/AIM/SAR and the MET Sub Groups finalize development of the AFI Volcanic Ash Contingency Plan; b) the Plan be provided to States for implementation, without awaiting the next meeting of APIRG.	ICAO	ATM/MET TF	VACP established	SG/13 meeting	Completed To be deleted
CONCLUSION 18/15 A	STRATEGY FOR IMPLEMENTATION OF THE NEW ICAO FLIGHT PLAN FORMAT	That, in order to implement the NEW ICAO Flight Plan format in a progressive and harmonized manner: a) The AFI Strategy for Implementation of NEW ICAO Flight Plan format be as at Appendix 3.2J to the report on agenda item 3.2; and b) States and users are urged to continue their implementation planning based on the Strategy	Follow AFI strategy	States	Harmonized and global implementation of the NEE ICAO FPL	15 Nov 2013	Completed New ICAO FPL Successfully implemented on 15 Nov. 2012 To be deleted

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
DECISION 18/16 A	REVISED TERMS OF REFERENCE OF THE AFI FLIGHT PLAN TRANSITION TASK FORCE (FPLT/TF)	That the updated Terms of Reference of the AFI Flight Plan Task Force be as at Appendix 3.2K to the report on agenda item 3.2.	FPLT TOR to be updated by the FPLT TF	APIRG	Updated FPLT TF TOR adopted	APIRG/18	FPLT TOR to be reviewed by SG/13 following successful implementation of the ICAO 2012 FPL New ICAO FPL Successfully implemented on 15 Nov. 2012 To be deleted
DRAFT DECISION 13/XX	DISSOLUTION OF FLIGHT PLAN TRANSITION TASK FORCE (FPLT/TF)	That, the AFI Flight Plan Transition Task Force is hereby dissolved.	No further activities of the FPLT TF	APIRG	No further activities of the FPLT TF	Immediate	To supersede Decision 18/16
CONCLUSION 18/17 A	ADDRESSING MISSING FLIGHT PLANS	That AFI States should: a) address the loss of ATS messages using AFTN,	States cooperate to effectively address missing flight plans	States	Causal factors to missing flight plans eliminated	Dec 2012	To be replaced by New Draft Conclusion from SG/13

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		~~including missing flight plans, as a matter of urgency;~~ b) ~~continuously monitor missing flight plans through:~~ ~~i) the AFI Tactical Action Group (TAG); and~~ ~~ii) conduct regular surveys on missing flight plans for a longer period (e.g. 30 days), or at regular intervals, under the coordination of the ICAO Regional Offices; and~~ e) ~~ensure that their ATC systems' clocks are synchronized with the GPS time in order to meet Annexes 2 and 11 relevant provisions.~~					To be deleted
CONCLUSION 18/18 A	TRAINING OF AIR OPERATORS PERSONNEL ON AIRSPACE ORGANIZATION	That, in order to reduce risks of missing flight plans, enhance safety and efficiency, States and concerned international organizations including IATA take necessary measures to	Ensure training of flight planning personnel	States & Organizations	Personnel trained	2012 2013-2015	On-going activity

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		ensure that flight planning personnel are adequately trained on the tasks for which they are engaged in the processing of flight plans.					
CONCLUSION 18/23 A	INFORMATION ON AIRCRAFT EQUIPAGE IN AIR NAVIGATION SYSTEM PLANNING AND IMPLEMENTATION	That AFI States: a) ~~Support surveys conducted on aircraft equipage and capabilities by providing the ICAO Regional Offices with detailed information concerning their registered aircraft; and~~ b) ~~Use the information for planning and implementation of air navigation systems.~~	~~States to support conduct of surveys~~	States	Completed surveys	2012-2014	Consolidated with Con 17/59 To be deleted
DECISION 18/32 A	MONITORING OF SBAS DEVELOPMENT IN ICAO REGIONS IN THE EQUATORIAL AREA	That, APIRG CNS and ATM/AIM/SAR Sub-groups monitor SBAS developments in other ICAO regions in the equatorial area, for consideration as appropriate when developing/updating its strategy for a cost-effective implementation of	Develop mechanism to monitor SBAS development	CNC & ATM/AIM/SAR SGs	Monitoring mechanism for SBAS effectively implemented	2012-2015	On-going activity

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		GNSS in the AFI Region.					
CONCLUSION 18/53	AWARENESS SEMINARS ON THE AFI AIR TRAFFIC MANAGEMENT VOLCANIC ASH CONTINGENCY PLAN	That ICAO ~~Dakar and Nairobi~~ ~~Regional Offices through the~~ ~~ATM/MET Task Force,~~ conduct regional awareness seminars on the AFI ATM Volcanic Ash Contingency Plan. ~~in view of:~~ a) ~~Making all aviation stockholders~~ ~~in the AFI region aware of ATM~~ ~~VACP;~~ b) ~~Supporting its implementation;~~ ~~and~~ c) ~~Proposing further improvements~~ ~~to the plan.~~	ICAO	ICAO	Seminars conducted regularly	2013-2015	On-going activity
CONCLUSION 18/57 C	DEVELOPMENT OF ACTION PLANS ON CO2 EMISSIONS REDUCTION ACTIVITIES	That States: a) continue to consider environmental issues in the planning and implementation of regional air navigation systems;	Use of IFSET tools and other guidance to effectively reduce Co2 emissions Ensure participation of aviation experts in UNFCC meetings	ATM/AIM/ SAR SG States	CO2 emissions reduced AFI States are represented in UNFCC events	2012-2015	On-going activity

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		b) bring to the attention of the ICAO Secretariat specific areas where additional guidance on environmental benefits would be valuable; c) ensure that their national Action Plan focal points collaborate with relevant stakeholders for all the operational measures that States wish to develop, implement and/or include in their action plans; d) promote use of the ICAO IFSET tool for the quantification of environmental benefits from operational measures, as part of the development of States' action plans; and e) ensure that civil aviation experts are included in their delegation attending UNFCC meetings where environmental issues are considered.					

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 18/58 C	ESTIMATIONS AND REPORTING OF OPERATIONAL BENEFITS	That States: a) are urged to use the ICAO Fuel Savings Estimation Tool (IFSET) or a more advanced tool to estimate environmental protection benefits accrued from operational improvements; b) include environmental benefits analysis in their plans to implement operational improvements that may reduce fuel burn at a regional or national levels; and c) report the benefits to ICAO on a quarterly basis using the table to report environmental benefits of operational benefits at Appendix 3.7A to this report .	Use of IFSET tools Share information on benefits	States	Operational benefits reported to ICAO	2012-2015	On-going activity

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
DECISION 18/59 C	INCORPORATION OF OPERATIONAL BENEFITS TASKS IN THE PRND WG TERMS OF REFERENCE	~~That the terms of reference of the PRND WG be amended to include consideration of operational benefits related to environmental protection.~~	~~Amend PRND WG TOR to reflect operational benefits tasks~~	~~ICAO (PRND WG & SG)~~	~~PRND WG TOR updated~~	~~APIRG/19~~	~~Completed To be deleted~~
CONCLUSION 18/60	PARTICIPATION OF THE AFRICA-INDIAN OCEAN (AFI) REGION AT AN CONF/12	~~That, in preparation for the Twelfth Air Navigation Conference (AN-Conf/12) to be held in Montreal from 10 to 30 November 2012: a) AFI States and aviation stakeholders participate in the workshops to be organized by ICAO in Dakar (July 2012) and Nairobi (August 2012); and b) AFCAC coordinate with States and regional organisations the development of a common AFI position at the AN Conf/12 Agenda item~~					

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 18/61 A	A SINGLE CENTRALIZED AIR NAVIGATION DEFICIENCIES DATABASE	That States and International Organizations: a) test the centralized database on iSTARS platform using the guidance at Appendix 4.1A; b) update the data as necessary in coordination with ICAO Regional Offices, Nairobi/Dakar; and c) provide feedback to ICAO Regional Office, Nairobi/Dakar by 31 August 2012.	Access and update the database	States and international organizations	Effective use and update of database	~~31 Aug 2012~~ June 2014	On-going activity
CONCLUSION 18/62	IMPROVEMENT OF DEFICIENCY REPORTING	That, in order to encourage reporting of deficiencies, follow up, collection of information on impediments to implementation, and to facilitate identification of solutions, AFI States and other stakeholders are encouraged to use the list of reporting areas at Appendix 4.3A to the report on agenda item 4.3, as a guide to minimum reporting.	Adopt effective reporting using minimum reporting areas	States	Improved minimum deficiency reporting	2012-2015	On-going activity

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
CONCLUSION 18/63	MEASURES TO ADDRESS HUMAN FACTORS AND INFRASTRUCTURE DEFICIENCIES	That, among efforts to reduce deficiencies, States address the following human factors and aviation infrastructure issues: a) Human Factors i) Undertake training courses to improve the proficiency of controllers on one hand and to assist them in the implementation of runway safety measures on the other hand; and ii) Undertake pilot training on the implementation of runway safety measures, crew discipline on board and measures preventing loss of control. b) Infrastructure deficiencies i) Implement previous APIRG conclusion on CPDLC implementation to back-up VHF and HF in remote areas and	States	States	Human factors addressed	2013-2015	On-going activity

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2A**

Consolidated APIRG Conclusions & Decisions related to ATM and SAR fields

Cons/Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Follow-up Action	To be initiated by	Deliverable/ Intended Outcome	Target Dates	Status of Implementation
		ii) Implementation and usage of PBN in TMAs.					
CONCLUSION 18/64	PARTICIPATION OF STAKEHOLDERS IN THE APIRG MEETINGS	That States extend invitation to all stakeholders including meteorology and airport operators and Air Navigation Service Providers (ANSPS) to participate in APIRG meetings.	Stakeholders	APIRG	Stakeholders participation	All APIRG meetings	On-going activity

*Note: ICAO has established the following Strategic objectives for the period 2011-2013

A: Safety: Enhance global civil aviation safety:

B: Security: Enhance Global civil aviation security;

C: Environmental Protection and Sustainable Development of Air Transport: Foster harmonised and economically viable development of international civil aviation that does not unduly harm the environment.

--- END ---

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2B**

**Proposed SSR Code allocation and assignment Working Group (ASCAA WG)
Terms of Reference**

Terms of Reference

1. Assess the SSR Code allocation system situation in the AFI Region and the adjacent ICAO Regions.
2. Propose short term solutions to address the identified SSR Code allocation system problems
3. Compare the advantages/disadvantages of a single Participating Area (PA) versus multiple PAs.
4. Analyze the development of PAs taking into consideration the following:
 - a) Operational consideration for the definition of PAs (scope and number);
 - b) Volume of traffic;
 - c) Impact on adjacent FIRs/PAs;
 - d) National defense requirements;
 - e) Automation system limitations;
 - f) Duration of code usage within a particular area.
5. Identify long term measures.
6. The Working Group will have the mandate to discuss, within its TORs, with adjacent ICAO Regions without having to go through the ATM/AIM/SAR Sub-Group.
7. The Working Group should endeavour to complete its tasks within the shortest timeframe possible, and will in this case hold at least one meeting a year.
8. The report and proposals of the ASCAA WG will be submitted to the ATM/AIM/SAR Sub-Group for its consideration and onward processing;

Composition

9. The Working Group will consist of a core of appropriately qualified and experienced ATM experts from the following AFI States and Organizations:

States:

10. Ghana, Kenya, South Africa, ...other States to indicate participation by 18 September 2013.

Organizations:

11. IATA, IFATCA, IFALPA, ASECNA, ICAO.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2B**

**Proposed SSR Code allocation and assignment Working Group (ASCAA WG)
Terms of Reference**

12. The core member States of the Working Group will be expected to coopt CNS experts as and when necessary.

Other Expertise:

13. The Working Group may, with the concurrence of the Secretary of the ATM/AIM/SAR Sub-Group, invite necessary expertise (including airworthiness and flight operations) on ad-hoc basis.

---END---

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2C**

AFI RVSM Safety Policy

AFI RVSM SAFETY POLICY



September 2013

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2C**

AFI RVSM Safety Policy

TABLE OF CONTENTS

CONTENTS	PAGE
SECTION 1: INTRODUCTION.....	3
SECTION 2: RVSM OPERATIONAL APPLICATION.....	3
SECTION 3: AFI RVSM SAFETY MAINTENANCE.....	4
SECTION 4: AFI RVSM MAINTENANCE SAFETY OBJECTIVES.....	4
SECTION 5: AFI RVSM MAINTENANCE SAFETY DELIVERABLES.....	4
SECTION 6: STATE RVSM NATIONAL MANAGER	5

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2C**

AFI RVSM Safety Policy

**AFI REDUCED VERTICAL SEPARATION MINIMUM
(RVSM) SAFETY POLICY**

1. INTRODUCTION

This document, the AFI RVSM Safety Policy Document, sets out the Safety Policy and the Safety Objectives in order to guide the safe maintenance of the AFI RVSM system in the AFI Region.

The AFI RVSM Safety Policy Document is intended to provide a framework to facilitate the safety regulation process for the maintenance of AFI RVSM.

The AFI RVSM Safety Policy Document provides guidance to States to ensure that safety is continuously met, the aircraft approval process is effective, the target levels of safety are being met, operational errors do not increase and ATC procedures and equipment introduced to manage RVSM remain effective.

2. RVSM OPERATIONAL APPLICATION

The application of AFI RVSM is maintaining the safe vertical separation minimum of, 1000 FT, between adjacent State CAA RVSM Approved aircraft between the Flight Levels FL290 and FL410 inclusive. This provides six additional cruising levels to air traffic, increases the capacity of the Air Traffic Management system and facilitates the task of Air Traffic Services in maintaining a safe, orderly and expeditious flow of traffic. The additional capacity and system benefits of AFI RVSM shall, by facilitating the Air Traffic Control function, also continue to enhance safety benefits.

AFI RVSM shall be applied between State CAA RVSM approved aircraft within the confines of the designated AFI RVSM airspace. Therefore, all operators proposing to operate across the lateral limits of the AFI RVSM airspace shall be required to submit flight plans as per the provisions in ICAO Document 4444. Non-RVSM approved State aircraft shall be permitted to operate in AFI RVSM airspace, traffic permitting, with 2000FT vertical separation.

Uninterrupted climb through AFI RVSM airspace to FL430 or above by non RVSM approved aircraft will be permitted.

Uninterrupted descent through AFI RVSM airspace from FL430 or above by non RVSM approved aircraft will be permitted

There will be no RVSM Transition Airspace within the AFI Region.

AFI RVSM requires that specific training of aircrew and ATC staff shall be performed to ensure safe RVSM operations. ATC equipment and procedures shall be maintained in such a way that they ensure the maintenance of safe AFI RVSM.

States shall ensure that the Globally accepted Minimum Monitoring Requirements, incorporating the ICAO Annex 6 Standard, – Operation of Aircraft, as published by Regional Monitoring Agencies are met.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2C**

AFI RVSM Safety Policy

3. AFI RVSM SAFETY MAINTENANCE

This Safety Policy has been established to meet the requirements of ICAO Standards, Recommended Practices, Global best practices and guidance material on managing collision risk consequent to safe AFI RVSM operations.

The following statements define the AFI RVSM Safety Policy:

- (i) AFI RVSM applies an explicit, pro-active approach to safety management in maintaining continued safe RVSM operations.
- (ii) The responsibility of management for the safe performance of AFI RVSM is recognised. Each States RVSM National Manager or Single Point Of Contact (SPOC) is responsible for the overall co-ordination of RVSM within the State.  The State RVSM National Manager or SPOC is responsible for liaison with the Regulatory Authority and ARMA.
- (iii) AFI RVSM shall be conducted in accordance with ICAO provisions, Global best practices and guidelines as applicable.
- (iv) 100% of aircraft operating within the designated AFI RVSM airspace shall be RVSM approved excluding bone fide non approved State aircraft;
- (v) AFI RVSM shall minimise the contribution to RVSM related incidents by maintaining a safe RVSM system as low as reasonably practicable.

4. RVSM MAINTENANCE SAFETY OBJECTIVES

AFI RVSM shall not contribute to an increase in incidents or accidents by ensuring that:

- (i) In accordance with ICAO SARP's the management of vertical collision risk within RVSM airspace shall meet the Target Level of Safety of 5×10^{-9} fatal accidents per flight hour;
- (ii) In accordance with ICAO SARP's, the risk of mid-air collision in the vertical dimension within RVSM airspace, due to technical height keeping performance, shall meet a Target Level of Safety of 2.5×10^{-9} fatal accidents per flight hour.

5. RVSM SAFETY DELIVERABLES

5.1 Collision Risk Assessment

A Collision Risk Assessment (CRA) shall be carried out annually in order to provide the evidence that the collision risk in RVSM airspace meets the Target Level of Safety as endorsed by APIRG.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2C**

AFI RVSM Safety Policy

5.2 Safety Management System Plans

Each State shall ensure that their SMS plan appropriately addresses all RVSM System elements. These elements shall be made available during routine safety audits for review.

6 STATE RVSM NATIONAL MANAGER

The State RVSM National Manager or SPOC shall facilitate the overall application and maintenance of RVSM in accordance with the AFI RVSM safety policy within the States area of responsibility.

Each State shall ensure that the ARMA has the most current contact details for the nominated State RVSM Manager or SPOC.

END

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2D**

Initial Summary Content for AFI ATS Route Catalogue

No .	Route Sector	Country	Route Description (Preferred)	Route Designator ICAO-ESAF	Remarks
1	HKG-JNB SIN-JNB	Mozambique	VBR - S15 40 E042 37	UT512	ASIO UPR
2			VBR – GADNO	UT513	ASIO UPR
3			VBR- S18 E041 13-VBR-S18 15.2 E041 04.1	UT515	ASIO UPR
4			VBR- S19 E040 37	UT516	ASIO UPR
5			VL - S19 E040 37	UT517	ASIO UPR
6			VL- S20 E040	UT518	ASIO UPR
7			VL- S21 E040	UT519	ASIO UPR
8			IN - S21 E040		ASIO UPR
9			VMA - S23 30 E040		ASIO UPR
10			VMA- S25 E040		ASIO UPR
11			VMA-S26 E040		ASIO UPR
12	ADD-FIH	Kenya Uganda	EKBUL-NALOS		RouteLab 1
13	DXB-GRU	Uganda Kenya Ethiopia Sudan	UQ579 TAREM-EKBUL-IMKIT-DWA (TAREM-DCT-DWA)		iFLEX 2
14			UQ583 KITEK-KNA-KTM-KSL		iFLEX 2
15			UT419 ASKON-MLK-TIKAT-QHA QHA		iFLEX 2
16		Egypt Libya Algeria Kenya Uganda	UQ597 DANAD-METSA		iFLEX 2
17			UQ598 DITAR-PASAM		iFLEX 2
18			UQ599 KFR-ALSEP-KHG		iFLEX 2
19			UQ595 KHG-KIRET		iFLEX 2
20			UQ594 LIGAT-OWT-ORMOL-LOPID-UMINI-SEDVA-YEN		iFLEX 2
21			UQ596 IPOBA-TWARG-TUKAM-IMRAD		iFLEX 2
22			UQ853 DJA-TWARG		iFLEX 2
23	NBO-LUN	Zambia Tanzania	KS-SINGI	UT428	NEW
24	NBO-JNB	Tanzania Kenya	NV-DO		NEW

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2D**

Initial Summary Content for AFI ATS Route Catalogue

25	NLA-NBO	Zambia Tanzania	VND-NV		NEW
26	NBO-JED	Asmara Ethiopia	GWZ-JDW		FIR of Eritrea and Ethiopia closure
27	ABV-SSG	Nigeria	BIMAT-ARDEX		NEW
No .	Route Sector	Country	Route Description		Remarks
28	SSG-ABV	Gabon Nigeria	ARDEX-LUKRO		NEW
29	DOH-KRT	Sudan Asmara Saudi Arabia	TOKAR-QUN-BSH		NEW
30	DAR-JRO	Tanzania	KV-DV- HTMT-DUSKA	UT427	NEW
31	GRU-DOH	Chad Sudan	DEMOX-GIBAP		NEW
32	DOH-EBB	Uganda Kenya	NN-ELI		NEW
33	DOH-LOS	Chad Sudan Ethiopia	UB736 Complete re-alignment		Delineation of South Sudan
34	LUN-JNB	Zambia	RETAR-GWV		Tactical to published route
35	ADD-BZV	South Sudan	JUB-SAGBU		UB535 ROUTELAB 1
36	ADD-LHR	Sudan	TIKAT-MRW		UT127 ROUTELAB 1
37	ADD-LOS	Nigeria	OXILO-LAG		UT151 ROUTELAB 1
38	NBO-LHR	Egypt	BRN-ATMUL		UT261 ROUTELAB 1
39	DKR-NBO	Ghana Togo Benin Nigeria CAR	TLE-MPK		UT271 ROUTELAB 1
40	CDG-LBV	Mali Niger Benin Nigeria Gabon	GAO-POT-LV		UG981 ROUTELAB 1 (In AFI ANP)
41		Mali Mauritania	MIYEC-TAPUS-LAG		Modification of UT365
42	ATL-LOS	Senegal	YF-N25 W030		

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2D**

Initial Summary Content for AFI ATS Route Catalogue

					NEW
43	JNB-HKG	South Africa	KC-N18 W030	UT122	
44			WIV-ITSAV		INSPIRE ASIO UPR Transitional Routes
45			NSV-PKV-TETEN		Close UG468
46			EXOBI-ORNAD		
47	MPT-LAD	Mozambique Botswana Namibia Angola	PKV-ETMIT-MNV-VNA	UT125	NEW
No .	Route Sector	Country	Route Description		Remarks
48	WDH-HRE	Namibia Botswana Zimbabwe	WHV-DCT-VBU	UT356	NEW
49	JNB-VFA	Botswana Zimbabwe	ETMIT-BONAL-FA	UT429	New
50	WDH-LUN	Namibia Botswana Zambia	WHV-DCT-VLS	UT358	NEW
51	ERS-MPA	Namibia Botswana	FYWE-DCT-FYKM	UT355	EROS/KATIMA (Airports)
52	CPT-FIH	Namibia	ATUPI-DCT-ANVAG	UT354	
53	NDU-ERS	Namibia	FYRU-DCT-EVESO-FYWE	UT353	
54	NDU-MPA	Namibia	FYKM-DCT-(S18E021)-FYRU	UT351	
55	GBE-HRE	Botswana Zimbabwe	GSV-DCT-VBU	UT437	Issues of FUA in Zimbabwe
56	HKG-JNB	Mozambique South Africa	EROP-PKV-OKPIT	UT446	NEW
57	HKG-JNB	Mozambique South Africa	SUNIR-PKV	UT444	ASIO UPR
58	WDH-JNB	Namibia	WHV-TETUS	UT431	Delete UT1
59	AORRA	Liberia Gambia	TYE-AMPAS		
60			AMPAS-BOTBU		
61			AMPAS-RIRAK		
62			AMPAS-TINIS		
63			AMPAS-SOLTU		

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2D**

Initial Summary Content for AFI ATS Route Catalogue

64			AMPAS-GUTAS		
65			AMPAS-LUMKA		
66			AMPAS-TUROT		
67			KC-N1840E020		
68	ATL-LOS		KC-25E030		
69			KC-ETIBA-NORED		
70	AMS-JUB	Sudan S. Sudan	ORNAT-JUB		
JNB-WEST AFRICA					
Route No	From	To	Remarks		
001	Gaborone VOR GBV	Huambo VOR VHU (FL)			
002	ETMIT FA/FB Bdry	Kuito VOR KU (FL)	Probably via new shared common bdry point 003/004		
003	Maun VOR MNV	Libreville VOR LV	Probably via new shared common bdry point 002/004		
004	Maun VOR MNV	Kinshasa VOR KSA	Probably via new shared common bdry point 002/003		
005	Gaborone VOR GBV	DUGRA (FL)	GC route to FL AORRA entry gate		
006	Gaborone VOR GBV	Lubango VOR VUB	GC route to FL AORRA entry gate		
007	Luanda VOR VLA	Abidjan VOR AD	Probably via NIDUS, NERUP, ARKOS & MINS		
008	Luanda VOR VLA	Accra VOR ACC	Probably via NIDUS & GANBI		
009	DEVLI (AORRA Bdry GL)	Roberts VOR ROB	Connect to Roberts from AORRA. Direct normally offered by ATC		
010	DEVLI (AORRA Bdry GL)	Dakar VOR YF	Connect to Roberts from AORRA. GC from AORRA gate		
011	SEVAM (AORRA Bdry DI)	Dakar VOR YF	Connect to Dakar from AORRA. GC from AORRA gate		
012	Accra VOR AD	Dakar VOR YF	GC route ACC-DKR		
JNB-EUROPE					
013	OKLAP (FB)	Kisangani VOR KGI	From JNB Sid transistion		
014	ETMIT FA/FB Bdry	Bangui VOR MPK	From JNB Sid transistion		
015	RUDAS (FB)	Bangui VOR MPK	From JNB Sid transistion		
019	Maputo VOR VMA	Libreville VOR LV	GC, plus MPM link to red carpet		
020	Brazzaville VOR BZ	Bordj Omar Driss VOR BOD (DA)			
021	Brazzaville VOR BZ	Agadez VOR AS (DR)			
022	KUFRA (HL)	Kisangani VOR KGI			
062	TONBA (HL/FL bdry)	Kisangani VOR KGI	NEED TO ADD TO CHART		
024	Lusaka VOR VLS	MOROS (FC)	Lusaka link to red carpet		
025	Lusaka VOR VLS	Abuja VOR ABC	Lusaka link to red carpet and Abuja		
026	Lusaka VOR VLS	Kinshasa VOR KSA			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2D**

Initial Summary Content for AFI ATS Route Catalogue

SOUTHERN AFRICA- NE AXIS			
016	MAKIR HT/FV Bdry	UTULI FA/FV Bdry	Direct normally offered by ATC
017	Harare VOR VSB	Entebbe VOR NN	
018	Durban VOR TGV	Harare VOR VSB	Concern over South African restricted areas enroute
027	Nakala FQNC	Luanda VOR VLA	Via Lubumbashi VOR. To develop Nakala to West Africa/South America
028	EXALA FA	Dar es Salaam VOR DA	EXALA is JNB Sid transition
029	EXALA FA	Lilongwe VOD DVL	EXALA is JNB Sid transition
030	Nakala FQNC	Harare VOR VSB	Proposed route expansion from Nakala
031	Nakala FQNC	Lusaka VOR VLA	Proposed route expansion from Nakala
032	Nakala FQNC	Dar es Salaam VOR DA	Proposed route expansion from Nakala
033	Cape Town FACT	Harare FVHA	GC, plus further options from CPT to red carpet
034	Cape Town FACT	Maputo FQMA	GC, plus further options from CPT to red carpet
035	Cape Town FACT	Lusaka VOR VLA	GC, plus further options from CPT to red carpet
EUROPE-WEST AFRICA			
036	El Bayadh VOR BAY	Abuja VOR ABC	
037	Niamey VOR NY	Bouarfa VOR BRG (GM)	And on to BERUM (GM/LE)
038	Abuja VOR ABC	Bouarfa VOR BRG (GM)	And on to BERUM (GM/LE)
039	Oaugadougou VOR	Tanger VOR TNG	Quoted TNG but to GM/LE Bdry (LINTO?)
040	Abidjan VOR AD	Tanger VOR TNG	Quoted TNG but to GM/LE Bdry (LINTO?)
041	Abuja VOR ABC	Tamanrasset VOR TMR	
042	Conakry VOR GIA	ECHED GM/GO Bdry	Freetown to Europe
043	Abidjan VOR AD	BULIS GM/GO Bdry	Additional route Abidjan-Europe (avoiding Algiers FIR)
044	Roberts VOR ROB	BULIS GM/GO Bdry	Additional route Roberts-Europe (avoiding Algiers FIR)
063	BULIS GM/GO	AMSEL GM/LP	
064	BULIS GM/GO	Tanger VOR TNG	Quoted TNG but to GM/LE Bdry (LINTO?)
045	Freetown VOR LGI	Tanger VOR TNG	Quoted TNG but to GM/LE Bdry (LINTO?)
068	Freetown VOR LGI	Laayoune LAY VOR	
069	Bissau VOR BIS	Laayoune LAY VOR	
046	Nouakchott VOR KC	Agadir VOR ADM	Route straightening Dakar-Europe
065	Abuja VOR ABC	IKTAV DA/FT bdry	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2D**

Initial Summary Content for AFI ATS Route Catalogue

067	Lagos VOR LAG	IKTAV DA/FT bdry	
066	IKTAV DA/FT	FARES HL/DT	
EUROPE-EAST AFRICA			
023	ORNAT HL/HS Bdry	Entebbe VOR NN	
048	Entebbe VOR NN	Dahra VOR DHR (HL)	
049	Entebbe VOR NN	Sebha VOR SEB (HL)	
050	Nairobi VOR NV	Dahra VOR DHR (HL)	
051	Nairobi VOR NV	Sebha VOR SEB (HL)	
052	Nairobi VOR NV	Cairo VOR CV	
053	El Obeid VOR OBD (HS)	Benghazi VOR BEN	
054	Juba VOR JUB (HS)	Sidi Barrani VOR BRN (HE)	
055	Kisangani VOR KGI	Sidi Barrani VOR BRN (HE)	
056	Khartoum VOR KRT	Sidi Barrani VOR BRN (HE)	
057	Entebbe VOR NN	Zarzatine VOR IMN (DA)	
058	Juba VOR JUB	Zarzatine VOR IMN (DA)	
059	Addis Ababa GWN VOR	EGLOM HC/FS Bdry	Via MOGDU Mogadishu. To establish route structure to Seychelles to west
060	Addis Ababa GWN VOR	Seychelles VOR PRA	To establish route structure to Seychelles to west
061	Mandera VOR MAV (HA/HC)	EGLOM HC/FS Bdry	Via MOGDU Mogadishu. To establish route structure to Seychelles to west
070	Addis Ababa GWN VOR	Mandera VOR MAV HA/HC	Route straightening

Proposed shortening of routes from / to Middle East & Africa

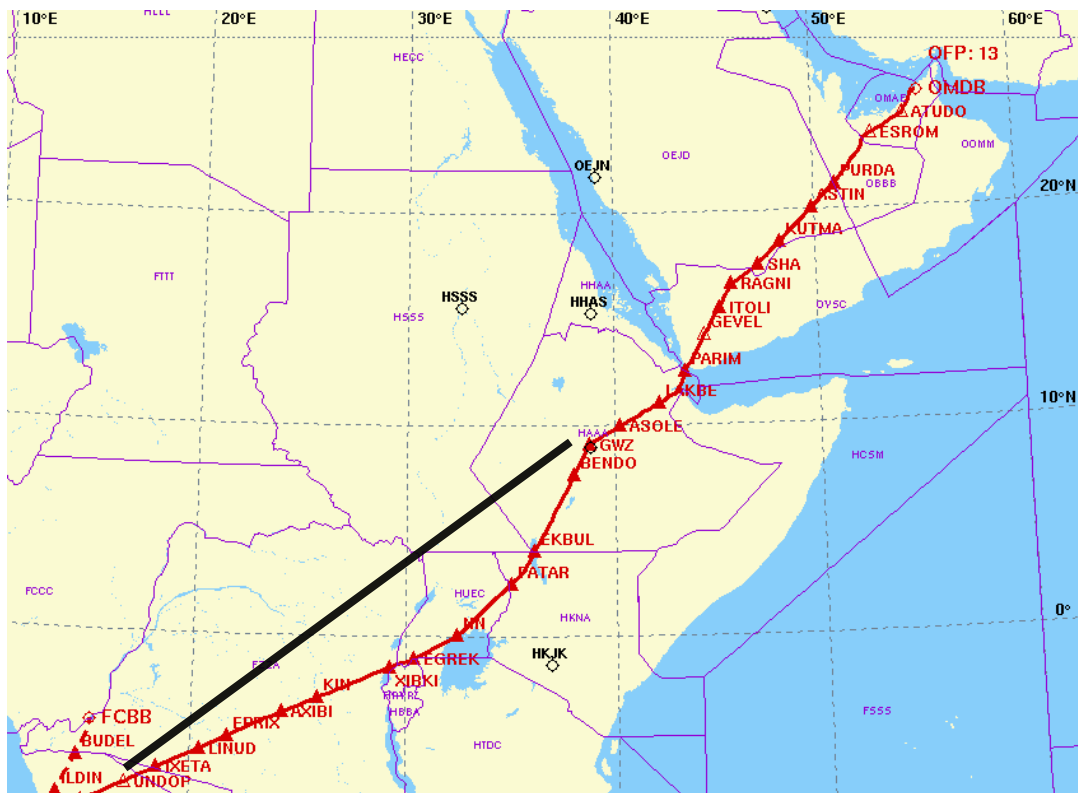
OMDB-FNLU

Red line: most frequently flown route as per current available airways

Black line: Proposed short cut

APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2D

Initial Summary Content for AFI ATS Route Catalogue



FNLU-OMDB

Red line: most frequently flown route as per current available airways

Black line: Proposed short cut

APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2D

Initial Summary Content for AFI ATS Route Catalogue



DNMM-OMDB

Red line: most frequently flown route as per current available airways

Black line: Proposed short cut



Red line: most frequently flown route as per current available airways
Black line: Proposed short cut



APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2D

Initial Summary Content for AFI ATS Route Catalogue

GOOY-OMDB

Red line: most frequently flown route as per current available airways

Black line: Proposed short cut



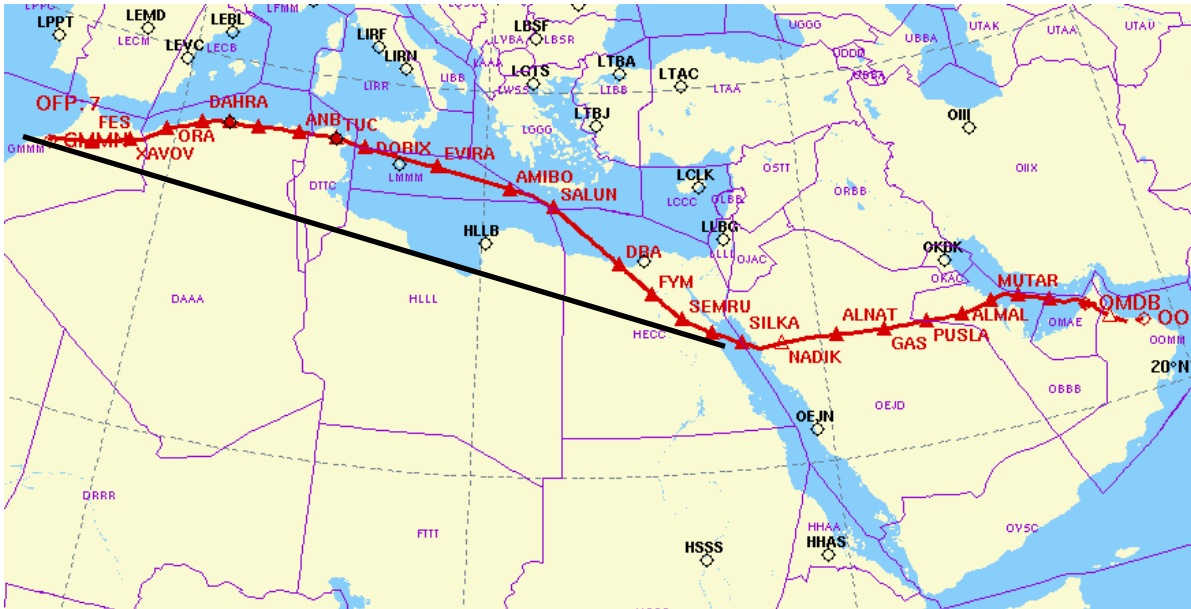
GMMN-OMDB

Red line: most frequently flown route as per current available airways

Black line: Proposed short cut

APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2D

Initial Summary Content for AFI ATS Route Catalogue



OMDB GMMN

Red line: most frequently flown route as per current available airways

Black line: Proposed short cut



OMDB-DAAG

Black line: Proposed short cut

APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2D

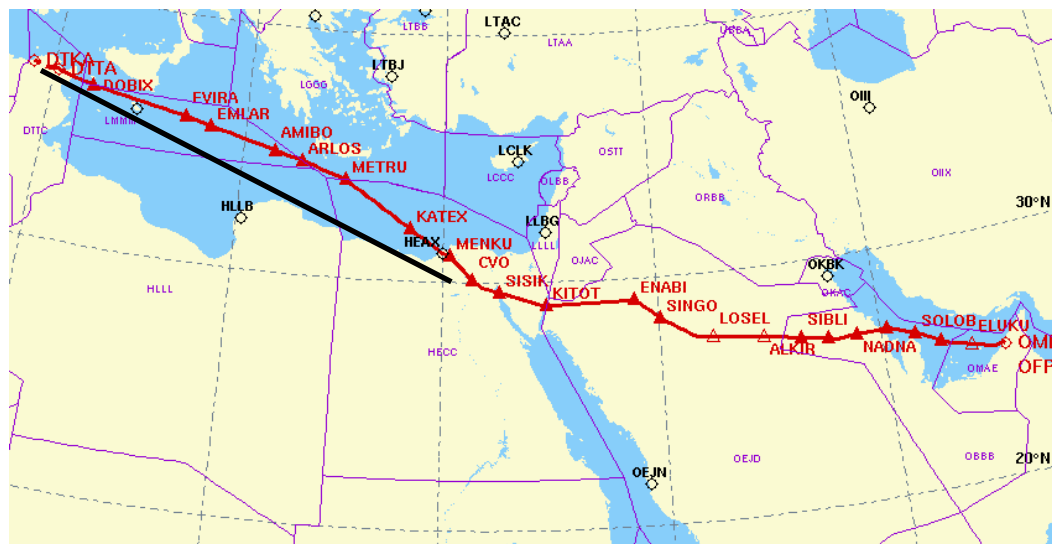
Initial Summary Content for AFI ATS Route Catalogue



OMDB-DTTA

Red line: most frequently flown route as per current available airways

Black line: Proposed short cut



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2D**

Initial Summary Content for AFI ATS Route Catalogue

OMDB HKJK

Black line: most frequently flown route as per current available airways

Red line: Proposed short cut

-18-
APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2D

Initial Summary Content for AFI ATS Route Catalogue



HKJK OMDb

APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2D

Initial Summary Content for AFI ATS Route Catalogue

Black line: most frequently flown route as per current available airways

Red line: Proposed short cut



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2D**

Initial Summary Content for AFI ATS Route Catalogue

HUEN OMDB

Black line: most frequently flown route as per current available airways

Red line: Proposed short cut



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2E-1**

**AFI Implementation Coordination Groups (ICGs)
Terms of Reference**

Terms of Reference:

TASKS

1. initiate and coordinate actions required to carry out implementation of the SARPs, the Global Aviation Navigation Plan as well as Regional Requirements as indicated in the Regional Performance Objectives
2. review information from various sources regarding implementation shortcomings and deficiencies and:
 - (i) facilitate the elimination of the shortcomings and deficiencies
 - (ii) propose solutions to be taken by states to eliminate the shortcomings and deficiencies
3. Coordinate the implementation of specific operational [performance] improvements (e.g. ATS route trajectories, applicable separation minima)
4. Coordinate the planning of elements within the Aviation System Block Upgrades (ASBUs) Modules, to ensure that operational requirements form the basis for investment in ANS infrastructure, and the planning and implementation of ANS infrastructure informs the readiness of operational improvements
5. Provide a forum for and facilitate the establishment and update of operational agreements in the areas of ATM, AIM and SAR

COMPOSITION

6. AFI ATM and CNS professionals from the ICGs identified below, who are regularly involved in planning and implementation of ASBUs Modules. The following professional will also be expected to participate in the activities of the ICGs as guided by Secretariat:
 - AIM, MET and SAR professionals who are involved in and conversant with issues concerning planning and implementation of ASBUs Modules in the AFI Region
 - Professionals involved in identifying and resolving safety issues in the areas of air navigation services (ANS)
7. The ICGs will be composed of States and ANSPs from the Areas of routing or part thereof as follows:
 - ICG 1 – AR-1 and AR-2
 - ICG 2 – AR-5 and AR-4 North
 - ICG 3 – AR-4 South (*Luanda, Lusaka, Lilongwe, Beira & FIRs to the South*)
 - ICG 4 – AR-3 and AR-6

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2E-1**

**AFI Implementation Coordination Groups (ICGs)
Terms of Reference**

8. Reporting: Outcome of the ICGs will be submitted to the ATM/AIM/SAR, CNS and MET Sub-Groups through coordination by the Secretariat.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2E-1**

AFI Implementation Coordination Groups (ICGs)				
<i>Areas (AR)</i>	<i>Homogeneous ATM areas and major traffic flows/routing areas</i>	Terms of Reference <i>FIRs involved</i>	<i>Type of area covered</i>	<i>Remarks</i>
Africa-Indian Ocean (AFI) Region				

Homogeneous ATM areas and major traffic flows/routing areas

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2E-1**

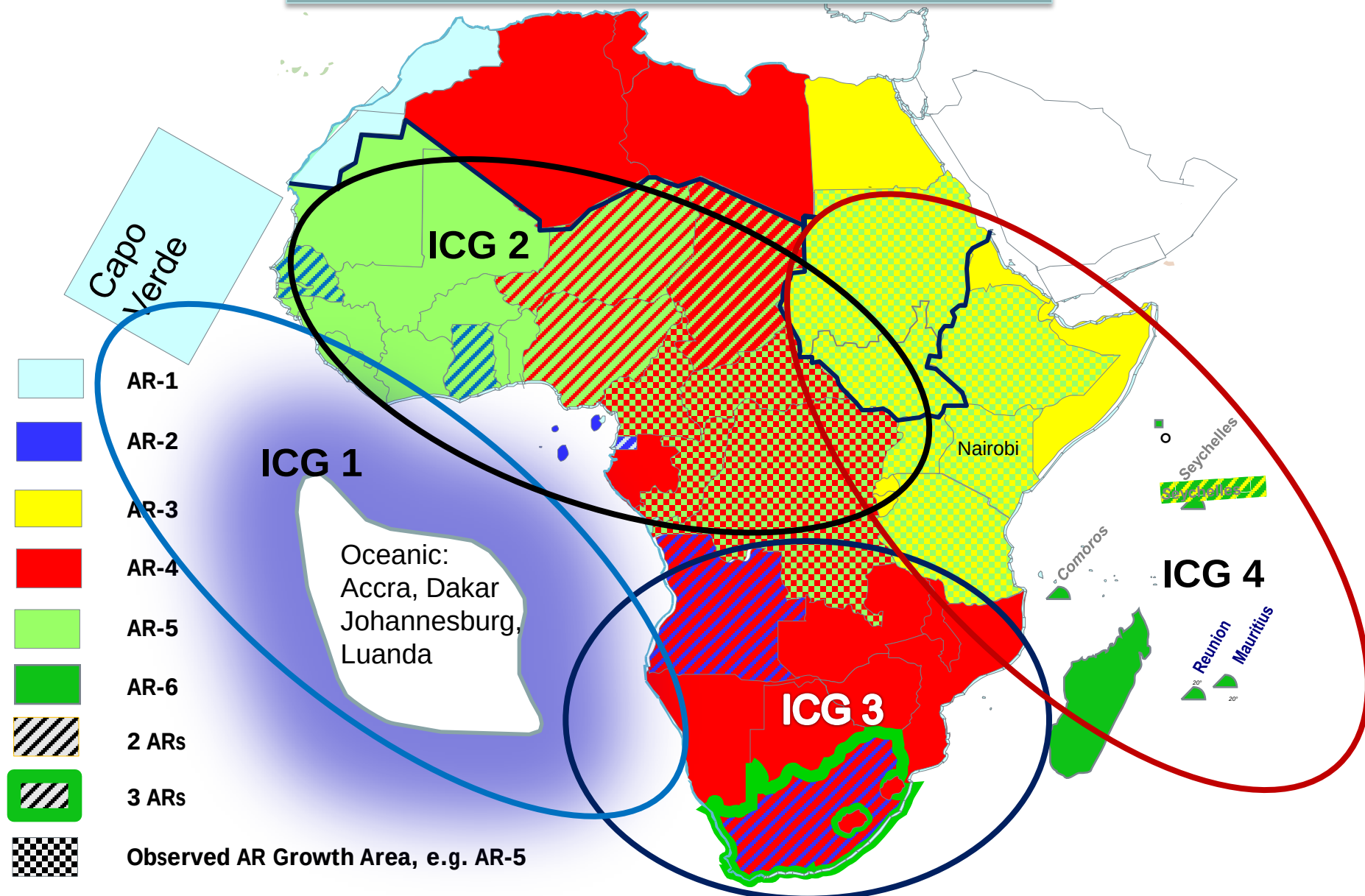
**AFI Implementation Coordination Groups (ICGs)
Terms of Reference**

AR1	Europe — South America (EUR/SAM) (oceanic)	Atlantico ¹ , Canarias, Casablanca, Dakar Oceanic, Recife, Sal Oceanic	Oceanic en route low density in southern part and oceanic high density in northern part	Major traffic flow EUR/SAM
AR2	Atlantic Ocean interface between the AFI, NAT and SAM Regions	Accra, Dakar, Johannesburg Oceanic, Luanda, Sal	Oceanic en route low density	Homogeneous ATM area AFI/NAT/SAM
AR3	Europe — Eastern Africa routes including the area of the Indian Ocean	Addis Ababa, Antananarivo, Asmara, Cairo, Dar es-Salaam, Entebbe, Khartoum, Mauritius, Mogadishu, Nairobi, Seychelles, Tripoli	Continental en route/ oceanic low density	Major traffic flow AFI/EUR
AR4	Europe to Southern Africa	Algiers, Beira, Brazzaville, Cape Town, Gaborone, Harare, Johannesburg, Kano, Kinshasa, Lilongwe, Luanda, Lusaka, N'Djamena, Niamey, Tripoli, Tunis, Windhoek	Continental en route low density	Major traffic flow AFI/EUR
AR5	Continental Western Africa including coastal areas	Accra, Dakar, Kano, Ndjamena, Niamey, Roberts, Brazzaville, Kinshasa, Khartoum, Addis, Nairobi, Entebbe, Dar-ES-Salaam	Continental/oceanic low density	Homogeneous area AFI (this is a growing traffic, developing into major traffic flow)
AR6	Trans-Indian	Antananarivo, Bombay ¹ , Johannesburg Oceanic, Male ¹ , Mauritius, Melbourne ¹ , Seychelles	Oceanic high density	Homogeneous ATM area AFI/ASIA

With Changes Proposed 2011 (not part of Doc 9750 3rd Ed.)

APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2E-2

AFI AREAS OF ROUTING – DOC 9750 3rd Ed.



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2F**

**Proposed Revised PBN Route Network Development Working Group (PRND WG)
Terms of Reference (TOR)**

A) TERMS OF REFERENCE

1. Review the AFI ATS route network in order to assess its capacity and constraints;
2. Based on the airspace user needs and in coordination with stakeholders (States, International Organizations, user representative organizations and other ICAO Regions), AFI Regional Performance Objectives, the Regional PBN Implementation Plan, as well as related ICAO provisions and guidance material, identify requirements and improvements for achieving and maintaining an efficient route network in the AFI Region;
3. Propose a strategy and prioritized plan for development of improvements to the route network, highlighting:
 - areas that require immediate attention
 - interface issues with adjacent ICAO Regions
 - the implementation of PBN
4. ~~Develop a working depository for route proposals that will be used as a dynamic reference document for ongoing discussions on routes under development/modification. In this respect, the Working Group should explore the utility that can be realized from the route catalogue concept/ATS route database;~~
5. Engage the necessary parties regarding routes under consideration;
6. Recognizing that, prior to implementation of new ATS routes or changes to existing routes, States are to conduct safety assessments in accordance with provisions of Annex 11 to the Chicago Convention, continue to sensitize States on the importance of this obligation and need to coordinate with the ARMA;
7. After adoption by the ATM/AIM/SAR SG, or as delegated by the same, submit completed route proposals for amendment of the Basic ANP Table ATS-1, to the AFI Regional Offices for processing;
8. Assess the role that may be contributed by a special project for a comprehensive review of the AFI ATS route network as envisaged by APIRG 15 and make recommendations, with detailed project description if the role of a project is confirmed.
9. In coordination with the AFI Air Transport Forecasting Group (TFG) as necessary, undertake the capturing and reporting of data on environmental benefits, as well as developing related forecasts.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2F**

**Proposed Revised PBN Route Network Development Working Group (PRND WG)
Terms of Reference (TOR)**

B) COMPOSITION

It is recognized that in order to facilitate the effectiveness of proceedings of the Working Group, the preferable core size of the Working Group should be about 15 members. However, that this does not preclude other AFI States from attending proceedings of the Working Group as necessary, the PRND Working Group will comprise:

- a) experts nominated by AFI Provider States from both civil aviation entities and military authorities;

Cape Verde, Ghana (~~to confirm~~), Kenya, Mozambique, Namibia, Nigeria, Seychelles, Somalia (CACAS), South Africa, Swaziland, Tanzania, Zimbabwe
(Agreed at the PRND WG/2 Meeting);

- b) ARMA, ASECNA, CANSO (to confirm participation), IATA, IFALPA and IFATCA;
- c) representatives from adjacent States and concerned international organizations (on ad-hoc basis).
- d) The Working Group may invite other organizations with the objective of benefiting from their expertise.

C) WORKING ARRANGEMENTS

The Working Group shall:

- a) report to the ATM/AIM/SAR Sub Group through the PBN/GNSS Task Force (~~or its successor~~);
- b) meet as required and at least once a year; and
- c) use electronic communication between members as much as feasible.

--- END ---

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2G**

Draft Terms of Reference of the ATS Competency Study Group (ATSCSG)

Terms of Reference (TOR)

- 1 The ATSCSG will review and assess the adequacy of training in the following areas against ICAO Annex 11 requirements, Doc 4444 and common operational requirements (industry best practices) as follows:
 - a) Aviation Training Academies, schools and institutions.
 - b) Abridging (conversion) training being provided by ANSPs in order to bring their candidates to set Standards and to specific requirements air traffic services units (ATSUs) requirements (airspace configuration, aircraft movements, procedural or radar control, etc.).
 - c) Type and quality of on-the-job (OJT) training being provided, covering both initial and in-service OJT.
 - d) Recurrent training.
 - e) Special training including introduction/indoctrination to new technologies.
 - f) Development and implementation of training programmes and training plans (Ref. ICAO USOAP Audit reports)
 - g) ANSP mechanisms to identify and rectify competency deficiencies
2. The ATSCSG will review the shortcomings in these areas and will make recommendations to the ATM/AIM/SAR SG to address and rectify them, so as to close the gaps identified.
3. Surveys should covering all AFI States should be conducted. However, in order to manage costs, time and other resources, visits should be taken to selected academies/schools/institutions in AFI States and detailed focus should be on the four institutions with low output/enrolment of ATM and AIM (including Message Handling) candidates, and four with the highest output. In addition, four ANSPs having the highest number of UCRs should be visited.
4. The ATSCSG will be guided by ICAO and will submit interim progress reports to the ESAF Regional Office through the TAG.
5. The report and proposals of the ATSCSG will be submitted to the ATM/AIM/SAR Sub-Group.
6. Composition/Number of Experts: TBD (*South Africa, Swaziland, Uganda, Ghana, Roberts FIR (Mr. Badara Alieu Tarawaley) Kenya, ASECNA, IFATCA (Messrs George Mbugua and Serge Tchanda)*, IFALPA, IATA, ARMA.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2G**

Draft Terms of Reference of the ATS Competency Study Group (ATSCSG)

7. *The Study Group may, with the agreement of the Secretariat invite other expertise as necessary.*
8. *Expertise provided to the Study Group should not include persons employed by or having roles in training academies/schools/institutions.*

---END---

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2H**

**AFI Air Traffic Management/Meteorology (AFI ATM/MET) Task Force
Terms of Reference**

1. Terms of Reference

1.1 Under guidance from ICAO Secretariat:

- a) Evaluate the current and future requirements for MET in support of ATM in the AFI Region and update Regional Air Navigation Plan accordingly and provide guidance material to assist States to develop MET services to meet these requirements;
- b) Assess aviation meteorological services, systems and architecture in the region and how they can integrate weather information into decision support tools;
- c) Review and update the AFI Volcanic Ash Contingency Plan (VACP) and monitor VACP exercises;
- d) Investigate sub-regional exchange of MET information and associated agreements that facilitate ATM operations particularly over busy routes that overlap different FIRs;
- e) Promote coordination between MET and ATM communities in the AFI Region to enhance the level of understanding of MET requirements and capabilities in support of ATM;
- f) Monitor global policy associated with source data and delivery of MET products for ATM;
- g) Coordinate with MET/SG and ATM/AIS/SAR/SG on framework for contingency plan for specific phenomenon including volcanic ash, radioactive cloud, tropical cyclone and Tsunami with reference to developments made WMO scientific steering committee;
- h) Report to the MET/SG Sub-group of APIRG for further co-ordination through the ICAO Secretariat with other relevant bodies.

1.2 The objective being to improve efficiency of ATM and airlines by providing tailored regional MET products needed to optimize flight routes in all weather conditions.

1.3 The Benefits will be to increase efficiency – save time and fuel as well as reduce carbon emissions.

2. Work Programme

2.1 The work to be addressed by the AFI ATM/MET Task Force includes:

- a) Develop regional MET requirements for ATM by:
 - conducting MET/ATM meetings (TF meetings, Seminars) to contribute in developing MET requirements for ATM;
 - analyzing existing ATM/MET surveys and develop new surveys, when necessary, to determine regional ATM requirements for MET;
 - recommending regional MET requirements for ATM to MET/SG Meetings;
 - Determining regional MET requirements for ATM.
- b) Developing methods to use weather information in decision support tools;

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2H**

**AFI Air Traffic Management/Meteorology (AFI ATM/MET) Task Force
Terms of Reference**

- c) Review and update the AFI Volcanic Ash Contingency Plan (VACP) by:
 - Regularly updating the VACP through new requirements from the IAVWOPSG
 - Conducting annual VACP exercises or AFI ATM/MET Volcanic Ash Exercises (VAEX/AFI);
 - reporting on annual VAEX/AFI to MET/SG meetings.
- d) Develop sub-regional exchange of MET information to facilitate ATM operations by:
 - Encouraging States develop agreements on the exchange of MET information that provides benefits to ATM operations on sub-regional level;
 - Encouraging States report developments to MET/ATM TF and MET/SG meetings;
 - Developing sub-regional exchange of MET information to facilitate ATM operations in busy routes.
- e) Develop regional implementation plan for Meteorological Service for Terminal Area (MSTA) by:
 - Monitoring developments of MSTA (pending approval at conjoint ICAO/WMO Divisional meeting 2014);
 - Monitoring ICAO Annex 3 developments (requirements for MSTA);
 - Developing regional implementation plan for MSTA ;
 - Monitoring regional implementation of MSTA;
 - Reporting implementation progress to MET/SG.
 - Developing regional implementation plan for Meteorological Services for the Terminal Area.
- f) Monitor global policies associated with source data and delivery of MET products for ATM by:
 - monitoring global policies associated with source data and delivery of MET products for ATM ;
 - reporting results to MET/SG meetings;
 - monitor global policies associated with source data and delivery of MET products for ATM.

3. Composition

3.1 The Task Force is composed of experts from:

- a) South Africa, Senegal, France, Kenya, Gambia and Morocco.
- b) Representatives of VAAC Toulouse, ASECNA, IATA, IFALPA and WMO are expected to participate in the work of the Task Force.

--- END ---

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2H**

**AFI Air Traffic Management/Meteorology (AFI ATM/MET) Task Force
Terms of Reference**

1. Terms of Reference

1.1 Under guidance from ICAO Secretariat:

- a) Evaluate the current and future requirements for MET in support of ATM in the AFI Region and update Regional Air Navigation Plan accordingly and provide guidance material to assist States to develop MET services to meet these requirements;
- b) Assess aviation meteorological services, systems and architecture in the region and how they can integrate weather information into decision support tools;
- c) Review and update the AFI Volcanic Ash Contingency Plan (VACP) and monitor VACP exercises;
- d) Investigate sub-regional exchange of MET information and associated agreements that facilitate ATM operations particularly over busy routes that overlap different FIRs;
- e) Promote coordination between MET and ATM communities in the AFI Region to enhance the level of understanding of MET requirements and capabilities in support of ATM;
- f) Monitor global policy associated with source data and delivery of MET products for ATM;
- g) Coordinate with MET/SG and ATM/AIS/SAR/SG on framework for contingency plan for specific phenomenon including volcanic ash, radioactive cloud, tropical cyclone and Tsunami with reference to developments made WMO scientific steering committee;
- h) Report to the MET/SG Sub-group of APIRG for further co-ordination through the ICAO Secretariat with other relevant bodies.

1.2 The objective being to improve efficiency of ATM and airlines by providing tailored regional MET products needed to optimize flight routes in all weather conditions.

1.3 The Benefits will be to increase efficiency – save time and fuel as well as reduce carbon emissions.

2. Work Programme

2.1 The work to be addressed by the AFI ATM/MET Task Force includes:

- a) Develop regional MET requirements for ATM by:
 - conducting MET/ATM meetings (TF meetings, Seminars) to contribute in developing MET requirements for ATM;
 - analyzing existing ATM/MET surveys and develop new surveys, when necessary, to determine regional ATM requirements for MET;
 - recommending regional MET requirements for ATM to MET/SG Meetings;
 - Determining regional MET requirements for ATM.
- b) Developing methods to use weather information in decision support tools;

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2H**

**AFI Air Traffic Management/Meteorology (AFI ATM/MET) Task Force
Terms of Reference**

- c) Review and update the AFI Volcanic Ash Contingency Plan (VACP) by:
 - Regularly updating the VACP through new requirements from the IAVWOPSG
 - Conducting annual VACP exercises or AFI ATM/MET Volcanic Ash Exercises (VAEX/AFI);
 - reporting on annual VAEX/AFI to MET/SG meetings.
- d) Develop sub-regional exchange of MET information to facilitate ATM operations by:
 - Encouraging States develop agreements on the exchange of MET information that provides benefits to ATM operations on sub-regional level;
 - Encouraging States report developments to MET/ATM TF and MET/SG meetings;
 - Developing sub-regional exchange of MET information to facilitate ATM operations in busy routes.
- e) Develop regional implementation plan for Meteorological Service for Terminal Area (MSTA) by:
 - Monitoring developments of MSTA (pending approval at conjoint ICAO/WMO Divisional meeting 2014);
 - Monitoring ICAO Annex 3 developments (requirements for MSTA);
 - Developing regional implementation plan for MSTA ;
 - Monitoring regional implementation of MSTA;
 - Reporting implementation progress to MET/SG.
 - Developing regional implementation plan for Meteorological Services for the Terminal Area.
- f) Monitor global policies associated with source data and delivery of MET products for ATM by:
 - monitoring global policies associated with source data and delivery of MET products for ATM ;
 - reporting results to MET/SG meetings;
 - monitor global policies associated with source data and delivery of MET products for ATM.

3. Composition

3.1 The Task Force is composed of experts from:

- a) South Africa, Senegal, France, Kenya, Gambia and Morocco.
- b) Representatives of VAAC Toulouse, ASECNA, IATA, IFALPA and WMO are expected to participate in the work of the Task Force.

--- END ---

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2I**

**AFI Air Traffic Management/Meteorology (AFI ATM/MET) Task Force
Proposed Revised Terms of Reference**

1. Terms of Reference

1.1 Under guidance from ICAO Secretariat:

- a) Review and update the AFI Volcanic Ash Contingency Plan (VACP) and monitor VACP exercises;
- b) Promote coordination between MET and ATM communities in the AFI Region to enhance the level of understanding of MET requirements and capabilities in support of ATM;
- c) Coordinate with MET/SG and ATM/AIS/SAR/SG on framework for contingency plan for specific phenomenon including volcanic ash, radioactive cloud, tropical cyclone and Tsunami;
- d) Report to the ~~ATM/AIS/SAR/MET~~ Sub-group of APIRG for further co-ordination through the ICAO Secretariat with other relevant bodies.

1.2 The objective being to improve efficiency of ATM and airlines by providing tailored regional MET products needed to optimize flight routes in all weather conditions.

1.3 The Benefits will be to increase safety and efficiency – save time and fuel as well as reduce carbon emissions.

2. Work Programme

2.1 The work to be addressed by the AFI ATM/MET Task Force includes:

- a) Review and update the AFI Volcanic Ash Contingency Plan (VACP) by:
 - Regularly updating the VACP through new requirements from the IAVWOPSG
 - Conducting annual VACP exercises or AFI ATM/MET Volcanic Ash Exercises (VAEX/AFI);
 - Reporting on annual VAEX/AFI to the ~~ATM/AIS/SR/SG~~ and MET/SG meetings.
- b) Develop sub-regional exchange of MET information to facilitate ATM operations by:
 - Encouraging States develop agreements on the exchange of MET information that provides benefits to ATM operations on sub-regional level;
 - Encouraging States report developments to MET/ATM TF and MET/SG meetings;
 - Developing sub-regional exchange of MET information to facilitate ATM operations in busy routes.

APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2I

AFI Air Traffic Management/Meteorology (AFI ATM/MET) Task Force
Proposed Revised Terms of Reference

- c) Reinforce ways and means of improving ATM/MET coordination by:
 - improving coordination between MET, ATS, AIM, etc.. through the manual on coordination (Doc 9377); and
 - Consulting/coordinating with users as an integral part of a well-established QMS for MET.

3. Composition

3.1 The Task Force is composed of experts from:

- a) Cameroun, Cape Verde, Congo Brazzaville, Democratic Republic of Congo, France, Kenya, Gambia Madagascar, Morocco, South Africa and Senegal.
- b) All other AFI States with potential or active volcanoes (Algeria, Canary Islands, Chad, Comoros, Djibouti, Eritrea, Ethiopia, Madeira, Mali, Niger, Nigeria, Reunion Island, Sao Tome and Principe, Sudan, Tanzania and Uganda).
- c) Representatives of VAAC Toulouse, ASECNA, IATA, IFALPA and WMO are expected to participate in the work of the Task Force.

--- END ---

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
*First Edition – October 2012***

INTERNATIONAL CIVIL AVIATION ORGANIZATION



VOLCANIC ASH CONTINGENCY PLAN

AFI REGION

First Edition - October 2012

THIS DOCUMENT IS ISSUED BY THE DAKAR AND NAIROBI ICAO REGIONAL OFFICES
UNDER THE AUTHORITY OF THE APIRG

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

FOREWARD

Within and adjacent to the Africa and Indian Ocean (AFI) Region there are areas of volcanic activities which are likely to affect flight in the AFI Region. The major volcanoes in the region are located in the following States: Algeria, Cameroon, Cape Verde Islands, Chad, Comoros Island, Democratic Republic of Congo, Djibouti, Eritrea, Ethiopia, France (Reunion Island), Kenya, Madagascar, Mali, Niger, Nigeria, Rwanda, Sao Tome and Principe, Spain (Canary Islands, Madeira), Sudan, Tanzania and Uganda. The names of the concerned volcano are listed in **APPENDIX K** (source: Smithsonian Institution).

This document is the AFI Air Traffic Management (ATM) Volcanic Ash Contingency Plan which sets out standardised guidelines and procedures for the provision of information to airlines and en-route aircraft before and during a volcanic eruption. Volcanic contamination, of which volcanic ash is the most serious, is a hazard for safe flight operations. Mitigating the hazards posed by volcanic ash in the atmosphere and/or at the aerodrome cannot be resolved in isolation but through collaborative decision-making (CDM) involving all stakeholders concerned. During an eruption volcanic contamination can reach and exceed the cruising altitudes of turbine-powered aircraft within minutes and spread over vast geographical areas within a few days. Encounters with volcanic ash may result in a variety of hazards including one or more of the following:

- a) the malfunction, or failure, of one or more engines leading not only to reduction, or complete loss, of thrust but also to failures of electrical, pneumatic and hydraulic systems;
- b) the blockage of pilot and static sensors resulting in unreliable airspeed indications and erroneous warnings;
- c) windscreens rendered partially or completely opaque;
- d) smoke, dust and/or toxic chemical contamination of cabin air requiring crew to don oxygen masks, thus impacting communications; electronic systems may also be affected;
- e) the erosion of external and internal aircraft components;
- f) reduced electronic cooling efficiency leading to a wide range of aircraft system failures;
- g) the aircraft may have to be manoeuvred in a manner that conflicts with other aircraft; and
- h) Volcanic ash deposition on a runway may degrade aircraft braking performance, most significantly if the volcanic ash is wet; and in extreme cases, this can lead to runway closure.

Operators are required by ICAO Annex 6 – *Operation of Aircraft* to implement appropriate mitigation measures for volcanic ash in accordance with their safety management system (SMS) as approved by the State of the Operator/Registry. The guidelines provided in this document assume that the ICAO requirements regarding safety management systems have been implemented by the operators. Detailed guidance on Safety Risk Assessments (SRAs) for flight operations with regard to volcanic contamination can be found in the manual on Flight Safety and Volcanic Ash – Risk Management of Flight Operations with Known or Forecast Volcanic Ash Contamination (ICAO Doc 9974).

This document is an ATM contingency plan including its interfaces with supporting services such as Aeronautical Information Service (AIS) and Meteorological (MET) services and that the plan therefore primarily addresses the provider States. Distribution of applicable AIS and MET messages related to volcanic ash are set out in relevant ICAO Annexes– namely *Annex 15– Aeronautical Information Services* and *Annex 3 – Meteorological Service for International Air Navigation*. .

Volcanic Ash can also affect the operation of aircraft at aerodromes. Volcanic ash deposition at an aerodrome, even in very small amounts, can result in the closure of the aerodrome until all the deposited ash has been removed. In

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
*First Edition – October 2012***

extreme cases, the aerodrome may no longer be available for operation at all, resulting in repercussions on the ATM system; e.g. diversions, revised traffic flow, etc.

Some aircraft types or engine technologies are more vulnerable to volcanic contaminants than others; therefore any specific mitigation measures to be applied would have to take into account these variances. Considering that a commercial aircraft will travel about 150 km (80 NM) in 10 minutes and that volcanic ash can rise to flight levels commonly used by turbine-engine aeroplanes in half that time, a timely response to volcanic eruptions and volcanic ash in the atmosphere is essential.

It is imperative that information on the volcanic activity is disseminated as soon as possible. In order to assist staff in expediting the process of originating and issuing relevant AIS and MET messages (VA SIGMET, NOTAM, and ASHTAM), a series of templates should be available for different stages of the volcanic activity. A list of ICAO registered volcanoes — see the Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds (ICAO Doc 9691) Appendix F — should be available at the international NOTAM office with volcano name, number and nominal position. In order to ensure the smooth implementation and effectiveness of the contingency plan in case of an actual volcanic eruption, annual AFI ATM/MET Task Force Volcanic Ash Exercises (VAEX/AFI) should be conducted.

This document has been prepared, and is in line with a proposal for amendment to the Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444) paragraph 15.8 Procedures for an ATC unit when a volcanic ash cloud is reported or forecast — which is expected to become applicable in November 2014.

General considerations during the development of an ATM contingency plan for volcanic ash and anticipated flight crew issues when encountering volcanic ash are provided in Appendices A and B respectively.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

TABLE OF CONTENTS

1.	TERMINOLOGY	5
1.1	Areas of Contamination.....	5
1.2	Danger Areas	5
1.3	Phases of an Event.....	5
2.	PRE-ERUPTION PHASE.....	6
2.1	General.....	6
2.2	Originating Area Control Centre (ACC) Actions (eruption in its own flight information region (FIR)).....	7
2.3	Adjacent ACC Actions	8
2.4.	ATFM Unit Actions (where established).....	8
3.	START OF ERUPTION PHASE	8
3.1	General.....	8
3.2	Originating ACC Actions (eruption in its own FIR)	8
3.3	Adjacent ACC Actions	9
4.	ONGOING ERUPTION PHASE	10
5.	RECOVERY PHASE	10
6.	AIR TRAFFIC CONTROL PROCEDURES.....	10
APPENDIX A -	GENERAL CONSIDERATIONS DURING THE DEVELOPMENT OF AN ATM CONTINGENCY PLAN FOR VOLCANIC ASH.....	13
APPENDIX B -	ANTICIPATED PILOT ISSUES WHEN ENCOUNTERING VOLCANIC ASH.....	15
APPENDIX C -	COMMUNICATION AND DISSEMINATION OF PILOT REPORTS OF VOLCANIC ACTIVITY	16
APPENDIX D-	ACTION TAKEN BY METEOROLOGICAL WATCH OFFICES (MWO) IN THE EVENT OF A VOLCANIC ERUPTION	21
APPENDIX E:	ACTION TO BE TAKEN BY THE AFI VAAC IN THE EVENT OF A VOLCANIC ERUPTION	22
APPENDIX F	RECOMMENDED ACTIONS BY STATES OF THE OPERATOR/REGISTRY WITH REGARDS TO AIRCRAFT OPERATIONS IN THE EVENT OF A VOLCANIC ERUPTION	23
APPENDIX G	EXAMPLE SAFETY RISK ASSESSMENT PROCESS	24
APPENDIX H	EXAMPLE TABLE OF CONSIDERATIONS FOR PLANNED OPERATIONS IN AIRSPACE OR TO/FROM AERODROMES WHICH MAY BE CONTAMINATED BY VOLCANIC ASH.	26
APPENDIX I	EXAMPLE OF A HAZARD LOG (RISK REGISTER).....	29

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

APPENDIX J - EXAMPLE SIGMET, NOTAM, ASHTAM.....	30

APPENDIX K – MAJOR VOLCANOES IN THE AFI REGION.....	33

1. TERMINOLOGY

1.1 Areas of Contamination

1.1.1 Information on areas of observed and/or forecast volcanic ash in the atmosphere is provided by means of appropriate MET messages in accordance with the *Meteorological Service for International Air Navigation* (Annex 3).

1.2 Danger Areas

1.2.1 If it is considered that the volcanic event could pose a hazard to aviation, a danger area³ may be declared by NOTAM; however, this option should only be applied over and in the proximity of the volcanic source. Normally, clearances will not be issued through the danger area unless explicitly requested by the flight crew. In this context it should be noted that the final responsibility for aircraft safety rests with the flight crew. Therefore, the final decision regarding route, whether it will be to avoid or proceed through an area of volcanic activity, is the flight crew's responsibility. Wherever this document discusses the possible establishment of danger areas, States are not prevented from establishing restricted or prohibited areas over the sovereign territory of the State if considered necessary by the State concerned.

1.2.2. Although it is the prerogative of the provider State to promulgate a danger area in airspace over the high seas, it should be recognized that restrictions to the freedom of flight over the high seas cannot be imposed in accordance with the United Nations Convention on the Law of the Sea (Montego Bay 1982).

1.3 Phases of an Event

1.3.1 The response to a volcanic event that affects air traffic has been divided into four distinct phases in this document - Pre-Eruption Phase, a Start of Eruption Phase, an On-going Eruption Phase, and a Recovery Phase-as follows:

- a) **PRE-ERUPTION PHASE** (when applicable): The initial response, “raising the alert”, commences when a volcanic eruption is expected.
 - 1) Appropriate AIS (NOTAM) and MET (VA SIGMET) messages may be issued in accordance with Annex 15 and Annex 3 respectively, and disseminated to affected aircraft in flight by the most expeditious means. It should be noted that, sometimes volcanoes erupt unexpectedly without any alert being raised, hence the pre-eruption phase may be omitted.
- b) **START OF ERUPTION PHASE** (when applicable): The start of eruption phase commences at the outbreak of the volcanic eruption and entrance of the volcanic ash into the atmosphere and mainly pertains to aircraft in flight. Appropriate AIS (NOTAM:ASHTAM) and MET (VA SIGMET) messages may be issued as appropriate in accordance with Annex 15 and Annex 3 respectively, and a danger area may be declared by NOTAM. Normally, clearances will not be issued through the danger area unless explicitly requested by the flight crew.
- c) **ONGOING ERUPTION PHASE:** The ongoing eruption phase commences with the issuance of the first volcanic ash advisory (VAA) containing information on the extent and movement of the volcanic ash cloud following completion of the previous reactive responses. Appropriate AIS

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

(NOTAM:ASHTAM) and MET (VA SIGMET) messages may be issued as appropriate in accordance with Annex 15 and Annex 3 respectively.

- d) **RECOVERY PHASE:** The recovery phase commences with the issuance of the first VAA containing a statement that “NO VA EXP” (i.e. “No Volcanic Ash Expected”) which normally occurs when it is determined that no volcanic activity has reverted to its pre-eruption state.

Note: These descriptions are amplified in Chapter 3 of this document.

1.3.2. Although the four distinct phases herein describe actions to be undertaken during an actual volcanic event, they are based on a theoretical scenario. Actual eruptions may not always be distinct with respect to ATM actions to be undertaken. Similarly, an eruption may occur without any pre-eruptive activity, or may cease and restart more than once. Hence, the first observation may be the presence of an ash cloud which is already some distance away from the volcano. It is essential that the contingency planning prepares the ATM system for an appropriate response depending on the actual conditions. Therefore, the “Pre-Eruption Phase” and “Start of Eruption Phase” described in this document are annotated “when applicable” in order to provide for flexibility in the application of the contingency plan in those parts of the world with insufficient volcano monitoring and alerting.

1.3.3 Flight crews are required to report observations of significant volcanic activity by means of a Special Air Report (AIREP). Arrangements should be put in place to ensure that such information is transferred without delay to the appropriate aeronautical institutions responsible for subsequent action. Reports (text to be included referring to **APPENDIX C**).

2. PRE-ERUPTION PHASE

2.1 General

2.1.1 Where flight operations are planned in areas that are susceptible to volcanic eruptions, ATS units may expect to receive from flight crews the ICAO Volcanic Activity Report (VAR) form (published in the *Procedures for Air Navigation Services – Air Traffic Management* (PANS-ATM, Doc 4444) Appendix 1).

2.1.2 The focus of this phase is to gain early recognition of volcanic events. This phase is frequently characterised by a limited availability of information on the potential extent and severity of the impending eruption. The priority is to ensure the continued safety of aircraft in flight, and there is therefore a requirement to promulgate information as a matter of urgency. Notwithstanding the potentially limited extent of information available, the pre-eruption phase actions described below should be carried out for every expected eruption..

2.1.3 The initial response, “raising the alert”, commences when a volcanic eruption is expected. Initial awareness of the event may be by means of an AIREP/VAR and/or from information provided by meteorological or volcanological agencies. Arrangements in each State between designated volcano observatories, meteorological and air traffic management agencies should ensure that alerting information is provided expeditiously by the most appropriate means (VA SIGMET, NOTAM or ASHTAM or re-transmitted AIREPs,) to provide continued safety of flight.

2.1.4 Emphasis is placed on raising awareness of the hazard and to protect aircraft in flight. The actions are based on well-prepared, well-exercised contingency plans and standard operating procedures. Aircraft are expected to clear or avoid the volcanic ash affected area based on standard operating procedures.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

2.2 Originating Area Control Centre (ACC) Actions (eruption in its own flight information region (FIR))

2.2.1 In the event of significant pre-eruption volcanic activity, which could pose a hazard to aviation, an area control centre (ACC)¹, on receiving information of such an occurrence, should carry out the following:

- a) ensure that appropriate AIS messages are originated in accordance with Annex 15. These must provide as precise information as is available regarding the activity of the volcano. It is imperative that this information is issued by the international NOTAM office and disseminated as soon as possible in accordance with the provisions of Annex 15;;
- b) when so required by the State, define an initial, precautionary danger area in accordance with established procedures. The size of the danger area should encompass a volume of airspace in accordance with the information available, aiming to avoid undue disruption of flight operations;
 - i) if no such procedures have been established, the danger area should be defined as a circle with a radius of xxx km (xx NM)². The circle should be centred on the estimated or known location of the volcanic activity;
 - ii) although ATC would not normally initiate a clearance through a danger area, it will inform aircraft about the potential hazard and continue to provide normal services. It is the responsibility of the pilot-in-command to determine the safest course of action.
- c) advise the associated Meteorological Watch Office (MWO) and the appropriate VAAC (unless the initial notification originated from such provider(s)), who will then inform the appropriate air traffic flow management (ATFM) units;.
- d) alert flights already within the area concerned and offer assistance to enable aircraft to exit the area in the most expeditious and appropriate manner. Flight crews should be provided with all necessary information required to make safe and efficient decisions in dealing with the hazards in the defined area. Flights which would be expected to penetrate the area should be re-cleared onto routes that will keep them clear; and
- e) immediately notify other affected ACCs of the event and the location and dimensions of the area concerned. The ACCs should also negotiate any re-routings necessary for flights already coordinated but still within adjacent flight information regions (FIRs). and provide any information on potential implications on traffic flow and its capability to handle the expected traffic. It is also expected that adjacent ACCs will be asked to reroute flights not yet coordinated to keep them clear of the area. It should be noted that flight crews may make the decision not to completely avoid the area based on, for example, visual observations.
- f) implement flow management measures if necessary to maintain the required level of safety.

Note 1. — In order to assist staff in expediting the process of composing the AIS messages, a series of templates should be available for this stage of the volcanic activity.

2.2.2 In addition to sending the relevant AIS messages to the normal distribution list, it will be sent to the relevant meteorological facilities, for example, agencies with the appropriate World Meteorological Organisation (WMO) header.

² The size of the area to be agreed in the region concerned.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

2.3 Adjacent ACC Actions

2.3.1 During the pre-eruption phase ATC will not normally initiate clearances through a danger area; however, it will inform aircraft about the potential hazard and continue to provide normal services. Any ash contamination should be contained within a limited area and disruption to traffic should not be excessive. Adjacent ACCs should take the following action to assist:

- a) when advised, re-clear flights to which services are being provided and which will be affected by the danger area; and
- b) unless otherwise instructed, continue normal operations and:
 - i) if one or more routes are affected by the area, suggest re-routings to the affected aircraft onto routes clear of the danger area; and
 - ii) maintain awareness of the affected area.

2.4. ATFM Unit Actions (where established)

2.4.1 The ATFM unit and the associated volcanic ash advisory centre (VAAC) will determine how their initial communications will take place on the basis of bilateral agreements. Upon reception of preliminary information on volcanic activity from the lead VAAC, the ATFM unit should initiate actions in accordance with its procedures to ensure exchange of information in order to support CDM between air navigation service providers (ANSPs), meteorological watch offices (MWOs), VAACs and aircraft operators concerned.

3. START OF ERUPTION PHASE

3.1 General

3.1.1 This phase commences at the outbreak of volcanic eruption with volcanic ash being ejected into the atmosphere. The focus of the processes in this phase is to protect aircraft in flight and at aerodromes from the hazards of the eruption through the collection and use of relevant information..

3.1.2 In addition to relevant actions described under the pre-eruption phase, major activities of the start of eruption phase are: Issuance of an eruption commenced VA SIGMET; eruption commenced NOTAM/ASHTAM; as well as provision of information and assistance to airborne traffic.. As appropriate, danger areas will be declared via NOTAM. This phase will last until such time as the on-going eruption phase can be activated.

3.2 Originating ACC Actions (eruption in its own FIR)

3.2.1 The ACC providing services in the FIR within which the volcanic eruption takes place should inform flights about the existence, extent and forecast movement of volcanic ash and provide information useful for the safe and efficient conduct of flights.

3.2.2 If necessary, rerouting of traffic should commence immediately or may be in progress if the alerting time has been sufficient to facilitate activation of the pre-eruption phase. The ACC should assist in rerouting aircraft around the danger area as expeditiously as possible. Adjacent ACCs should also take the danger area into account and give similar assistance to aircraft as early as possible.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

3.2.3 During the start of eruption phase, although ATC will not normally initiate a clearance through a danger area, it will inform aircraft about the hazard and will continue to provide normal services. It is expected that aircraft will attempt to remain clear of the danger area; however, it is the responsibility of the pilot-in-command to determine the safest course of action.

3.2.4 During the start of eruption phase the ACC should:

- a) ensure a NOTAM is originated to define a danger area delineated cautiously so as to encompass a volume of airspace in accordance with the limited information available. In determining the area, information on upper winds should be taken into account, if available. The purpose is to ensure safety of flight in the absence of any prediction from a competent authority of the extent of contamination;
- b) maintain close liaison with MET facilities (its associated MWO and the AFI VAAC, Toulouse), who should issue appropriate MET messages (“start of eruption” SIGMET message by the most expeditious means) in accordance with Annex 3;
- c) devise and update ATFM measures when necessary to ensure safety of flight operations, based on these forecasts and in cooperation with aircraft operators and the adjacent ACCs using the CDM process;
- d) ensure that reported differences between published information and observations (pilot reports, airborne measurements, etc.) are forwarded as soon as possible to the appropriate authorities to ensure its dissemination to all concerned;
- e) begin planning for the on-going eruption phase in conjunction with the aircraft operators, the appropriate ATFM unit/ACCs concerned; and
- f) issue appropriate AIS messages in accordance with Annex 15, should significant reductions in intensity of volcanic activity take place during this phase and the airspace no longer is contaminated by volcanic ash. Otherwise, begin CDM planning for the on-going eruption phase in conjunction with aircraft operators, the appropriate ATFM unit and the affected ACCs.

3.3 Adjacent ACC Actions

3.3.1 During the start of eruption phase adjacent ACCs should take the following actions:

- a) maintain close liaison with the appropriate ATFM unit and the originating ACC to design, implement and keep up to date ATFM/ACC measures which will enable aircraft to ensure safety of flight operations.
- b) the adjacent ACC, in cooperation with the originating ACC and aircraft operators, should impose as required additional tactical measures to those issued by the appropriate ATFM unit;
- c) maintain awareness of the affected area; and
- d) begin planning for the on-going eruption phase in conjunction with the aircraft operators, the appropriate ATFM unit and the ACCs concerned.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

3.4. ATFM UNIT ACTIONS (where established)

3.4.1. During the start of eruption phase, depending on the impact and/or extent of the volcanic ash, the appropriate ATFM unit should organise the exchange of latest information on the developments with the associated VAACs, ANSPs, MWOs and operators concerned in order to support CDM.

4. ONGOING ERUPTION PHASE

4.1 The on-going eruption phase commences with the issuance of the first volcanic ash advisory (VAA) by the Toulouse VAAC which contains information on the extent and movement of the volcanic ash cloud in accordance with Annex 3 provisions.

Note. — Volcanic ash advisory information in graphical format (VAG) may also be issued by the VAAC, containing the same information as its text-based VAA equivalent.

4.2 The VAA/VAG should be used to prepare appropriate AIS and MET messages in accordance with Annex 15 and Annex 3 provisions respectively, and plan and apply appropriate ATFM measures.

4.3 The volcanic contamination may affect any combination of airspace; therefore, it is not possible to prescribe measures to be taken for all situations. Furthermore it not possible to detail the actions to be taken by any particular ACC. The following guidance therefore may prove useful during the on-going eruption phase but should not be considered mandatory or exhaustive:

- a) ACCs affected by the movement of the volcanic ash should ensure that appropriate AIS messages are originated in accordance with Annex 15. ACCs concerned and the appropriate ATFM unit should continue to publish details on measures taken to ensure dissemination to all concerned;
- b) depending on the impact and/or extent of the volcanic ash, the appropriate ATFM unit/ACC may take the initiative to organise teleconferences to exchange latest information on the developments, in order to support CDM, with the VAACs, ANSPs and MWOs and operators concerned;
- c) ACCs and ATFM units should be aware that for the purposes of flight planning, operators could treat the horizontal and vertical extent of the volcanic ash contaminated area to be over-flown as if it were mountainous terrain; and
- d) any reported differences between published information and observations (pilot reports, airborne measurements, etc.) should be forwarded as soon as possible to the appropriate (see **Appendix C**).

5. RECOVERY PHASE

5.1 The recovery phase commences with the issuance of the first VAA/VAG containing a statement that “NO VA EXP” (i.e. no volcanic ash expected”) - which normally occurs when it is determined that the volcanic activity has reverted to its pre-eruption state and the airspace is no longer affected by volcanic ash contamination. Consequently, appropriate AIS messages (i.e. NOTAMC cancelling the active NOTAM, and a new NOTAM/ASHTAM) should be issued in accordance with Annex 15.

5.2. ACCs and ATFM units should revert to normal operations as soon as practical.

6. AIR TRAFFIC CONTROL PROCEDURES

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

6.1 If volcanic ash cloud is reported or forecasted in the FIR for which the ATS unit is responsible, the following actions should be taken:

- a) relay all pertinent information immediately to flight crews whose aircraft could be affected to ensure that they are aware of the ash cloud's position and levels affected;
- b) request the intention of the flight crew and endeavour to accommodate requests for re-routing or level changes;
- c) suggest appropriate re-routing to the flight crew to avoid an area of reported or forecast ash clouds; and;
- d) request a special air-report when the route of flight takes the aircraft into or near the forecast ash cloud and provide such special air-report to the appropriate agencies.

Note 1.— The recommended escape manoeuvre for an aircraft which has encountered an ash cloud is to reverse its course and begin a descent if terrain permits.

Note 2. — The final authority as to the disposition of the aircraft, whether it be to avoid or proceed through a reported or forecast volcanic ash cloud, rests with the flight crew.

6.2

When advised by the flight crew that the aircraft has inadvertently entered a volcanic ash cloud, the ATS unit should:

- a) take such action applicable to an aircraft in an emergency situation; and
- b) not initiate modifications of route or level assigned unless requested by the flight crew or necessitated by airspace requirements or traffic conditions.

Note 1.— General procedures to be applied when a pilot reports an emergency situation are contained in Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444) Chapter 15, 15.1.1 and 15.1.2.

Note 2.— Guidance material concerning the effect of volcanic ash and the impact of volcanic ash on aviation operational and support services is provided in Chapters 4 and 5 of the Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds (Doc 9691).

7. ATFM PROCEDURES

7.1. Depending on the impact and/or extent of the volcanic ash and in order to support CDM, the appropriate ATFM unit should organize the exchange of the latest information on the developments with the associated VAACs, ANSPs, MWOs and operators concerned.

7.2. The ATFM unit will apply ATFM measures on request of the ANSPs concerned. The measures should be reviewed and updated in accordance with updated information. Operators should also be advised to maintain watch for relevant AIS and MET messages for the area.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
*First Edition – October 2012***

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

APPENDIX A - GENERAL CONSIDERATIONS DURING THE DEVELOPMENT OF AN ATM CONTINGENCY PLAN FOR VOLCANIC ASH³

1. In a contingency plan relating to volcanic contamination, certain steps need to be taken to provide a coordinated and controlled response for dealing with an event of this nature. Responsibilities should be clearly defined to ATS personnel.. The plan should also identify the officials who need to be contacted, the type of messages that are to be created, the proper distribution of the messages and how to conduct business.
 2. ATS personnel need to be trained and be made aware of the potentially hazardous effects if an aircraft encounters a volcanic ash cloud. Some particular aspects include:
 - a) volcanic ash contamination may extend for hundreds, or even thousands of miles horizontally and reach the stratosphere vertically;
 - b) volcanic ash may block the pitot-static system of an aircraft, resulting in unreliable airspeed indications;
 - c) braking conditions at airports where volcanic ash has recently been deposited on the runway will affect the braking ability of the aircraft. This is more pronounced on runways contaminated with wet ash. Flight crews and ATS personnel should be aware of the consequences of volcanic ash being ingested into the engines during landing and taxiing. For departure, it is recommended that pilots avoid operating in visible airborne ash; instead they should allow sufficient time for the particles to settle before initiating a take-off roll, in order to avoid ingestion of ash particles into the engine. In addition, the movement area to be used should be carefully swept before any engine is started;
 - d) volcanic ash may result in the failure or power loss of one or all engines of an aircraft; and
 - e) aerodromes with volcanic ash deposition may be declared unsafe for flight operations. This might have consequences for the ATM system.
 4. The area control centre (ACC) in conjunction with air traffic flow management (ATFM) units, where established, serves as the critical communication link between affected aircraft in flight and the information providers during a volcanic eruption. During episodes of volcanic ash contamination within the flight information region (FIR), the ACC has two major communication roles. First and most important is its ability to communicate directly with aircraft en-route which may encounter the ash. Based on the information provided in SIGMET information for volcanic ash and volcanic ash advisories (VAAs) and working with meteorological watch offices (MWOs), ATS personnel should be able to advise the flight crew of which flight levels are affected by the ash and the forecast movement of the contamination. Through the use of various communication means, ATS units have the capability to coordinate with the flight crew alternative routes which would keep the aircraft away from the volcanic ash cloud..
 5. Similarly, through the origination of a NOTAM/ASHTAM for volcanic activity the ACC can disseminate information on the status and activity of a volcano even for pre-eruption increases in volcanic activity. NOTAM/ASHTAM and SIGMET, together with AIREPs, are critical to dispatchers for flight planning purposes. Operators need as much advance notification as possible on the status of a volcano for strategic planning of flights and the safety of the flying public. Dispatchers need to be in communication with flight crews en-route so that a coordinated decision can be made between the flight crew, the dispatcher and ATS regarding alternative routes that
-

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

are available. The ACC should advise the ATFM unit concerning the availability of alternative routes. It cannot be presumed, however, that an aircraft which is projected to encounter ash will be provided with the most desirable route to avoid the contamination. Other considerations have to be taken into account such as existing traffic levels on other routes and the amount of fuel reserve available for flights which may have to be diverted to other routes to allow for the affected aircraft to divert.

6. The NOTAM/ASHTAM for volcanic activity provides information on the status of activity of a volcano when a change in its activity is, or is expected to be, of operational significance. They are originated by the ACC and issued through the respective international NOTAM office based on the information received from any one of the observing sources and/or advisory information provided by Toulouse Volcanic Ash Advisory Centre (VAAC). In addition to providing the status of activity of a volcano, the NOTAM/ASHTAM also provides information on the location, extent and movement of the ash contamination and the air routes and flight levels affected. NOTAM can also be used to limit access to the airspace affected by the volcanic ash. Complete guidance on the issuance of NOTAM and ASHTAM is provided in Annex 15 — *Aeronautical Information Services*. Included in Annex 15 is a volcano level of activity colour code chart. The colour code chart alert may be used to provide information on the status of the volcano, with “red” being the most severe, i.e. volcanic eruption in progress with an ash column/cloud reported above flight level 250, and “green” at the other extreme being volcanic activity considered to have ceased and volcano reverted to its normal pre-eruption state. It is very important that NOTAM for volcanic ash be cancelled and ASHTAM be updated as soon as the volcano has reverted to its normal pre-eruption status, no further eruptions are expected by volcanologists and no volcanic ash is detectable or reported within the FIR concerned.

7. It is essential that the procedures to be followed by ATS personnel during a volcanic eruption, as well as supporting services such as MET, AIS and ATFM, should be translated into local staff instructions (adjusted as necessary to take account of local circumstances). It is also essential that such local staff instructions form part of the basic training for all ATS, AIS, ATFM and MET personnel whose jobs would require them to take action in accordance with the procedures. Background information to assist the ACC or flight information centre (FIC) in maintaining an awareness of the status of activity of volcanoes in their FIR(s) is provided in the monthly Scientific Event Alert Network Bulletin published by the United States Smithsonian Institution and sent free of charge to ACCs/FICs requesting it.

— — — — —

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

APPENDIX B - ANTICIPATED PILOT ISSUES WHEN ENCOUNTERING VOLCANIC ASH

1. ATS personnel should be aware that flight crews will be immediately dealing with some or all of the following issues when they encounter volcanic ash:

- a) smoke or dust appearing in the cockpit which may prompt the flight crew to don oxygen masks (could interfere with the clarity of voice communications);
- b) acrid odour similar to electrical smoke;
- c) multiple engine malfunctions, such as stalls, increasing exhaust gas temperature (EGT), torching, flameout, and thrust loss causing an immediate departure from assigned altitude;
- d) on engine restart attempts, engines may accelerate to idle very slowly, especially at high altitudes (could result in inability to maintain altitude or Mach number);
- e) at night, St. Elmo's fire/static discharges may be observed around the windshield, accompanied by a bright orange glow in the engine inlet(s);
- f) possible loss of visibility due to cockpit windows becoming cracked or discoloured, due to the sandblast effect of the ash;
- g) because of the abrasive effects of volcanic ash on windshields and landing lights, visibility for approach and landing may be markedly reduced. Forward visibility may be limited to that which is available through the side windows; and/or
- h) sharp distinct shadows cast by landing lights as compared to the diffused shadows observed in clouds (this affects visual perception of objects outside the aircraft).

2. Simultaneously, ATS personnel can expect flight crews to be executing contingency procedures such as the following:

- a) if possible, the flight crew may immediately reduce thrust to idle;
- b) exit volcanic ash cloud as quickly as possible. The shortest distance/time out of the ash may require an immediate, descending 180-degree turn (terrain permitting);
- c) don flight crew oxygen masks at 100 per cent (if required);
- d) monitor airspeed and pitch attitude. If unreliable airspeed is suspected, or a complete loss of airspeed indication occurs (volcanic ash may block the pitot system), the flight crew will establish the appropriate pitch attitude;
- i) land at the nearest suitable airport; and
- j) on landing, reverses may be used as lightly as feasible.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

APPENDIX C - COMMUNICATION AND DISSEMINATION OF PILOT REPORTS OF VOLCANIC ACTIVITY

1. INTRODUCTION

1.1 ICAO Annex 3 — Meteorological Service for International Air Navigation (paragraph 5.5, g) and h)) prescribes that volcanic ash clouds, volcanic eruptions and pre-eruption volcanic activity, when observed, shall be reported by all aircraft. The ICAO Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444) contain detailed provisions on this special air report requirement in paragraphs 4.12.3 and 4.12.5, and the Volcanic Activity Report form in Appendix 1.

1.2 Experience has shown that reporting and sharing of information on volcanic ash encounters in accordance with the above mentioned provisions (in-flight and post-flight) varies across the world. The efficiency and quality of reporting currently depends heavily on regional characteristics and the level of regional integration. A high level of global harmonization is essential to achieve the desired level of implementation and consistency of the information.

2. PURPOSES OF VOLCANIC ASH REPORTING AND DATA COLLECTION

2.1 The main purposes for volcanic ash reporting and data collection are to:

- a) locate the volcanic hazards;
- b) notify immediately other aircraft (in-flight) about the hazard;
- c) notify other interested parties: ANSPs (ATC, AIS, ATFM), VAACs, MWO, etc to ensure the consistent production of appropriate information and warning products in accordance with existing provisions;
- d) analyse collected reports from the post-flight phase in order to:
 - i) identify areas of concern;
 - ii) validate and improve volcanic ash forecasts;
 - iii) improve existing procedures;
 - iv) assist in defining better airworthiness requirements; and
 - v) share lessons learned, etc.

3. PHASE OF OPERATIONS

3.1 The roles and responsibilities of the participants in the collection, exchange and dissemination of the volcanic information are distinctly different in two distinct phases:

- a) in-flight; and
- b) post-flight.

3.2 The following section analyses these separately.

4. PARTICIPANTS IN THE REPORTING PROCESS, THEIR ROLES AND RESPONSIBILITIES

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

4.1 Identification of the participants as well as their roles and responsibilities in general, but specifically during the two different phases of operations, is an important element in improving collection, exchange and dissemination of volcanic information. The number of participants and their roles and responsibilities depends on the phase of operations (in-flight, post-flight), their position in the information chain within one of these two phases and national/regional arrangements. One of the main issues regarding participants' roles and responsibilities is that each of them is, at one time or another, both a data/information provider and user of the information.

4.2 *In-Flight Phase*

4.2.1 Participants, Roles & Responsibilities

	Participants	Roles & Responsibilities
1	Pilots, civil and/or military, observing and/or encountering volcanic activity	To provide as much detailed information as possible about the type, position, colour, smell, dimensions of the volcanic contamination, level and time of the observation and forward VAR Part I immediately to the ATS unit with which the pilot is in radiotelephony (R/T) communication. Record the information required for VAR Part II on the appropriate form as soon as possible after the observation or encounter, and file the report via data link, if available.
2	ATS unit receiving the information from the pilot encountering volcanic event	To ensure that information received by an air traffic controller from the pilot has been copied, clarified (if necessary) and disseminated to other pilots as well as to the ACC Supervisor. In addition, air traffic controllers could ask other pilots flying within the same area if they have observed any volcanic activity
3	ATS unit/ACC Supervisor (if applicable) or other responsible person within the Air Navigation Service Provider	To use all means of communication and available forms to ensure that the information received from the air traffic controller has been: • passed on to the associated Meteorological organizations in accordance with national/regional arrangements; • fully and immediately disseminated across the organization, in particular to adjacent sectors and the associated NOTAM Office (NOF); • passed on to the neighbouring sectors and ACCs (if necessary); • passed on to the regional ATFM centre if existing (e.g. CFMU in AFI); • passed on to the national/regional authority responsible for the handling of contingency situations
4	Neighbouring ANSPs (ACCs etc.)	To ensure that information is provided to flight crews flying towards the area affected by the volcanic contamination; disseminated across the organization and the system prepared to cope with the possible changes of the traffic flows; and that the information is provided to the national authority responsible for the handling of contingency situations and passed on to the NOF and MWO as required
5	MET Watch Office	To use the information originated by flight crews and forwarded by the ATS unit which received the information in accordance with Annex 3
6	VAAC	To use the information originated by flight crews, MWOs and other competent sources in accordance with Annex 3
7	AIS / NOF	To publish appropriate AIS messages in accordance with Annex 15

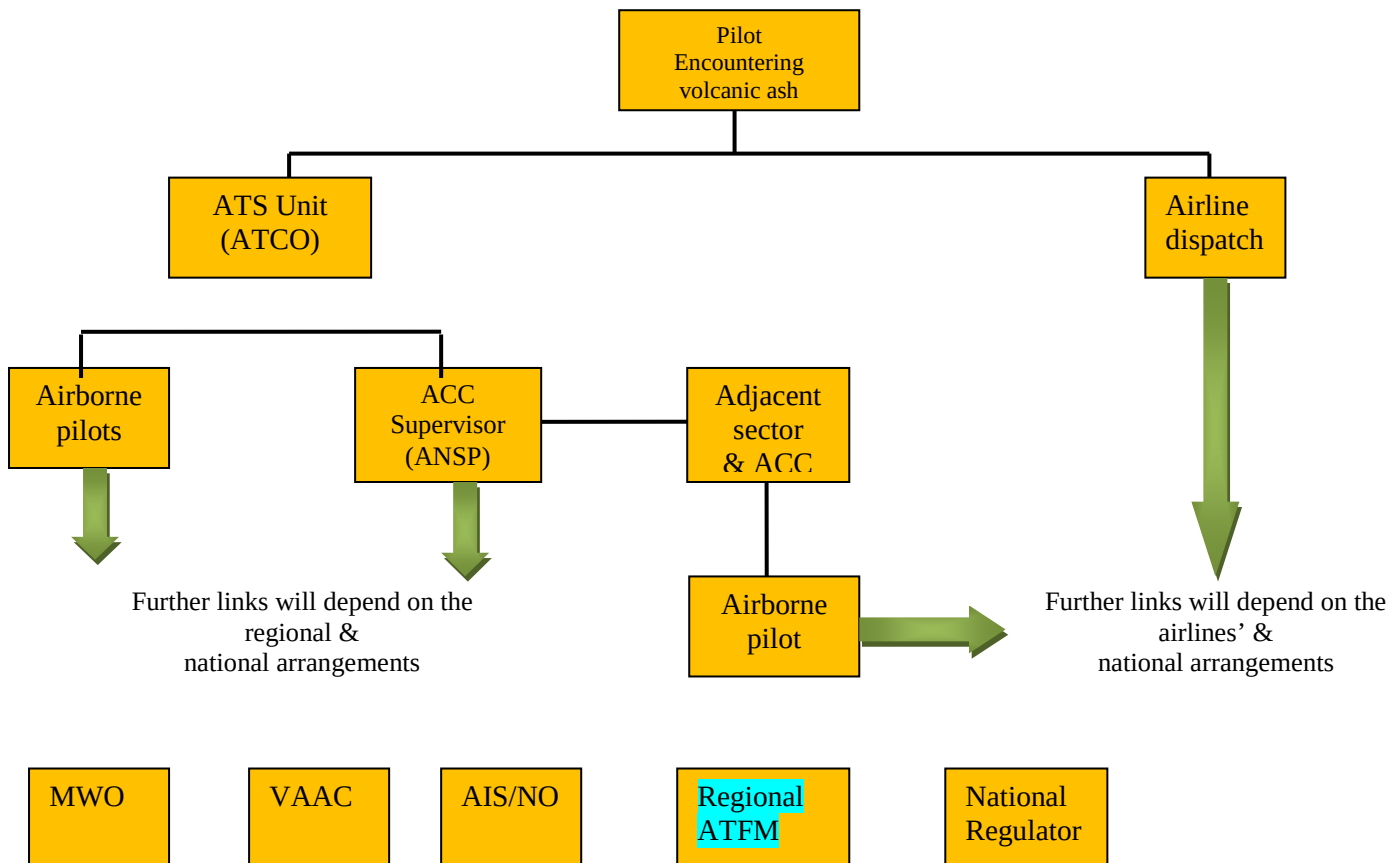
**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

8	ATFM unit or centre (if existing)	To ensure that information received is stored and made available for information to all partners in its area of responsibility (ANSPs, airlines, VAAC, MET etc.). As part of the daily activity, coordinate ATFM measures with ACCs concerned.

4.2.2 In-flight reporting – Sample Flow Chart of the volcanic ash information

4.2.2.1 The chart below is a graphical representation of a possible path of the in-flight volcanic ash information and may differ between regions depending on regional arrangements. It also gives the position of the volcanic ash participants in the reporting chain. The flow chart is not exhaustive and the path of the information can be extended and new participants could be added depending of the national and regional requirements.



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

4.3 *Post-Flight Operations Roles & Responsibilities and order of reporting*

	Participants	Roles & Responsibilities
1	Civil and/or military pilots/airlines having observed or encountered an eruption or volcanic contamination	To file the volcanic ash report with as much detailed information as possible about the volcanic activity and/or encounter (position, colour, smell, dimensions, FL, time of observation, impact on the flight, etc.). Ensure that the VAR is filed and transmitted to the relevant recipients as soon as possible after landing (if not filed via datalink already during the flight). Make an entry into the Aircraft Maintenance Log (AML) in case of an actual or suspected encounter with volcanic contamination
2	ANSP	To provide a summary report of effects of the volcanic activity that affected its operations at least once per day to the national authority with as much detailed information as possible about the number of encounters, impact on air traffic management, etc.)
3	AOC Maintenance - Post flight Inspection	To report about the observation of the aircraft surfaces, engine, etc, and to provide the information to the national (or regional or global, where applicable) central data repository
4	Investigation authority	All aeronautical service providers (including operators, ANSPs, airports, etc) shall investigate the effects of a volcanic activity, analyze the information and search for conclusions; and report the investigation results and relevant information to the national supervisory authority and any central data repository.
5	National Authority	To handle the national central data repository and report to the regional/global central data repository if any. To analyze reports from its aeronautical service providers and take action as appropriate
6	Regional Central Data Repository	To collect the national data and make them available to interested stakeholders under agreed conditions
7	MWO	To use the national and regional information coming from national and regional central data repositories
8	VAAC	To use the information originated by flight crews, and other competent sources to: a) validate its products accordingly and; a) b) improve the forecast
9	Global Data Repository (and research institutes - where appropriate)	To analyse the information stored in the regional central data repository and provide the research outcomes for lessons learnt process.
10	Knowledge management (e.g. SKYbrary)	To use the post-flight lessons learnt and disseminate them to interested stakeholders.
11	ICAO	To review/revise ATM volcanic ash contingency plans.

4.4 *Tools for presenting and sharing the volcanic ash information*

4.4.1 To report, transmit and disseminate the volcanic ash encounter information, different types of tools can be used. The list below is provided to give ideas as to what tools can be used. It could also be split into regulatory and general information tools. At any case, it is not an exhaustive list and can be updated with new elements depending on regional experiences.

- a) Radiotelephony and Data link Communications
- b) VAR

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
*First Edition – October 2012***

- c) NOTAM/ASHTAM
- d) SIGMET
- e) VAA/VAG
- f) Central data repository e.g. CFMU Network Operations Portal (NOP)
- g) Centralized web based sites with the regularly updated information and maps – e.g. EVITA - <http://www.eurocontrol.int/services/evita-european-crisis-visualisation-interactive-tool-atfcm>
- h) Teleconferences
- i) Periodic Bulletins with the set of information defined by the data providers and data users; e.g. Smithsonian Institution Weekly Bulletin.
- j) Centralized internet-based sites for the sharing of lessons learnt (Knowledge management – e.g. SKYbrary http://www.skybrary.aero/index.php/Main_Page)

- END -

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

APPENDIX D- ACTION TAKEN BY METEOROLOGICAL WATCH OFFICES (MWO) IN THE EVENT OF A VOLCANIC ERUPTION⁴

1. On receipt of information of a volcanic eruption and/or the existence of volcanic ash, the MWO will:
 - a) Notify, if necessary, the AFI VAAC (Toulouse) designated to provide VAA/VAG for the FIR for which the MWO is responsible that a volcanic eruption and/or ash has been reported. In the event that the MWO becomes aware, from a source other than an ACC, of the occurrence of pre-eruption activity, a volcanic eruption or ash from any other source, the information will be passed with all available relevant details on the extent, forecast movement of volcanic ash immediately to the ACC and to the designated VAAC;
 - b) Reported differences between ash encounters by aircraft and the information published in VAA/VAG, SIGMET or NOTAM/ASHTAM received by an ACC shall be made available as soon as possible to the respective MWO, preferably in the form of an AIREP. The MWO will relay the information to the respective originators of the published information;
 - c) Notify adjacent MWOs designated to provide SIGMET that a volcanic eruption and/or ash cloud has been reported, provide available relevant details on the extent, forecast movement of volcanic ash. In the event that any other MWO becomes aware of the occurrence of volcanic ash cloud from any source other than the VAAC, the information should be passed immediately to the VAAC and any adjacent MWO(s) downstream of the moving ash cloud;
 - d) As soon as practicable, advise the ACC and the VAAC whether or not the volcanic ash is identifiable from satellite images/data, ground based or airborne measurements or other relevant sources;
 - e) Issue SIGMET relating to the horizontal and vertical extent of volcanic ash cloud and its expected movement (provided in the VA from Toulouse VAAC) for a validity period of up to 6 hours. The SIGMET shall include an observed (or forecast) position of the ash cloud at the *start* of the period of validity, and a forecast position at the *end* of the period of validity. The SIGMET should be based on the advisory information provided by the VAAC. Include in the SIGMET distribution list the two Regional OPMET Databanks (RODBs) in Dakar and Johannesburg (Pretoria RODB). As well as inter-regional distribution, the RODBs will ensure dissemination of the SIGMET to all the VAAC, the London World Area Forecast Centre (WAFC) and the AFI Bulletin Compiling Centres (BCC);
 - f) provide information to assist with the origination of NOTAM by ACCs and maintain continuous coordination with ACCs, adjacent MWOs and the VAAC concerned to ensure consistency in the issuance and content of SIGMET and NOTAM/ASHTAM; and
 - g) provide, if possible, regular volcanic briefings, based on the latest available ash observations and forecasts, to ACCs, Airport Operators and aircraft operators concerned, giving an outlook for beyond T+12 hours.

⁴ This information is adapted from the *Handbook on the International Airways Volcano Watch (IAVW)* (Doc 9766). Refer to this document for full details.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

**APPENDIX E: ACTION TO BE TAKEN BY THE AFI VAAC IN THE EVENT OF A
VOLCANIC ERUPTION⁵**

1. On receipt of information from a MWO or any other source, of significant pre-eruptive/eruption activity and/or a volcanic ash cloud observed, the VAAC should:
 - a) Initiate the volcanic ash computer trajectory/dispersal model in order to provide advisory information on volcanic ash trajectory to MWOs, ACCs and operators concerned;
 - b) Review satellite images/data and any available pilot reports of the area for the time of the event to ascertain whether a volcanic ash cloud is identifiable and, if so, its extent and movement;
 - c) Prepare and issue advisories on the extent, and forecast trajectory, of the volcanic ash contamination in message format for transmission to the MWOs, ACCs and operators concerned in the VAAC area of responsibility, and to the two Regional OPMET Data Banks (RODB) in Dakar and Pretoria. As well as inter-regional distribution, the RODBs will ensure dissemination of the advisory to all VAACs, the London World Area Forecast Centre (WAFc);
 - d) Monitor subsequent satellite information or other available observations to assist in tracking the movement of the volcanic ash;
 - e) Continue to issue advisory information (i.e. VAA/VAG), for validity periods T+0, T+6, T+12 and T+18 hours after data time, to MWOs, ACCs and operators concerned at least at 6 hour intervals, and preferably more frequently, until such time as it is considered that the volcanic ash is no longer identifiable from satellite data, no further reports of volcanic ash are received from the area and no further eruptions of the volcano are reported; and
 - f) Maintain regular contact with other VAACs and meteorological offices concerned, and, as necessary, the Smithsonian Institute Global Volcanism Network, in order to keep up to date on the activity status of volcanoes in the VAAC area of responsibility.

END

⁵ This information is adapted from the *Handbook on the International Airways Volcano Watch (IAVW)* (Doc 9766). Refer to this document for full details.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

**APPENDIX F RECOMMENDED ACTIONS BY STATES OF THE
OPERATOR/REGISTRY WITH REGARDS TO AIRCRAFT OPERATIONS
IN THE EVENT OF A VOLCANIC ERUPTION**

Safety Risk Assessments For Flights In Airspace Proximate To Volcanic Ash

1 Introduction

- 1.1 It is recommended that States of the Operator/Registry as appropriate which intend to allow operators under their jurisdiction to operate in areas of volcanic ash contamination consider requiring operators to carry out a safety risk assessment prior to carrying out such operations.
- 1.2 Safety risk assessments should be completed prior to planned operations in airspace or to/from aerodromes which may be contaminated by volcanic ash.

2 Applicability

- 2.1 All operators conducting flights in airspace and/or to/from aerodromes which could be affected by volcanic ash.

3 Recommendations

- 3.1 In accordance with ICAO Annex 6, Chapter 3, paragraph 3.3- Safety Management, it is recommended that States of the Operator/Registry as appropriate require all operators, planning to operate in areas where the presence of volcanic ash is forecast, to carry out a safety risk assessment prior to planned operations. The safety risk assessment should include a requirement for the operator to:
 - a) Conduct their own risk assessment and develop operational procedures to address any remaining risks;
 - b) Put in place appropriate maintenance ash damage inspections; and
 - c) Ensure that any ash related incidents are reported by AIREP and followed up by a Volcanic Activity Report (VAR).
 - 3.2 Guidance in the preparation of such a safety risk assessment is provided in **APPENDIX H** of this document.
-

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

APPENDIX G EXAMPLE SAFETY RISK ASSESSMENT PROCESS

1 Introduction

- 1.1 The safety risk assessment process is described in the *Safety Management Manual* (Doc 9859) .The process involves identifying the hazards associated with the activity (in this case airspace proximate to volcanic ash or flying to and from aerodromes affected by volcanic ash), considering the seriousness of the consequences of the hazard occurring (the severity), evaluating the likelihood or probability of it happening, deciding whether the consequent risk is acceptable and within the organisation's safety performance criteria (acceptability), and finally taking action to reduce the safety risk to an acceptable level (mitigation).

2 Hazard Identification

- 2.1 A hazard is any situation or condition that has the potential to cause adverse consequences. A suggested list of topics, that is not necessarily exhaustive, to be considered is attached at **APPENDIX I**.

3 The Safety Risk Assessment

- 3.1 Risk is an assessment of the likelihood and the severity of adverse consequences resulting from a hazard.
- 3.2 To help an operator decide on the likelihood of a hazard causing harm, and to assist with possible mitigation of any perceived safety risk, all relevant stakeholders should be consulted.
- 3.3 The safety risk from each hazard should be assessed using a suitably calibrated safety risk assessment matrix. An example risk assessment matrix is given in *Safety Management Manual* (Doc 9859) but an alternative which aligns with an organisation's own Safety Management System (SMS) would be equally appropriate. The safety risk should be derived by considering the severity of the safety outcome arising from the hazard, together with the likelihood of the outcome.
- 3.4 The severity of any adverse consequences resulting from a particular hazard should be assessed using a suitably calibrated severity scale. Example scales are given in *Safety Management Manual* (Doc 9859) but an alternative, which aligns with an organisation's own SMS, would be equally appropriate. Note that, for any flight, the safety outcome of a volcanic ash encounter may be significant.

3.5 Risk Likelihood

- 3.5.1 The likelihood or probability of adverse consequences resulting from a particular hazard should then be assessed. The likelihood should be agreed using a suitably calibrated likelihood or probability scale. An example probability scale is given in *Safety Management Manual* (Doc 9859), but an alternative which aligns with an organisation's own SMS would be equally appropriate.
- 3.5.2 When assessing likelihood or probability the following factors should be taken into account:
- The degree of exposure to the hazard.
 - Any historic incident or safety event data relating to the hazard. This can be derived from data from industry, regulators, other operators, Air Navigation Service Providers, internal reports etc.
 - The expert judgement of relevant stakeholders.
- 3.5.3 The results of the assessment should be recorded in a hazard log, sometimes referred to as a risk register. An example of a hazard log is at **APPENDIX J**.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

3.6 Risk Tolerability

- 3.6.1 At this stage of the process the safety risks should be classified in a range from acceptable to unacceptable. A suitable set of definitions for Risk Classification is given in *Safety Management Manual* (Doc 9859).
- 3.6.2 Appropriate mitigations for each identified hazard should then be considered, recorded on the hazard log and implemented. Mitigations must be adopted in order to reduce the safety risks to an acceptable level, but additional mitigation wherever reasonably practicable should also be considered where this might reduce an already acceptable safety risk even further. Thus, the mitigation process should reduce the safety risk to be as low as reasonably practicable.
- 3.6.3 Not all hazards can be suitably mitigated in which case the operation should not proceed.

3.7 Mitigating Actions

- 3.7.1 Mitigating actions by themselves can introduce new hazards. Where an organisation has an effective SMS then procedures will exist for continual monitoring of hazard, risk and involvement of qualified personnel in accepting the mitigating actions or otherwise. Operators without an effective SMS should repeat the safety risk assessment following any mitigation process and at regular intervals as the circumstances on which the original assessment was predicated may have changed. This ensures ongoing safety management or monitoring.

3.8 Records

- 3.8.1 The results of the safety risk assessment should be documented and promulgated throughout the organisation and submitted to the operator's national safety authority. Actions should be completed and mitigations verified and supported by evidence prior to the start of operations.
- 3.8.2 Any assumptions should be clearly stated and the safety risk assessment reviewed at regular intervals to ensure the assumptions and decisions remain valid.
- 3.8.3 Any safety performance monitoring requirements should also be identified and undertaken through the organisation's safety management processes.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

APPENDIX H

**EXAMPLE TABLE OF CONSIDERATIONS FOR PLANNED OPERATIONS
IN AIRSPACE OR TO/FROM AERODROMES WHICH MAY BE
CONTAMINATED BY VOLCANIC ASH.**

Considerations	Guidance
Operator Procedures	
Type Certificate Holder Guidance	Operators must obtain advice from the Type Certificate Holder and engine manufacturer concerning both operations in potentially contaminated airspace and/or to/from aerodromes contaminated by volcanic ash, including subsequent maintenance action.
Guidance for Company Personnel	Publish procedures for flight planning, operations and maintenance. Review of flight crew procedures for detection of volcanic ash and associated escape manoeuvres. Type Certificate Holder advice on operations to/from aerodromes contaminated by volcanic ash including performance.
Flight Planning	These considerations will be applicable to all flights that plan to operate in airspace or to/from aerodromes which may be contaminated by volcanic ash.
NOTAM and ASHTAM	The operator must closely monitor NOTAM and ASHTAM to ensure that the latest information concerning volcanic ash is available to crews.
SIGMETs	The operator must closely monitor SIGMETs to ensure that the latest information concerning volcanic ash is available to crews.
Departure, Destination and any Alternates	Degree of contamination, additional performance, procedures and maintenance consideration.
Routing Policy	Shortest period in and over contaminated area.
Diversion Policy	Maximum allowed distance from a suitable alternate. Availability of alternates outside contaminated area. Diversion policy after an ash encounter.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

Minimum Equipment List / Dispatch Deviation Guide	Consider additional restrictions for dispatching aircraft: • air conditioning packs; • engine bleeds; • air data computers; • standby instruments; • navigation systems; • Auxiliary Power Unit (APU); • Airborne Collision Avoidance System (ACAS); • Terrain Awareness Warning System (TAWS); • provision of crew oxygen; and • supplemental oxygen for passengers. (This list is not necessarily exhaustive.)

Considerations	Guidance
Operator Procedures	
Provision of Enhanced Flight Watch	Timely information to and from crew of latest information.
Fuel Policy	Consideration to the carriage of extra fuel.

Considerations	Guidance
Crew Procedures	These considerations will be applicable to all flights that plan to operate in airspace or to/from aerodromes which may be contaminated by volcanic ash.
Pilot Reports	Requirements for reporting in the event of an airborne encounter. Post-flight reporting.
Mandatory Reports Occurrence	Reminder regarding the necessity for filing MORs following an encounter.
Standard Procedures Operating	Review changes to normal and abnormal operating procedures: • pre-flight planning; • operations to/from aerodromes contaminated with volcanic ash; • supplemental oxygen; • engine-out procedures; and • escape routes. (This list is not necessarily exhaustive.)

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

Technical Log	Any actual or suspected volcanic ash encounter will require a tech log entry and appropriate maintenance action prior to subsequent flight. Penetration (detail and duration) of airspace or operations to/from aerodromes which may be contaminated by volcanic ash will require a tech log entry.

Considerations	Guidance
Maintenance Procedures	Operators, who are operating in areas of ash contamination, are recommended to enhance vigilance during inspections and regular maintenance and potentially adjust their maintenance practices, based upon the observations, to prevent unscheduled maintenance. Observations should include signs of unusual or accelerated abrasions, corrosion and / or ash accumulation. Operator co-operation is requested in reporting to manufacturers and the relevant authorities their observations and experiences from operations in areas of ash contamination. If significant observations are discovered beyond normal variations currently known, manufacturers will share these observations, and any improved recommendations for maintenance practices, with all operators and the relevant authorities.

Note: The above list is not necessarily exhaustive and operators must make their own assessments of the hazards on the specific routes they fly.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

APPENDIX I EXAMPLE OF A HAZARD LOG (RISK REGISTER)

HAZARD		Incident Sequence Description	Existing Control s	Outcome (Pre- Mitigation)			Additional Mitigation Required	Outcome (Post-Mitigation)			Actions and Owners	Monitoring and Review Requirements
No.	Description			Severity	Likelihood	Risk		Severity	Likelihood	Risk		

(Add additional rows as necessary)

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

APPENDIX J - EXAMPLE SIGMET, NOTAM, ASHTAM

Guidance on WMO headers referred to in Alerting Phase, paragraph 1.2.2 refers can be found in WMO No.386 Volume I (*Manual of Global Telecommunications System*) Part II (*Operational Procedures for the Global Telecommunications System*)

NOTAM Offices are reminded that ASHTAM (or NOTAM for volcanic ash) should be distributed via AFTN to their associated MWO, the SADIS Gateway and all the VAAC, in accordance with guidelines contained in ICAO Doc 9766 Chapter 4 paragraph 4.3.

1. SIGMET

WVUK02 EGRR 180105
EGGX SIGMET 2 VALID 180105/180705 EGRR-
EGGX SHANWICK OCEANIC FIR VA ERUPTION MT KATLA PSN N6337 W01901 VA CLD
OBS AT 0100Z N6100 W02730 - N6100 W02230 - N5800 W01730 - N5630 W02000
FL200/350 MOV SE 35KT FCST 0705Z VA CLD APRX N5800 W02000 - N5730
W01200 - N5500 W00910 - N5430 W01530 - N5800 W02000=

Note: PSN replaces LOC as per Amendment 75 to Annex 3 (applicable 18 November 2010)

2. NOTAM alerting pre-eruptive activity

(A0777/10NOTAMN
Q) BIRD/QWWXX/IV/NB0/W/000/999/6337N01901WXXX
A) BIRD B) 1002260830 C) 1002261100 E) INCREASED VOLCANIC ACTIVITY,
POSSIBLY INDICATING IMMINENT ERUPTION, REPORTED FOR VOLCANO KATLA
1702-03 6337.5N01901.5W ICELAND-S. VOLCANIC ASHCLOUD IS EXPECTED TO
REACH 50,000 FEET FEW MINUTES FROM START OF ERUPTION. AIRCRAFT ARE
REQUIRED TO FLIGHT PLAN TO REMAIN AT LEAST XXXNM CLEAR OF VOLCANO AND
MAINTAIN WATCH FOR NOTAM/SIGMET FOR AREA.
F) GND G) UNL)

Note: XXX is a distance established by the Provider State in accordance with paragraph 1.2.1 a)

3. NOTAM establishing Danger Area after initial eruption

(A0778/10 NOTAMR A0777/10
Q) BIRD/QWWXX/IV/NB0/W/000/999/6337N01901WXXX
A) BIRD
B) 1002260900 C) 1002261200
E) VOLCANIC ERUPTION REPORTED IN VOLCANO KATLA 1702-03 6337.5N01901.5W
ICELAND-S. VOLCANIC ASHCLOUD REPORTED REACHING FL500. AIRCRAFT ARE
REQUIRED TO REMAIN AT LEAST XXXNM CLEAR OF VOLCANO AND MAINTAIN WATCH
FOR NOTAM/SIGMET FOR BIRD AREA.
F) GND G) UNL)

Note: XXX is a distance established by the Provider State in accordance with paragraph 1.2.1 a)

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

4. NOTAM establishing Danger Area to include Area of High [or High/Medium or High/Medium/Low] Contamination

(A0503/10 NOTAMN
Q)EGGN/QWWXX/IV/NB0/AE/000/350
A) EGPX B) 1005182300 C) 1005190500
E) TEMPORARY DANGER AREA HAS BEEN ESTABLISHED FOR VOLCANIC ASH AREA OF HIGH CONTAMINATION IN AREA 5812N00611W 5718N00216W 5552N00426W 5629N00652W
F) SFC
G) FL350)

5. NOTAM to define Area of Medium Contamination for which a Danger Area has not been established

(A0207/10 NOTAMN
Q) EUEC/QWWXX/IV/AE/000/200
A) EIAA B) 1005190700 C) 1005191300
E) VOLCANIC ASH AREA OF MEDIUM CONTAMINATION FORECAST IN AREA 5243N00853W 5330N00618W 5150N00829W
F) SFC
G) FL200)

6. ASHTAM alerting pre-eruptive activity

VALI0021 LIRR 01091410
ASHTAM 005/10
A) ROMA FIR B) 01091350 C) ETNA 101-06 D) 3744N01500E
E) YELLOW ALERT
J) VULCANOLOGICAL AGENCY

7. ASHTAM alerting eruptive activity

VALI0024 LIRR 01151800
ASHTAM 015/10
A) ROMA FIR B) 01151650 C) ETNA 101-06 D) 3744N01500E
E) RED ALERT F) AREA AFFECTED 3700N01500E 3900N01600E 3800N001700W
SFC/35000FT G) NE H) ROUTES AFFECTED WILL BE NOTIFIED BY ATC J)
VULCANOLOGICAL AGENCY

8. ASHTAM alerting reduction in eruptive activity

VALI0035 LIRR 01300450
ASHTAM 025/10
A) ROMA FIR B) 01300350 C) ETNA 101-06 D) 3744N01500E
E) YELLOW ALERT FOLLOWING ORANGE J) VULCANOLOGICAL AGENCY

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
*First Edition – October 2012***

APPENDIX K – MAJOR VOLCANOES IN THE AFI REGION

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

MAJOR VOLCANOES IN THE AFI REGION				
	Volcano Name	Volcano Type	Volcano Status	Location
1	TAHALRA VOLCANIC FIELD	Pyroclastic cones	Holocene	Algeria
2	ATAKOR VOLCANIC FIELD	Scoria cones	Holocene	Algeria
3	MANZAZ VOLCANIC FIELD	Scoria cones	Holocene	Algeria
4	IN EZZANE VOLCANIC FIELD	Volcanic field	<i>Holocene</i>	Algeria-Niger border
5	CAMEROON	Stratovolcano	Historical	Cameroon
6	TOMBEL GRABEN	Cinder cones	Holocene	Cameroon
7	MANENGOUBA	Stratovolcano	<i>Holocene</i>	Cameroon
8	OKU VOLCANIC FIELD	Stratovolcano	<i>Holocene</i>	Cameroon
9	NGAOUNDERE PLATEAU	Volcanic field	<i>Holocene</i>	Cameroon
10	LA PALMA	Stratovolcanoes	Historical	Canary Islands
11	HIERRO	Shield volcano	Radiocarbon	Canary Islands
12	TENERIFE	Stratovolcano	Historical	Canary Islands
13	GRAN CANARIA	Fissure vents	Radiocarbon	Canary Islands
14	FUERTEVENTURA	Fissure vents	Holocene	Canary Islands
15	LANZAROTE	Fissure vents	Historical	Canary Islands
16	FOGO	Stratovolcano	Historical	Cape Verde Islands
17	BRAVA	Stratovolcano	Holocene	Cape Verde Islands
18	SAO VICENTE	Stratovolcano	Holocene	Cape Verde Islands
19	TARSO TOH	Volcanic field	Holocene	Chad
20	TARSO TOUSSIDE	Stratovolcano	Holocene	Chad
21	TARSO VOON	Stratovolcano	Fumarolic	Chad
22	EMI KOUSSE	Pyroclastic shield	Holocene	Chad
23	LA GRILLE	Shield volcano	Holocene	Comore Island
24	KARTHALA	Shield volcano	Historical	Comore Island
25	KARISIMBI	Stratovolcano	Potassium-Argon	Democratic Republic Congo-Rwanda border
26	VISOKI	Stratovolcano	Historical	Democratic Republic Congo-Rwanda border
27	MAY-YA-MOTO	Fumarole field	Fumarolic	Democratic Republic of Congo
28	NYAMURAGIRA	Shield volcano	Historical	Democratic Republic of Congo
29	NYIRAGONGO	Stratovolcano	Historical	Democratic Republic of Congo
30	TSHIBINDA	Cinder cones	Holocene	Democratic Republic of Congo
31	ARDOUKOBA	Fissure vents	Historical	Djibouti
32	GARBE	Fumarole field	<i>Pleistocene-</i>	Djibouti
33	BOINA	Fumarole field	<i>Pleistocene-</i>	Djibouti-Ethiopia border
34	JALUA	Stratovolcano	Holocene	Eritrea
35	ALID	Stratovolcano	Holocene	Eritrea
36	DUBBI	Stratovolcano	Historical	Eritrea
37	NABRO	Stratovolcano	<i>Holocene?</i>	Eritrea
38	ASSAB VOLCANIC FIELD	Volcanic field	Holocene	Eritrea
39	GUFA	Volcanic field	Holocene	Eritrea-Djibouti border
40	DALLOL	Explosion craters	Historical	Ethiopia
41	GADA ALE	Stratovolcano	Holocene	Ethiopia
42	ALU	Fissure vents	Holocene	Ethiopia
43	DALAFFILLA	Stratovolcano	Historical	Ethiopia
44	BORALE ALE	Stratovolcano	Holocene	Ethiopia
45	ERTA ALE	Shield volcano	Historical	Ethiopia
46	ALE BAGU	Stratovolcano	Holocene	Ethiopia
47	HAYLI GUBBI	Shield volcano	Holocene	Ethiopia
48	ASAVYO	Shield volcano	Holocene	Ethiopia
49	MAT ALA	Shield volcano	Holocene	Ethiopia
50	TAT ALI	Shield volcano	Holocene	Ethiopia
51	BORAWLI	Stratovolcano	Holocene	Ethiopia
52	AFDERA	Stratovolcano	<i>Holocene?</i>	Ethiopia
53	MA ALALTA	Stratovolcano	Holocene	Ethiopia
54	ALAYTA	Shield volcano	Historical	Ethiopia
55	DABBAHU	Stratovolcano	Historical	Ethiopia

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012

APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J

Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012

MAJOR VOLCANOES IN THE AFI REGION				
	Volcano Name	Volcano Type	Volcano Status	Location
56	DABBAYRA	Shield volcano	Holocene	Ethiopia
57	MANDA HARARO	Shield volcanoes	Historical	Ethiopia
58	GROPPPO	Stratovolcano	Holocene	Ethiopia
59	KURUB	Shield volcano	Holocene	Ethiopia
60	MANDA GARGORI	Fissure vents	Anthropology	Ethiopia
61	BORAWLI	Lava domes	Holocene	Ethiopia
62	DAMA ALI	Shield volcano	Historical	Ethiopia
63	GABILLEMA	Stratovolcano	Holocene	Ethiopia
64	YANGUDI	Complex volcano	Holocene	Ethiopia
65	AYELU	Stratovolcano	Holocene	Ethiopia
66	ADWA	Stratovolcano	Holocene	Ethiopia
67	HERTALI	Fissure vent	Holocene	Ethiopia
68	LIADO HAYK	Maars	<i>Holocene?</i>	Ethiopia
69	DOFEN	Stratovolcano	Holocene	Ethiopia
70	FENTALE	Stratovolcano	Historical	Ethiopia
71	BERU	Volcanic field	Holocene	Ethiopia
72	KONE	Calderas	Historical	Ethiopia
73	UNNAMED	Pyroclastic cones	Holocene	Ethiopia
74	BOSET-BERICHA	Stratovolcanoes	Holocene	Ethiopia
75	BISHOFTU VOLCANIC FIELD	Fissure vents	Holocene	Ethiopia
76	UNNAMED	Fissure vents	Holocene	Ethiopia
77	SODORE	Pyroclastic cones	Holocene	Ethiopia
78	GEDAMSA	Caldera	Holocene	Ethiopia
79	BORA-BERICCIO	Pumice cones	Holocene	Ethiopia
80	TULLU MOJE	Pumice cone	Anthropology	Ethiopia
81	UNNAMED	Fissure vents	Holocene	Ethiopia
82	EAST ZWAY	Fissure vents	Holocene	Ethiopia
83	BUTAJIRI-SILTI FIELD	Fissure vents	Holocene	Ethiopia
84	ALUTU	Stratovolcano	Radiocarbon	Ethiopia
85	O'A CALDERA	Caldera	Holocene	Ethiopia
86	CORBETTI CALDERA	Caldera	Holocene	Ethiopia
87	BILATE RIVER FIELD	Maars	Holocene	Ethiopia
88	TEPI	Shield volcano	Holocene	Ethiopia
89	HOBICHA CALDERA	Caldera	<i>Holocene?</i>	Ethiopia
90	CHIRACHA	Stratovolcano	<i>Holocene?</i>	Ethiopia
91	TOSA SUCHA	Cinder cones	Holocene	Ethiopia
92	UNNAMED	Cinder cones	Holocene	Ethiopia
93	KORATH RANGE	Tuff cones	<i>Holocene?</i>	Ethiopia
94	MALLAHLE	Stratovolcano	<i>Holocene?</i>	Ethiopia/Eritrea
95	SORK ALE	Stratovolcano	<i>Holocene?</i>	Ethiopia/Eritrea
96	MANDA-INAKIR	Fissure vents	Historical	Ethiopia-Djibouti border
97	MOUSA ALLI	Stratovolcano	Holocene	Ethiopia-Eritrea-Djibouti border
98	MEGA BASALT FIELD	Pyroclastic cones	Holocene	Ethiopia-Kenya border
99	NORTH ISLAND	Tuff cones	Holocene	Kenya
100	CENTRAL ISLAND	Tuff cones	Holocene	Kenya
101	SOUTH ISLAND	Stratovolcano	Historical	Kenya
102	MARSABIT	Shield volcano	<i>Holocene?</i>	Kenya
103	THE BARRIER	Shield volcano	Historical	Kenya
104	NAMARUNU	Shield volcano	Tephrochronology	Kenya
105	SEGERERUA PLATEAU	Pyroclastic cones	Holocene	Kenya
106	EMURUANGOGOLAK	Shield volcano	Radiocarbon	Kenya
107	SILALI	Shield volcano	Ar/Ar	Kenya
108	PAKA	Shield volcano	Ar/Ar	Kenya
109	BOGORIA	Shield volcano	<i>Pleistocene-Geysers</i>	Kenya

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

**Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012**

MAJOR VOLCANOES IN THE AFI REGION				
	Volcano Name	Volcano Type	Volcano Status	Location
110	KOROSI	Shield volcano	Holocene	Kenya
111	OL KOKWE	Shield volcano	Holocene	Kenya
112	NYAMBENI HILLS	Shield volcano	Holocene	Kenya
113	MENENGAJ	Shield volcano	Tephrochronology	Kenya
114	HOMA MOUNTAIN	Complex volcano	Holocene	Kenya
115	ELEMENTEITA BADLANDS	Pyroclastic cones	Holocene	Kenya
116	OL DOINYO EBURRU	Complex volcano	Holocene	Kenya
117	OLKARIA	Pumice cones	Radiocarbon	Kenya
118	LONGONOT	Stratovolcano	Anthropology	Kenya
119	SUSWA	Shield volcano	Holocene	Kenya
120	CHYULU HILLS	Volcanic field	Anthropology	Kenya
121	HARUJ	Volcanic field	Holocene	Libya
122	WAU-EN-NAMUS	Caldera	<i>Holocene?</i>	Libya
123	AMBRE-BOBAOMBY	Volcanic field	Holocene	Madagascar
124	NOSY-BE	Cinder cones	Holocene	Madagascar
125	ANKAIZINA FIELD	Cinder cones	Holocene	Madagascar
126	ITASY VOLCANIC FIELD	Scoria cones	Radiocarbon	Madagascar
127	ANKARATRA FIELD	Cinder cones	Holocene	Madagascar
128	MADEIRA	Shield volcano	Radiocarbon	Madeira
129	TIN ZAOUATENE VOLCANIC FIELD	Volcanic field	Holocene	Mali
131	TODRA VOLCANIC FIELD	Cinder cones	Holocene	Niger
132	BIU PLATEAU	Volcanic field	<i>Holocene?</i>	Nigeria
133	PITON DE LA FOURNAISE	Shield volcano	Historical	Reunion Island
134	SAO TOME	Shield volcano	<i>Holocene?</i>	Sao Tome and Principe
135	JEBEL MARRA	Volcanic field	Radiocarbon	Sudan
136	KUTUM VOLCANIC FIELD	Scoria cones	<i>Holocene?</i>	Sudan
137	MEIDOB VOLCANIC FIELD	Scoria cones	Holocene	Sudan
138	BAYUDA VOLCANIC FIELD	Cinder cones	Radiocarbon	Sudan
139	JEBEL UMM ARAFIEB	Shield volcano	<i>Holocene?</i>	Sudan
140	OL DOINYO LENGAI	Stratovolcano	Historical	Tanzania
141	KILIMANJARO	Stratovolcano	Holocene	Tanzania
142	MERU	Stratovolcano	Historical	Tanzania
143	IGWISI HILLS	Tuff cones	Holocene	Tanzania
144	UNNAMED	Pyroclastic cone	Holocene	Tanzania
145	SW USANGU BASIN	Lava domes	Holocene	Tanzania
146	NGOZI	Caldera	Radiocarbon	Tanzania
147	IZUMBWE-MPOLI	Pyroclastic cones	Holocene	Tanzania
148	RUNGWE	Stratovolcano	Radiocarbon	Tanzania
149	KYEJO	Stratovolcano	Historical	Tanzania
150	FORT PORTAL	Tuff cones	Radiocarbon	Uganda
151	KYATWA	Tuff cones	<i>Holocene?</i>	Uganda
152	KATWE-KIKORONGO	Tuff cones	Holocene	Uganda
153	BUNYARUGURU	Maars	Holocene	Uganda
154	KATUNGA	Tuff cone	Holocene	Uganda
155	BUFUMBIRA	Cinder cones	<i>Holocene?</i>	Uganda
156	MUHAVURA	Stratovolcano	Holocene	Uganda-Rwanda border

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2J**

Volcanic Ash Contingency Plan – AFI Region
First Edition – October 2012

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2K**

Survey on the Provision of SAR in the AFI Region

QUESTION	YES	NO
1- Has your State established an entity which provides, on a 24-hour basis, Search and Rescue (SAR) services within its territory to ensure that assistance is rendered to persons in distress? <i>(add details as appropriate)</i>		
2- Does the SAR services system include a responsible authority, organized available resources and a workforce skilled in coordination and operational functions? <i>(add details as appropriate)</i>		
3- Has your State designated a SAR Point of Contact (SPOC) for the receipt of COSPAS-SARSAT distress data? <i>(add details as appropriate)</i>		
4- Has your State designated a SAR point of contact? If yes, provide details. <i>(add details as appropriate)</i>		
5- Has your State taken appropriate action to ensure that all owners/operators of Emergency Locator Transmitters (ELT) have upgraded to the 406 MHz ELTs and registered them with the International Beacon Registration Database (IBRD) and established your own database? <i>(add details as appropriate)</i>		

APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2K

Survey on the Provision of SAR in the AFI Region

.....		
6- Has your State designated, as SAR units, elements of public or private services suitably located and equipped for SAR operations? <i>(add details as appropriate)</i> 		
7- Has your Rescue Coordination Centre (RCC)/Rescue Subcenter (RSC) prepared detailed plans of operation for the conduct of SAR operations within its Search and Rescue Region (SRR)? If Yes, as part of your National SAR Plan, are arrangements made for all aircraft, vessels and facilities, which do not form part of SAR organisation to cooperate fully with the latter in SAR to extend any possible assistance to the survivors of aircraft accidents? <i>(add details as appropriate)</i> 		
8- Does your State coordinate its SAR organisation with those of neighbouring States? If Yes, what is the status of SAR agreements with your neighboring States? <i>(add details as appropriate)</i> 		
9- Does your State ensure that SAR personnel are regularly trained and that appropriate SAR exercises are arranged? <i>(add details as appropriate)</i> 		

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2L**

**AFI Regional Performance Objectives/
National Performance Objectives for Search and Rescue (SAR)**

ESTABLISHMENT OF SUB-REGIONAL SAR ARRANGEMENTS				
Benefits				
Efficiency and Safety	• cost-efficient use of accommodation and RCC equipment on a shared basis • service provision more uniform across a geographic area defined by risk • proficient services provided near and within States with limited resources. • harmonization of aviation / maritime procedures • inter-operability of life-saving equipment • development of a pool of experienced SAR mission coordinators skilled across both aviation and maritime domains thus reducing coordination and fragmentation			
Strategy				
ATM OC COMPONENTS	TASKS	TIMEFRAME START-END	RESPONSIBILITY	STATUS
N/A	• conduct AFI Regional SAR workshop	every year	ICAO	Yearly event. One day workshop back to back followed by with ASSI TF meeting
	• establish collaborative decision making process • Collaboration between states • Networking process by setting up a website; nominate a focal point within ICAO to manage the website • Nominate a focal point within each state/organization to coordinate SAR issues	2011 – 2012 2013	ICAO /States	Implementation to continue through 2013Not started
	• develop needs assessment and gap analysis • conduct self audits	From 2011 – 2012 End of 2014	APIRG/STATES	Not started Process of implementation on-going
	• data collection from States • develop regional action plan to resolve the deficiencies	2011 – 2012 2014	APIRG/STATES	Process of implementation on-going Collection of data has started Not started
	• conduct regional SAR Administrators training and SAR Mission Coordinators training	From 2011 – 2012	ICAO/STATES	Process of implementation on-going Not started

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2L**

**AFI Regional Performance Objectives/
National Performance Objectives for Search and Rescue (SAR)**

	determine regional and sub-regional <u>SAR</u> organisations, functions and responsibilities, accommodation and equipment needs.	2011 – 201 ~~24~~	APIRG/ STATES	~~Not started~~ <u>Process of implementation on-going</u>
	<u>Use</u> ~~produce~~ draft legislation, regulations, operational procedures, letters of agreement SAR plans and safety management policies for regional SAR provision using IAMSAR manual as guidance.	2010 – 201 ~~23~~	<u>APIRG States</u>	<u>Process of implementation on-going</u>
	<u>determine</u> future training needs and develop training plans and conduct training as required <u>Ensure capacity building</u>	2010 – permanent	APIRG/STATES	<u>Process of implementation on-going</u>
	- develop SAR plan ➤ alerting procedures ➤ resource databases ➤ interface procedures with aerodrome emergency procedures and generic disaster response providers ➤ RCC check lists ➤ staffing, proficiency and certification plans ➤ preventive SAR programmes ➤ quality programmes ➤ education and awareness programmes ➤ in-flight emergency response procedures	2011 – 201 ~~23~~	States	~~Not started~~ <u>Process of implementation on-going</u>
	- conduct SAR exercises required: -National -Multinational	2012 - Permanent	States	<u>Process of implementation on-going</u> ~~Not started~~
	monitor implementation process	As appropriate	ICAO/States	<u>Process of implementation on-going</u> ~~Not started~~
Linkage to GPIs	N/A			

Notes:

- Enablers: Regional Organizations like AFCAC, EAC, CEMAC, ECOWAS, SADC, etc.
- The Task Force has identified the following groups of RCCs/RSCs as potential base for regional/sub-regional SAR close co-operation e.g. SAR exercise, training, meetings etc..
 - Casablanca, Canarias, Dakar, Roberts, Sal,
 - Algiers, Asmara, Cairo, Tripoli, Tunis,

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2L**

**AFI Regional Performance Objectives/
National Performance Objectives for Search and Rescue (SAR)**

- Accra, Brazzaville, Kano, Kinshasa, Ndjamená, Niamey,
- Addis, Bujumbura, Dar_es_Salaam, Entebbé, Khartoum, Kigali, Mogadishu, Nairobi,
- ~~Southern African States~~, Gaborone, Harare, Johannesburg, Lilongwe, Luanda, Lusaka, Maputo, Maseru, Matsapha, Windhoek,
- Antananarivo, Comoros Mauritius, Reunion, Seychelles,

3. All work requires close cooperation with all States affected, ICAO, IMO, COSPAS-SARSAT and other worldwide bodies as required.

--- END ---

APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2M
AFI Search and Rescue Services Integration Task Force (ASSI/TF)
Revised Terms of Reference and Composition

1. TERMS OF REFERENCE

The ASSI Task Force is established to support the development of the concept of sub-regional search and rescue (SAR) arrangements and cooperation between neighboring States; provide a forum for discussions and identifying solutions to impediments in the effective provision of SAR services in the Region; and developing regional guidance to meeting ICAO provisions in the field of SAR.

2. WORK PROGRAMME

As part of its work programme, the ASSI Task Force will:

- a) Periodically review and update Regional performance objectives with regard to SAR;
- b) Identify and coordinate tasks related to establishment and functions of sub-regional SAR organizations;
- c) Develop Regional strategies and guidance to support establishment of joint aviation/maritime rescue coordination centres;
- d) Review SAR deficiencies identified within the AFI region, taking into consideration existing capacity and other constraints being experienced by States and SAR organizations, and propose solutions;
- e) Support the cooperation between ICAO and IMO in their continuing collaboration with African States to implement sub-regional, joint RCCs at strategic locations on the African continent.

3. REPORTING

The ASSI Task Force shall meet at least once a year and report to the ATM/AIM/SAR Sub-Group.

4. COMPOSITION:

The ASSI Task Force will comprise of:

- a) Experts nominated by the following AFI States from both civil aviation and military entities, SAR organizations and ANSPs: *Algeria, Angola, ASECNA, Botswana, Cameroon, Comoros, Congo Brazzaville, Côte d'Ivoire, Djibouti, Ethiopia, Kenya, Madagascar, Mali, Niger, Roberts FIR, Senegal, Seychelles, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.*

APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2M
AFI Search and Rescue Services Integration Task Force (ASSI/TF)
Revised Terms of Reference and Composition

- b) Interested International and Sub-Regional Organizations; and
- c) Expertise on SAR from States outside the AFI Region and from other entities may be invited by the Task Force, based on the contribution that may be provided by such expertise.

--- *END* ---

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2N**

Revised Terms of Reference (TOR) of the Air Traffic Management/Aeronautical Information Management/Search and Rescue Sub-Group (ATM/AIM/SAR/SG)

1. TERMS OF REFERENCE

- a) Support the implementation of a performance based transition to the ATM system envisaged in the Global ATM Operational Concept (ICAO Doc 9854), the Global Air Navigation Plan (ICAO Doc 9750) and in accordance with the regional performance objectives.
- b) Ensure that the planning and implementation of ATM systems in the AFI Region, is coherent and facilitates the objective of achieving seamlessness in the air navigation system, interoperability and harmonization within the Region and with other Regions.
- c) Keep under review the adequacy of requirements in the fields of Air Traffic Management, Search and Rescue, PANS-OPS, Aeronautical Information Services/Management, as well as Aeronautical Charts, taking into account, *inter alia*, changes in user requirements, the evolution in operational requirements and technological developments.
- d) Identify, State by State, those specific deficiencies and problems that constitute major obstacles to the provision of efficient air traffic management, aeronautical information services and search and rescue services and recommend specific measures to eliminate them.

2. WORK PROGRAMME

No.	Task Description	Priority	Target Date
1.	Analyse the operational implications of the introduction of CNS/ATM systems in the fields of ATM, SAR and AIM/MAP and propose any required actions with a view to ensuring their smooth integration in the operational environment.	A	~~ongoing~~ APIRG/19
2.	Consider problems and make specific recommendations relating to ATM interface issues with other regions.	B	~~ongoing~~ APIRG/19
3.	Monitor achievements and progress in the maintenance ~~implementation~~ of RVSM, provide recommendations for improvement and support the functions of the ARMA.	A	~~ongoing~~ APIRG/19
4.	Review the Regional requirements for air traffic control service and surveillance, monitor and support implementation	B	~~ongoing~~ APIRG/19

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2N**

Revised Terms of Reference (TOR) of the Air Traffic Management/Aeronautical Information Management/Search and Rescue Sub-Group (ATM/AIM/SAR/SG)

No.	Task Description	Priority	Target Date
5.	Taking into consideration the Regional performance objectives relating to PBN implementation, Review the existing ATS route network (including RNAV routes) on a systematic basis with a view to achieving an optimum flow of air traffic while keeping flight distances of individual flights to a minimum. (AFI/7 Rec.5/8) (SP AFI RAN)	A	Complete review of user requirement by ~~Oct 10~~ April 2014 ~~PRND TF agreement Apr 11~~
6.	Monitor and support the development and update of ATM contingency arrangements	B	~~ongoing~~ APIRG/19
7.	Monitor trends on unsatisfactory condition (including incidents) reports through the TAG, IATA AIAG and similar mechanisms and recommend action as appropriate	A	~~ongoing~~ APIRG/19
8.	~~Develop standard auditing and proficiency maintenance procedures to be used by States to assess the capability/competence of any ATS unit as well as monitor the implementation of uniform proficiency assessment for ATS personnel. (AFI/7 Conc 5/27)~~ Carry out a comprehensive review and update of all Conclusions and Decisions within the framework of APIRG that are applicable to the Sub-Group in order to ensure continued relevance of the Conclusions and Decisions.	C	~~Oct 10~~ December 2013 New text added
9.	Review the requirements and monitor the implementation of Search and Rescue Services	B	~~First Revision~~ ~~Oct 10~~ APIRG/19
10.	Support the development of sub-regional SAR bodies	B	ongoing
11.	Promote and support States' efforts in the development of SAR agreements.	A	Review progress every ~~Apr/May~~ APIRG/19

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.2N**

Revised Terms of Reference (TOR) of the Air Traffic Management/Aeronautical Information Management/Search and Rescue Sub-Group (ATM/AIM/SAR/SG)

No.	Task Description	Priority	Target Date
12.	~~Taking into considering the Regional performance objectives that have been formulated by the SP AFI RAN 2008:~~ Taking into consideration the Regional performance objectives adopted by APIRG, and the 4th Edition of the Global Air Navigation Plan (GANP), adjust the Regional planning and implementation programmes to align with the GANP with particular focus on the Aviation System Block Upgrades (ASBUs) planning methodology ~~– Develop further the Regional performance objectives using the Performance Framework Forms~~ ~~– Update the Regional performance objectives, particularly with regard to identification of and assignment of detailed tasks, and identifying deliverables with deadlines~~ – identify detailed tasks and deliverables with deadlines – Monitor implementation	A	Initial development by Oct 10 APIRG/19
13.	Review the requirements and monitor the implementation and transition from AIS to AIM and MAP services	A	Ongoing APIRG/19
14.	Analyse, review and monitor shortcomings and deficiencies in the fields of ATM/SAR, PANS-OPS and AIM/MAP, propose measures to eliminate the shortcomings	A	Ongoing APIRG/19

Priority:

- A. High priority tasks, on which work should be speeded up;
- B. Medium priority tasks, on which work should be undertaken as soon as possible, but without detriment to priority A tasks;
- C. Lesser priority tasks, on which work should be undertaken as time and resources permit, but without detriment to priority A and B tasks.

3. COMPOSITION

~~Algeria, Angola, Burkina Faso, Cameroon, Congo, Democratic Republic of Congo (DRC), Côte d'Ivoire, Egypt, Ethiopia, France, Gabon, Ghana, Guinea, Kenya, Madagascar, Malawi, Mauritania, Morocco, Niger, Nigeria, Rwanda, Senegal, Spain, South Africa, Sudan, Uganda, Tanzania, Togo, Tunisia, Zambia, Zimbabwe~~
AFI States, ASECNA, IATA, IFALPA and IFATCA, ARMA.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4A**

**Review and update of APIRG meetings Conclusions and Decisions
pertaining to Aeronautical Fixed Service
APIRG/13, 14, 15, 16, 17 and 18**

APIRG/13

SPECIFIC CNS AREAS	No. and Title of Conclusion/Decision	Validity (Yes/No)	Maturity (Yes/No)	Remarks
	Conclusion 13/4: AFI AFTN circuits availability	Yes	No	Ongoing
	Conclusion 13/5: Brazzaville/Nairobi main AFTN circuit	Yes	Yes	Redundant
	Conclusion 13/6: Algeria/Niamey main AFTN circuit	Yes	No	Ongoing
	Conclusion 13/7: Nairobi/Johannesburg main AFTN circuit	No	No	Ongoing
	Conclusion 13/8: Dakar/Johannesburg circuit	No	Yes	Redundant
	Conclusion 13/9: Review of the configuration of the AFI AFTN plan	Yes	Yes	Redundant
	Conclusion 13/10: introduction of bit-oriented protocols in the AFI region	No	No	Ongoing
	Conclusion 13/12: seminars on the aeronautical telecommunications Network (ATN)	No	Yes	Redundant
	Conclusion 13/13: use of SITA network for AFTN circuits requirements	No	Yes	
	Conclusion 13/14: interconnection between VSAT networks – AFTN and ATS/DS connectivity	No	Yes	Redundant
	Conclusion 13/15: extension of the use of satellite technology	No	Yes	Redundant
	Conclusion 13/16: need for technical cooperation agreements in the Implementation of satellite telecommunication facilities within the AFI region	Yes	Yes	Redundant
	Conclusion 13/17: Improvement of the ATS/DS network	Yes	No	Redundant
	Conclusion 13/92: Shortcomings and deficiencies in the aeronautical Fixed services	No	No	Ongoing

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4A**

**Review and update of APIRG meetings Conclusions and Decisions
pertaining to Aeronautical Fixed Service
APIRG/13, 14, 15, 16, 17 and 18**

APIRG/14

Specific CNS areas	No. and title of Conclusion/Decision	Validity (yes/no)	Maturity (yes/no)	Remarks
AFS Ghana	Decision 14/6: Survey on availability and usage costs of PDNS and ISDNS	Yes	No	Ongoing
	Conclusion 14/7: Use of PDNS and ISDNS to meet AFTN requirements	Yes	No	
	Conclusion 14/8: implementation requirements for the AFTN Circuits	Yes	No	Ongoing
	Conclusion 14/9: AFTN transit time statistics	Yes	No	Ongoing
	Conclusion 14/10: Use of the internet	Yes	Yes	Ongoing
	Conclusion 14/11: ATS/COM coordination meeting between the Accra, Brazzaville, Dakar oceanic, Kano, Kinshasa and Luanda firs	No	No	Redundant
	Decision 14/13: Implementation of ATS inter-facility data Communications (AIDC)	Yes	Yes	Redundant
	Conclusion 14/14: Information on the planning by States of the Implementation of the ATS message handling system (AMHS)	Yes		Ongoing

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4A**

**Review and update of APIRG meetings Conclusions and Decisions
pertaining to Aeronautical Fixed Service
APIRG/13, 14, 15, 16, 17 and 18**

APIRG/15

SPECIFIC CNS AREAS	No. and Title of Conclusion/Decision	Validity (Yes/No)	Maturity (Yes/No)	Remarks
	Conclusion 15/9: Implementation of the AFI AFTN routing directory (14th edition, 2004).	No	Yes	Redundant
	Conclusion 15/10: Synchronization of AFTN automated message switch Clocks	Yes	No	Ongoing
	Conclusion 15/11: Implementation of ATS/DS circuits	Yes	No	Ongoing
	Conclusion 15/12: Sustainability of AFISNET network	Yes	No	Ongoing
	Conclusion 15/14: Draft AFI ATN routing architecture	No	Yes	Redundant
	Conclusion 15/37: Organization of an automated AIS system	Yes	No	Ongoing
	Conclusion 15/38: Participation of AIS personnel in the planning Related to CNS/ATM implementation	Yes	No	Ongoing
	Conclusion 15/39: Implementation strategy for AIS automation in the AFI region	Yes	No	Ongoing
	Conclusion 15/40: Harmonization of AIS, met and filed flight plan (FPL) Information	Yes	No	Ongoing
	Conclusion 15/56: Implementation of ATS/DS circuits	No	Yes	Redundant

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4A**

**Review and update of APIRG meetings Conclusions and Decisions
pertaining to Aeronautical Fixed Service
APIRG/13, 14, 15, 16, 17 and 18**

APIRG/16

Specific cns areas	No. And title of conclusion/decision	Validity (yes/no)	Maturity (yes/no)	Remarks
AFS Ghana	Conclusion 16/13A & B: AFTN Implementation specifications	Yes	No	Ongoing
	Conclusion 16/A: Implementation of ATN/IPS (TCP/IP)	Yes	No	
	Conclusion 16/A & B: Aeronautical use of public internet for non-time critical applications	Yes	No	
	Conclusion 16/A:Implementation/interconnection of SADC/2, NAFISAT and AFISNET VSAT networks			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4A**

**Review and update of APIRG meetings Conclusions and Decisions
pertaining to Aeronautical Fixed Service
APIRG/13, 14, 15, 16, 17 and 18**

APIRG/17

SPECIFIC CNS AREAS	No. and Title of Conclusion/Decision	Validity (Yes/No)	Maturity (Yes/No)	Remarks
	Conclusion 17/13: AFTN performance	Yes	No	Accra Kano still pending
	Conclusion 17/14: AFTN monthly statistical data	Yes	No	Ongoing
	Conclusion 17/15: Development of an AFTN database	Yes	No	Ongoing
	Conclusion 17/16: Implementation of AMHS	Yes	No	Ongoing
	Conclusion 17/17: Creation of an AMHS implementation task force	Yes	No	Ongoing
	Conclusion 17/18: Implementation of ATS/DS circuits	Yes	No	Ongoing – task force in place
	Conclusion 17/19: Activation of AFS circuits	Yes	No	Ongoing
	Decision 17/20: Need for an ATS-voice numbering plan for AFI	yes	No	Ongoing
	Conclusion 17/23: Back up-systems for AFS	Yes	No	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4A**

**Review and update of APIRG meetings Conclusions and Decisions
pertaining to Aeronautical Fixed Service
APIRG/13, 14, 15, 16, 17 and 18**

APIRG/18

SPECIFIC CNS AREAS	No. and Title of Conclusion/Decision	Validity (Yes/No)	Maturity (Yes/No)	Remarks
AFS Ghana	Conclusion 18/17: Addressing missing flight plans	Yes	No	Ongoing
	Conclusion 18/19: AFI AMHS implementation strategy	Yes	Yes	Ongoing
	Conclusion 18/20: AFI ATN architecture plan	Yes	No	Ongoing

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4B**

Terms of Reference of the AFI AMHS Implementation Task Force

Terms of Reference:

- 1) Conduct a comprehensive review of ICAO Standards and Recommended Practices for the Aeronautical Message Handling System (AMHS) application as specified in Annex 10 Volume II[3], chapter 4.6 and Annex 10 Volume III, Part II[26], chapter 3.5.3), ICAO Doc.9880 Part II[5] and Doc 9896;
- 2) Collect and analyze information on the status of AFI ANSP Aeronautical Message Handling System plan processing systems including ongoing upgrades to existing systems;
- 3) On the basis of the above, based on ICAO Global Air Navigation Plan and in accordance with relevant additional ICAO provisions, develop a coordinated AFI transition strategy and plan with associated timelines to enable the streamlined coordinated implementation of AMHS.

Considerations:

In addressing these terms of reference, the Task Force should consider, inter alia, the following aspects:

- a) The implemented systems in the AFI Region could differ from systems in other ICAO Regions and accordingly provide recommendable Regional action with global goals;
- b) Inter and intra-regional issues taking into consideration ICAO Aviation System Block Upgrades (ASBU) planning requirements;
- c) Personnel training for operational migration from AFTN to AMHS;
- d) AFS network backbone capability as defined by the AFI APIRG CNS/SG Task Force on integrated VSAT infrastructure;
- e) Contingency arrangements for States that cannot comply by the due date;
 - Way to handle staged implementations by States,
 - Expectations across ANSPs with different implementation dates, and
- f) Systems that transition early will need to be capable of handling both new and current instructions.
- g) Inter-system exchanges need to take account of differing automation capabilities in order to avoid excessive message rejection;
- h) Establishment of an Information Management system to track implementation timelines for various States/systems;
- i) Impacts to users;
- j) Appropriately timed withdrawal of existing systems specific requirements to ensure consistency with new instruction; and
- k) Existing ICAO guidance material.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4B**

Terms of Reference of the AFI AMHS Implementation Task Force

WORK PROGRAMME

Task No.	ASBU Performance Improvement Area and Block() Modules	Subject	Target Date
1	PIA-2: Globally interoperable systems and data; B0-FICE: Increased interoperability through ground/ground integration; B0-DATM: Service improvement through digital information Management.	Review of ICAO SARPs and Guidance Material <u>Team Leader: Secretariat</u> Team members: All Task Force Core members References: • ICAO Annex 10 (Vol. 2 and Vol.3) • ICAO Doc 9880, 9896	CNS/SG/6 Deliverable:
2	PIA-2: Globally interoperable systems and data; B0-FICE: Increased interoperability through ground/ground integration; B0-DATM: Service improvement through digital information Management	Conduct of a Regional and Interregional (direct connection) Survey on: 1.AFS circuits specifications (circuit type, modulation rate, protocol, ITU code, VSAT network) 2. AMHS implementation status (implementations, plans, levels of service, protocols, implementation challenges, level of knowledge on AMHS and ATN, etc.) <u>Team Leader: Secretariat</u> Team members: All Task Force Core members References: • APIRG/15,16,17 and 18 Report • ICAO Annex 10 (Vol. 2 and Vol.3) • ICAO Doc 9880 • ICAO Doc 9896	CNS/SG/6 Deliverable
3	PIA-2: Globally interoperable	Finalize the revised AFI AMHS Implementation Strategy	CNS/SG/5

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4B**

Terms of Reference of the AFI AMHS Implementation Task Force

Task No.	ASBU Performance Improvement Area and Block() Modules	Subject	Target Date
	systems and data; B0-FICE: Increased interoperability through ground/ground integration; B0-DATM: Service improvement through digital information Management	<u>Team Leader: ASECNA</u> Team members: Botswana, Burkina Faso, Madagascar, South Africa (ATNS), Tanzania and ASECNA References: • CAR/SAM AMHS Implementation Strategy	Deliverable: August 2013
4	PIA-2: Globally interoperable systems and data; B0-FICE: Increased interoperability through ground/ground integration; B0-DATM: Service improvement through digital information Management	Redraft the AFI AMHS Implementation Plan 1. Draft AFI AMHS Architecture 2. Draft AFI AMHS Network Service Access Point Addressing Plan 3. Draft AFI AMHS Implementation Plan a. AFI FASID CNS1B Table b. AFI FASID CNS1C Table <u>Team Leader: Nigeria</u> Team members: Angola, Ethiopia, Kenya, Mozambique, Rwanda, Sudan, Uganda, Zimbabwe and ASECNA. References: • Report of the fifth meeting of APIRG CNS/SG • AFI Air Navigation Plan, FASID (CNS) • ICAO Annex 10 (Vol. 2 and Vol.3)	CNS/SG/5 Deliverable: August 2013
5	PIA-2: Globally interoperable systems and data;	Revised AFI AMHS Manual and the Appendixes 1. AFI IP AMHS infrastructure test guidelines	CNS/SG/5 Deliverables:

APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4B

Terms of Reference of the AFI AMHS Implementation Task Force

Task No.	ASBU Performance Improvement Area and Block() Modules	Subject	Target Date
	B0-FICE: Increased interoperability through ground/ground integration; B0-DATM: Service improvement through digital information Management	2. AFI AMHS training guidelines Team Leader: South Africa (ATNS) Team members: Somalia (CACAS), South Africa, Tanzania, Uganda and ASECNA References: • ICAO EUR AMHS Manual (Doc 020) • ICAO Annex 10 (Vol. 2 and Vol.3) • ICAO Doc 9880 • ICAO Doc 9896	August 2013

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4B**

Terms of Reference of the AFI AMHS Implementation Task Force

COMPOSITION

Core members: Algeria, Angola, Botswana, Burkina Faso, Burundi, Egypt, Ethiopia, Ghana, Guinea, Kenya, Malawi, Mali, Mauritania, Niger, Nigeria, Rwanda, Senegal, South Africa (ATNS), Sudan, Tanzania, Tunisia, Uganda, Zimbabwe, ASECNA, IFATSEA and Roberts FIR.

Other members: All AFI States and Air Navigation Service Providers (ANSPs) with implemented and planned AMHS systems.

Note: Members should nominate suitable experts involved in aeronautical telecommunications operations and systems engineering.



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4C**

Results of the AFI VHF and HF Communications Survey – 2013

1. Introduction

1.1. IATA conducts aeronautical mobile communications surveys in the AFI Region every 18 months with an objective to determine VHF/HF coverage within the region, in order to identify deficiencies in communication and arrive at corrective action plans to address them, in coordination with States and Air Navigation Service Providers (ANSPs).

The last survey was done on the 8 – 29 July 2013.

2. Airlines participation

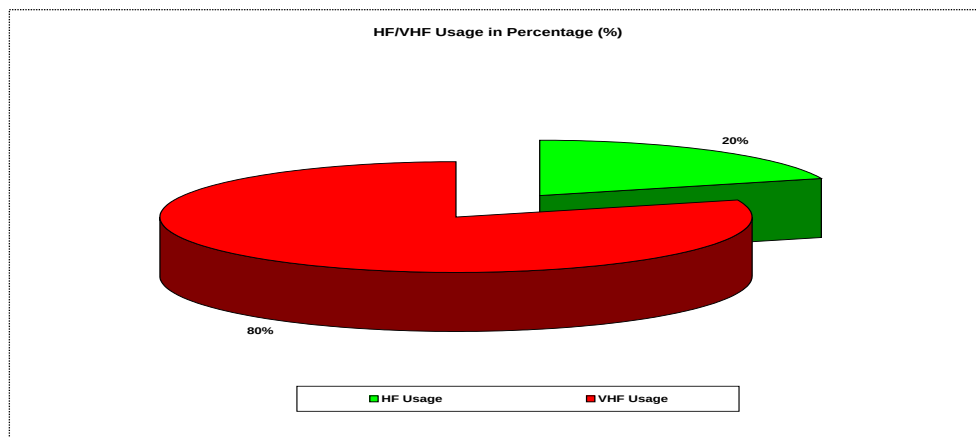
2.1. The following airlines; Arik Air (W3), Air France (AF), British Airways (BA), Delta Air Lines (DL), Emirates Airlines (EK), Ethiopian Airlines (ET), Iberia (IB), KLM Royal Dutch Airlines (KL), Lufthansa (LH), South African Airways (SA) and Air Portugal (TP); provided data representing 2903 communication reports on 39 ATS units. The data covers most of the AFI Region.

3. Participation of States Air Traffic Services Units

3.1. ATS Units of Botswana, Cape Verde, Morocco and Zimbabwe participated in the survey.

4. Summary of the results

4.1. Overall, VHF usage in the continent based on the survey stands at 79%, a decline of 1% compared to the last survey (2012); while HF usage has remained at 20 % (Fig 1).



4.2. In 2012, some FIRs namely, Khartoum, Kinshasa, Luanda and Mogadishu FIR showed a high HF usage indicating that HF was the primary means of communication.



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4C**

Results of the AFI VHF and HF Communications Survey – 2013

A comparison was also carried out for some FIRs in 2013 survey as per the chart below (Fig 2) to show at a glance any improvement in VHF usage. Additional information on CPDLC has been also been included in the chart.

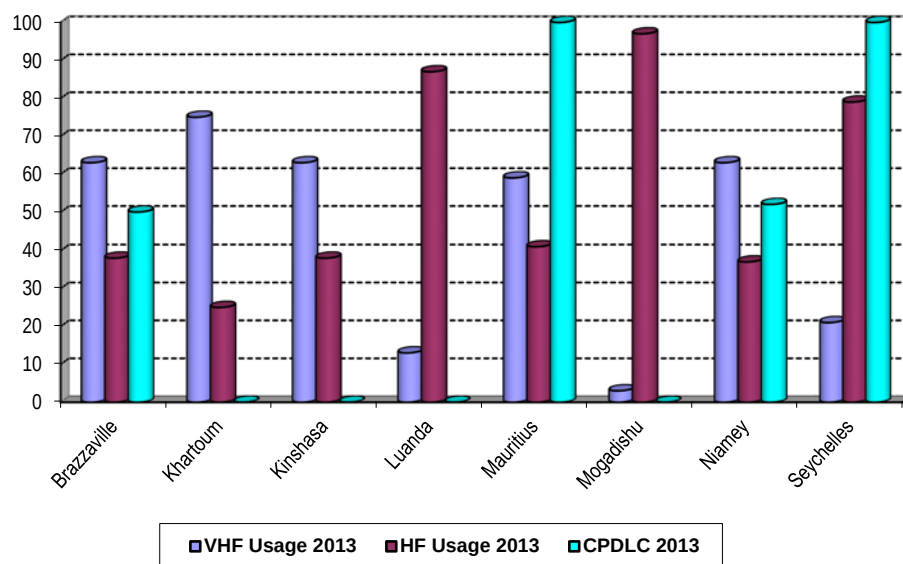


Fig 2

It is generally assumed that an increase in VHF communication usage vis-à-vis a decrease in HF communication usage usually indicates an improvement in the overall status of communication in any FIR. Most airlines switch to the more effective VHF communication whenever available. The opposite is also valid.

This assumption is clearly shown in the marked increase in HF usage for Luanda in 2013 compared to 2012. VHF usage in Luanda FIR has diminished to a mere 13% compared to 62% in 2012. This shows VHF infrastructural challenges. For more details refer to the detailed analysis of Luanda FIR.

Mogadishu mainly uses HF communications only. There were only 10 data points for VHF compared to 280 data points for HF. There is a need to implement ADS-C/CPDLC in this FIR.

4.3. The table below (fig 3) summarizes the VHF/HF and CPDLC usage and the respective success rate. The figures in the table have been arrived at based on the data received during the survey period and are a good indication of the reality on the ground. For the purpose of this report, data points in excess of 18 were considered.

While some of the data was not adequate to deduce any meaningful analyses and conclusions, the information was still published for future reference to encourage further investigation and resolution.



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4C**

Results of the AFI VHF and HF Communications Survey – 2013

In addition to the quantitative analysis based on the data received, qualitative ratings were used to try to interpret what the flight crew intended to report, especially with regards to quality of service (excellent, good, fair and poor).

Fig 3 Table of the summary of the VHF, HF and CPDLC Survey

NO.	ATS UNIT	NO. OF CALLS			% COMMUNICATION SUCCESS		%VHF	%HF	% CPDLC		
		VHF	HF	TOTAL	VHF	HF	Usage	Usage	Log on	Transfer	Log off
1	Abidjan	27	19	46	74	69	59	41	-	-	-
2	Accra	40	29	69	90	66	58	42	52	-	-
3	Addis Ababa	124	9	133	85	44	93	7	-	-	-
4	Algiers	144	17	161	85	71	89	11	51	5	39
5	Antananarivo	6	1	7	NIL DATA	NIL DATA	86	14	-	-	-
6	Bamako	13	0	13	NIL DATA	NIL DATA	100	0	-	-	-
7	Beira	150	11	161	80	77	93	7	-	-	-
8	Brazzaville	50	30	80	76	52	63	38	50	15	28
9	Cairo	71	0	71	79	0	100	0	-	-	-
10	Canarias	0	0	0	0	0	0	0	-	-	-
11	Casablanca	37	0	37	97	0	100	0	-	-	-
12	Dakar	49	34	83	82	97	59	41	70	13	57
13	Dar es salaam	116	0	116	83	0	100	0	-	-	-
14	Djibouti	0	0	0	0	0	0	0	-	-	-
15	Douala	14	0	14	79	0	100	0	-	-	-
16	Entebbe	15	2	17	100	0	88	12	-	-	-
17	Gaborone	21	0	21	100	0	100	0	-	-	-
18	Harare	36	0	36	100	0	100	0	-	-	-
19	Johannesburg	60	0	60	100	0	100	0	92	50	-
20	Kano	173	26	199	35	3	87	13	-	-	-
21	Khartoum	177	59	236	69	61	75	25	-	-	-
22	Kinshasa	30	18	48	3	89	63	38	-	-	-
23	Lagos	110	0	110	68	0	100	0	-	-	-
24	Libreville	6	0	6	100	0	100	0	-	-	-
25	Lilongwe	23	0	23	100	0	100	0	-	-	-
26	Luanda	9	61	70	44	77	13	87	-	-	-
27	Lusaka	28	0	28	57	0	100	0	-	-	-
28	Mauritius	23	16	39	91	100	59	41	100	8	37
29	Mogadishu	10	280	290	60	61	3	97	-	-	-
30	Nairobi	158	8	166	88	NIL DATA	95	5	-	-	-
31	N'djamena	131	18	149	88	83	88	12	97	3	42
32	Niamey	123	72	195	88	88	63	37	52	38	44
33	Nouakchott	33	5	38	70	NIL DATA	87	13	-	-	-
34	Ouagadougou	13	0	13	85	0	100	0	-	-	-
35	Port Hacourt	17	0	17	94	0	100	0	-	-	-
36	Roberts	8	0	8	100	0	100	0	-	-	-
37	Seychelles	20	74	94	100	86	21	79	100	-	-
38	Windhoek	10	0	10	90	0	100	0	-	-	-

4.4. Notes



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4C**

Results of the AFI VHF and HF Communications Survey – 2013

Successful (use of VHF/HF) communication or 'VHF/HF success rate' described in this survey is based on ICAO Annex 10 readability definition scales;

- a) read you one = unreadable
- b) read you two = readable now and again
- c) read you three = readable but with difficulty
- d) read you four = readable
- e) read you five = perfectly readable

4.5 VHF/HF was rated unsuccessful whenever a combination of a) and b) was recorded. That is, the call was unreadable and/or readable now and then. When the call was readable but with difficulty, readable and perfectly readable, then communication was rated successful. Readability in this report was determined from reports from flight crew based mainly on strength and clarity.

5.0 Analysis of the results by FIR

5.1 Accra FIR

VHF/HF

A total of 69 calls were made: 40 on VHF and 29 on HF.

Success rate for VHF and HF was at 90% and 66% respectively. Approximately 85% of the VHF calls were readable and perfectly readable.

The low rate in HF was compensated for by CPDLC especially in the oceanic area.

Based on data reviewed, 75% of the HF calls at position GAPEL experienced readability but with difficulty. The amount of data is not enough to conclusively confirm this but is an indication of HF propagation issues as all the calls were made in the late morning hours.

CPDLC

The data indicate that 52% of the CPDLC log-on was successful. There is no report on the success rate for automatic handover and automatic log off. Investigation should be done into the low log on rate experienced.

5.2 Addis FIR

VHF/HF

A total of 133 calls were made: 124 on VHF and 9 on HF.

Success rate for VHF and HF was 85%, which was a slight improvement compared to last survey. There was not enough HF data to arrive at any meaningful analysis and results. However, there are still some challenges at positions EPSIX and EKBUL and further review is required.

CPDLC

No CPDLC available in Addis FIR.

5.2.1 Djibouti FIR



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4C**

Results of the AFI VHF and HF Communications Survey – 2013

VHF/HF

Note that the upper airspace of Djibouti is delegated to ADDIS FIR (Refer to ADDIS FIR report)

CPDLC

No CPDLC available for Djibouti FIR.

5.3 Algiers FIR

VHF/HF

A total of 161 calls were made: 144 on VHF and 17 on HF.

Success rate for VHF and HF was 86% and 71 % respectively. The main issues on VHF communication are still at positions ERKEL and EREBO which have been reported in previous surveys.

CPDLC

The data indicate that 51% of the CPDLC log-on was successful out of the 96 attempts. Only 5 (5%) managed to auto transfer and a further 37(39%) logged off successfully.

Investigation should be done into the low log on rate experienced.

5.4 Antananarivo FIR

VHF/HF

A total of 7 calls were made: 6 on VHF and 1 on HF.

There was not enough data to arrive at any meaningful analysis and results.

CPDLC

Not enough data received on CPDLC that could provide meaningful analysis.

ASECNA Performance report for July success of delivered messages is 99.90%

5.5 Beira FIR

VHF/HF

A total of 161 calls were made; 150 on VHF and 11 on HF.

Success rate for VHF was at 80%. Main areas of concern are at positions EPSEK, AVITO and ANVAK and need further investigation and improvement. There was not enough HF data to arrive at any meaningful analysis and results.

CPDLC

No CPDLC provided in Beira FIR.

5.6 Brazzaville FIR

VHF/HF

A total of 80 calls were made; 50 on VHF and 30 on HF.



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4C**

Results of the AFI VHF and HF Communications Survey – 2013

Success rate for VHF and HF was at 76% and 52% respectively. No trend in any particular waypoints was visible on VHF data surveyed.

At position ONUDA, which has been a problem so far going by previous survey, data still show poor HF communication. However, with the onset of CPDLC, the problems seem to have been alleviated somewhat. Position NASED also seemed to have HF communications issues and require further investigation.

CPDLC

There were 81 attempts to log on to CPDLC. 44 attempts were successful, which represents a 50% success rate. 12 times the system managed auto transfer and 23 times it achieved auto log off. Investigation should be done into the low log on rate experienced.

However ASECNA Performance report for July suggest opposite (that log in is successful: 99.78%), IATA to enquire from survey participants the reason(s) for the reported unsuccessful log on.

5.6.1 Douala ACC

VHF/HF

A total of 14 calls were made and all were on VHF. Success rate was at 79% with the main concern being on waypoint TAKUM which need further investigation and resolution.

CPDLC

Not provided in Doula UTA.

5.6.2 Libreville UTA

VHF/HF

A total of 6 calls were made, all of which were on VHF with a success rate of 100%. This amount of data is not adequate to deduce meaningful conclusions.

CPDLC

Not provided in Libreville UTA.

5.7 Cairo FIR

VHF/HF

A total of 71 calls were made, all of which were on VHF.

Success rate was at 79% with the main issue manifesting itself at position KITOT at the Jeddah/Cairo FIR. This may be an isolated occurrence but may need further investigation.

CPDLC

No CPDLC provided in Cairo FIR.



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4C**

Results of the AFI VHF and HF Communications Survey – 2013

5.8 Canarias FIR

VHF/HF

No data was available in the 2013 survey.

CPDLC

No CPDLC data was available for Canarias FIR.

5.9 Casablanca FIR

VHF/HF

A total of 37 calls were made and all were on VHF.

Success rate was at 97%.

Marocco ANSP had participated in survey: A total of 128 calls made were received on VHF.

Success rate was at 100%. No calls were received on HF

CPDLC

No CPDLC provided in Casablanca FIR.

5.10 Dar es Salaam FIR

VHF/HF

A total of 116 calls were made and all were on VHF with a success rate of 83%. The main communication issues were at waypoints BONAP, ITOBO and Mbeya (MB) which need to be investigated and addressed.

CPDLC

No CPDLC provided in Dar FIR.

5.11 Dakar Terrestrial and Oceanic FIRs

5.11.1 Dakar ACC

VHF/HF

A total of 83 calls were made; 49 on VHF and 34 on HF.

Success rate was at 82% and 97% on VHF and HF respectively.

CPDLC in Dakar Oceanic FIR

A total of 30 attempts were reported during the survey. Approximately 21 (70%) log on were successful with 4 that completed auto transfer.

There were 17 (57%) automatic log off captured in the survey.



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4C**

Results of the AFI VHF and HF Communications Survey – 2013

However ASECNA Performance report for July suggest opposite (that log in is successful: Dakar 98.45% and Abidjan 99.94%), IATA to enquire from survey participants the reason(s) for the reported unsuccessful log on.

5.11.2 Abidjan ACC

VHF/HF

A total of 46 calls were made; 27 on VHF and 19 on HF.

Success rate for VHF and HF were 74% and 69% respectively. On two occasions the crew reported readability at strength for 4 for both occasions but clarity was reported at strength 0 and 1. There is a possibility that crew perceived clarity in terms of language in either pronunciation or language proficiency. Both cases the quality was good and excellent.

CPDLC

CPDLC data is reflected under Item 5.11.1 Dakar ACC

5.11.3 Bamako ACC

VHF/HF

A total of 13 calls were made, all which were on VHF. Although there was not enough VHF data to arrive at any meaningful analysis and results, possible issues at position EBSUD need further investigation.

CPDLC

No CPDLC provided in Bamako UTA.

5.11.4 Nouakchott ACC

VHF/HF

A total of 38 calls were made; 33 on VHF and 5 on HF.

Success rate for VHF was 70%. The HF data was not adequate to provide conclusive results.

CPDLC

No CPDLC provided in Nouakchott UTA.

5.12 Entebbe FIR

VHF/HF

A total of 17 calls were made; 15 on VHF and 2 on HF.

Success rate was at 100% for VHF. There was not enough data for HF.

CPDLC

No CPDLC provided in Entebbe FIR.

5.13 Gaborone FIR



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4C**

Results of the AFI VHF and HF Communications Survey – 2013

VHF/HF

A total of 21 calls were made, all on VHF.

Success rate was at 100% for VHF. This provides an indication of the success of VHF communication.

Botswana CAA (ANSP) participated in survey: A total of 502 calls were received on VHF.

Success rate was at 97% for VHF. No calls were received on HF

CPDLC

No CPDLC provided in Gaborone FIR.

5.14 Harare FIR

VHF/HF

A total of 36 calls were made, all on VHF.

Success rate was at 100% for the VHF.

Zimbabwe CAA (ANSP) participated in Survey: A total of 113 calls were received on VHF.

Success rate was at 100% for the VHF. No calls were received on HF

CPDLC

No CPDLC provided in Harare FIR.

5.15 Johannesburg FIR

VHF/HF

A total of 60 calls were made, all on VHF.

Success rate of 100% was achieved.

CPDLC

A total of 12 attempts were made via CPDLC with 92% log on successful. Approximately 50% were successful in automatic log off. No data was available for auto transfer (isolated).

5.16 Kano FIR

5.16.1 Kano ACC

VHF/HF

A total of 199 calls were made; 173 on VHF and 26 on HF.

Success rate was at 35% and 4% (four percent) on VHF and HF respectively.

CPDLC

No CPDLC provided in Kano FIR.

5.16.2 Lagos ACC

VHF/HF

A total of 110 calls were made, all of which were on VHF.



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4C**

Results of the AFI VHF and HF Communications Survey – 2013

Success rate was at VHF 68%. This does not reflect the infrastructure that has been implemented in Nigeria.

CPDLC

No CPDLC provided in Lagos FIR

5.17 Khartoum FIR

VHF/HF

A total of 236 calls were made; 177 on VHF and 59 on HF.

Success rate was at 69% and 61% for VHF and HF respectively. The results of the survey show concern at waypoints SOGIN and IMTAR although it is widespread in the whole FIR.

After posting an improvement in 2012 (73%), the survey results show a slip back to the 2009 figures. In 2009, the survey results showed a 67% success rate while the 2013 results show 69% on VHF. Positions ALRAP, MALAKAL and AVONO did not display any pattern as was in 2012 as the pattern was widespread within the FIR.

The results of the survey show a high level of utilization of HF in the FIR which is an indicator of challenges in still encountered in VHF coverage in the FIR.

CPDLC

No CPDLC provided in Khartoum FIR.

5.18 Kinshasa FIR

VHF/HF

A total of 48 calls were made; 30 on VHF and 18 on HF.

Success rate was at 3% (three percent) and 89% for VHF and HF respectively. The issue of aeronautical mobile communication challenges in DR Congo has been reported over all previous surveys. The 2013 still shows that these challenges have not been addressed. The HF communication has improved, going with the sample of data received from the survey. In 2012 survey, only 33% of the calls were successful based on the assumption applied then. In the current survey which is based on ICAO Annex 10 (more strict than previous surveys) HF still showed remarkable improvement although the sample data was small.

CPDLC

No CPDLC provided in Kinshasa FIR.

5.19 Lilongwe FIR

VHF/HF

A total of 23 calls were made, all of which were on VHF with a success rate VHF 100%. The data is representative of the actual position on the ground.

CPDLC

No CPDLC provided in Lilongwe FIR.



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4C**

Results of the AFI VHF and HF Communications Survey – 2013

5.20 Luanda FIR

VHF/HF

A total of 70 calls were made; 9 on VHF and 61 on HF.

Success rate was at 44% for VHF and 77% for HF. Although the VHF data was inadequate to arrive at a solid conclusion, the fact that the crew resorted to HF communication (87% of the calls) demonstrates the breakdown of VHF infrastructure. This is in stark contrast to the survey results of 2012 which had shown a jump of 50% in VHF usage. The 2012 survey showed a 94% success rate for VHF based on 100 calls compared to 83% in 2009.

There is an urgent need to return the VHF success rate to the figures shown by the last two surveys.

CPDLC

No CPDLC provided in Luanda FIR.

5.21 Lusaka FIR

VHF/HF

A total of 28 calls were made and all on VHF with 57% success rate. There is a need to investigate communication issues in the North-East sector of the FIR (APGEL and GESAT on UR779). This, however, may not in itself be a real issue but for the fact that the success rate for VHF is down to 57% compared to 2012 figure of 97% the new criteria notwithstanding.

CPDLC

No CPDLC provided in Lusaka FIR.

5.22 Mauritius FIR

VHF/HF

A total of 39 calls were made; 23 on VHF and 16 on HF.

Success rate was at 91% and 100% for VHF and HF 100% respectively.

CPDLC

A total of 38 attempts were made via CPDLC with 100% log on successful. Only 3 out of the 38 data points had a successful auto transfer. Approximately 37% were successful in automatic log off.

5.23 Mogadishu FIR

VHF/HF

A total of 290 calls were made; 10 on VHF and 280 on HF.

Success rate was at 60% and 61% for VHF and HF respectively. The data points for VHF are inadequate to conclude the level of success but goes to demonstrate that Mogadishu relies mainly on HF communication. Although the general deduction is that the communication challenges are spread throughout the FIR, positions ASKEN, AXINA, ITMAR and EGTUL showed particular difficulties in establishing communication on HF.



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4C**

Results of the AFI VHF and HF Communications Survey – 2013

CPDLC

No CPDLC provided in Mogadishu FIR.

5.24 Nairobi FIR

VHF/HF

A total of 166 calls were made; 158 on VHF and 8 on HF.

Success rate was at 88% for VHF communication. The data for HF was inadequate for any meaningful conclusion.

CPDLC

No CPDLC provided in Nairobi FIR.

5.25 N'Djamena FIR

VHF/HF

A total of 149 calls were made; 131 on VHF and 18 on HF.

Success rate was at 88% and 83% for VHF and HF respectively.

CPDLC

A total of 109 attempts were made via CPDLC with 97% log on successful. Only 3 out of the 109 data points had a successful auto transfer. Approximately 42% were successful in automatic log off.

ASECNA Performance report for July is similar (99.31% messages delivered).

5.26 Niamey FIR

VHF/HF

A total of 195 calls were made; 123 on VHF and 72 on HF.

Success rate was at 88% for both VHF and HF.

CPDLC

A total of 77 attempts were made via CPDLC with 52% log on successful. Only 29 (38%) out of the 77 data points had a successful auto transfer. Approximately 44% were successful in automatic log off. Investigation should be done into the low log on rate experienced.

However ASECNA Performance report for July suggest opposite (that messages were delivered: 99.76%), IATA to enquire from survey participants the reason(s) for the reported unsuccessful log on.

5.26.1 Ouagadougou ACC



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4C**

Results of the AFI VHF and HF Communications Survey – 2013

VHF/HF

A total of 13 calls were made and all on VHF with success rate of 85%. The HF data was not adequate to provide conclusive results.

CPDLC

No CPDLC provided in Ouagadougou ACC

5.27 Roberts FIR

VHF/HF

A total of 8 calls were made and all on VHF with success rate of 100%. The VHF and HF data was not adequate to provide conclusive results.

CPDLC

No CPDLC provided in Lilongwe FIR.

5.28 Seychelles FIR

VHF/HF

A total of 94 calls were made; 20 on VHF and 74 on HF.
Success rate was at 100% and 86% for VHF and HF respectively.

CPDLC

A total of 89 attempts were made via CPDLC with 100% log on successful. Only 2 (isolated) out of the 89 data points had a successful auto transfer. Approximately 57% were successful in automatic log off.

5.29 Sal FIR

VHF/HF

No data from flight crew was available in the 2013 survey.
Cabo Verde ANSP participated in survey: A total of 449 calls were made, all on VHF.
Success rate was at 99% for the VHF. No calls were received on HF

CPDLC

No CPDLC data received for SAL FIR.

5.30 Tunis FIR

VHF/HF

A total of 18 calls were made all on VHF with success rate was at 100%. The VHF data was not adequate to provide conclusive results.

CPDLC

No CPDLC provided in Tunis FIR.



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4C**

Results of the AFI VHF and HF Communications Survey – 2013

5.31 Windhoek FIR

VHF/HF

A total of 10 calls were made and all on VHF with success rate of 90%. The VHF and HF data was not adequate to provide conclusive results.

CPDLC

No CPDLC provided in Windhoek FIR.

-END-

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4D**

**Draft Terms of Reference of the AFI Aeronautical Surveillance Task Force (AFI ASI/TF)
Terms of Reference**

Terms of Reference

- 1) Ensure that the implementation and operation of aeronautical surveillance systems meet ICAO Standards and Recommended Practices as specified in Annex 10 Volume IV[4]-Surveillance and collision avoidance Systems, the provision of the Aeronautical Surveillance Manual, Doc. 9924 and those of relevant ICAO Manuals related to surveillance operation and systems;
- 2) Develop the AFI regional criteria for the planning and implementation of aeronautical surveillance systems as key enablers to the improvement of the Performance of the Air Navigation System as defined in the Manual on Global Performance of the Air Navigation System (Doc. 9883);
- 3) Ensure that the AFI regional aeronautical surveillance implementation strategy and plans consider the regional ATM operational performance requirements along the AFI Routing Areas in line with the provisions contained in the Manual on ATM System Requirements (Doc. 9882);
- 4) Conduct timely assessment of the status of implementation, operation and sustainability of aeronautical surveillance systems in the AFI region for growth and technology development to support safety and operational effectiveness for current and future surveillance systems and allow for the transition between present and next generation technologies;
- 5) Ensure that appropriate mechanisms (Technical/operational interfaces, procedures, agreements) are developed to facilitate interconnectivity and interoperability of surveillance systems within and across the AFI region;
- 6) On the basis of the above and in the framework of the implementation of ICAO Aviation System Blocks Upgrades (ASBU), revise and coordinate AFI strategy and plan for the provision, the operation and the interoperability of aeronautical surveillance systems within the AFI Region in accordance with the Roadmap for the surveillance systems contained in the Global Air Navigation Plan (GANP, Doc.9750) and taking into account relevant additional ICAO provisions.

Considerations:

In addressing these terms of reference, the Task Force should consider, inter alia, the following aspects:

- a) Operational performance requirements for aeronautical surveillance in the AFI Region, en-route, terminal areas (TMAs) and aerodromes operations;
- b) Near term and long term benefits of relevant candidate surveillance systems.
- c) Strategy from legacy to future system including specific demand during transition
- d) Inter and intra-regional issues taking into consideration ICAO Aviation System Block Upgrades (ASBU) planning requirements (Interconnectivity, interoperability, Data sharing..);
- e) Personnel training for safe aeronautical surveillance system operation and maintenance;
- f) Minimized impact of market mechanism on aeronautical surveillance systems procurement and operation.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4D**

**Draft Terms of Reference of the AFI Aeronautical Surveillance Task Force (AFI ASI/TF)
Terms of Reference**

3-WORK PROGRAMME

Task No.	ASBU Performance Improvement Area	ASBU Applicable Block 0 Modules	Subject	Target date
1	PIA: 1-2-3-4	All that apply	Review of ICAO SARPs and Guidance Material <u>Team Leader:</u> Secretariat <u>Team members:</u> All AFI/ASI Core members <u>References:</u> • ICAO Annex 10 (Vol. 4), Docs.4444 • ICAO Docs.: 8071; 9684; 9688; 9694; 9750; 9863. 9871;9882;9883;9924	CNS/SG/6 :
2	PIA-1: Airport Operations	APTA: Optimization of Approach Procedures including vertical guidance ACDM: Improved Airport Operations through Airport-CDM	Categorization of Aerodromes and Terminal Areas • Data Collection: Statics parameters, Movement figures; • Statistics modeling and categorization <u>Team Leader:</u> ASECNA <u>Team members:</u> All AFI States/ANSPs <u>References:</u> • Surveillance Data collection Template • Statistics models	CNS/SG/6 :
3	PIA 2: Globally Interoperable Systems and Data - Through Globally Interoperable System Wide Information Management	FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration FRTTO: Improved Operations through Enhanced En-Route Trajectories	Categorization of en Route Airspaces • Data Collection: Statics parameters, Movement figures; • Statistics modeling and categorization <u>Team Leader:</u> Seychelles-CACAS <u>Team members:</u> All AFI States/ANSPs <u>References:</u> • Surveillance Data collection Template • Statistics models	CNS/SG/6 :

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4D**

**Draft Terms of Reference of the AFI Aeronautical Surveillance Task Force (AFI ASI/TF)
Terms of Reference**

4	PIA 2: Globally Interoperable Systems and Data - Through Globally Interoperable System Wide Information	FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration	Development of guidelines for surveillance data sharing & exchange; Models of MoU and draft agreements Team Leader: Nigeria Team members: All AFI States/ANSPs	
	Management	FRTTO: Improved Operations through Enhanced En-Route Trajectories	References: • <u>Current</u> models in other regions (EUR, SAM) • Technical interface documents	
	PIA 2: Globally Interoperable Systems and Data - Through Globally Interoperable System Wide Information Management	FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration FRTTO: Improved Operations through Enhanced En-Route Trajectories	Development of regional strategies for coordination between States and stakeholders 1. Coordination with AFCAC <u>Team Leader:</u> Secretariat <u>Support:</u> 2. Coordination with Sub Regional Economic Unions a) ECOWAS/UEMOA <u>Team Leader:</u> Nigeria/ Ghana <u>Support:</u> ECOWAS/UEMOA AFI/FMG Members	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4D**

**Draft Terms of Reference of the AFI Aeronautical Surveillance Task Force (AFI ASI/TF)
Terms of Reference**

	PIA 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM	ASUR: Initial capability for ground surveillance ASEP: Air Traffic Situational Awareness(ATSA) OPFL: Improved access to Optimum Flight Levels through Climb/Descent Procedures using ADS-B ACAS: ACAS Improvements SNET: Increased Effectiveness of Ground-Based Safety Nets	b) CEMAC <u>Team Leader:</u> Cameroon/Congo <u>Support:</u> CEMAC AFI/FMG Members c) SADC <u>Team Leader:</u> South Africa/Botswana <u>Support:</u> SADC ASI Members d) EAC <u>Team Leader:</u> Kenya/Uganda <u>Support:</u> EAC ASI Members India Ocean	CNS/SG/6 :
5	PIA 2: Globally Interoperable Systems and Data - Through Globally Interoperable System Wide Information Management	FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration FRTTO: Improved Operations through Enhanced En-Route Trajectories	Review and update Status of deployment of Surveillance systems <u>Team Leader:</u> Secretariat Team members: All AFI/ASI States members References: • Template on the collection of Status of current AFI surveillance systems	CNS/SG/6 :

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4D**

**Draft Terms of Reference of the AFI Aeronautical Surveillance Task Force (AFI ASI/TF)
Terms of Reference**

	PIA 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM	ASUR: Initial capability for ground surveillance ASEP: Air Traffic Situational Awareness(ATSA) OPFL: Improved access to Optimum Flight Levels through Climb/Descent Procedures using ADS-B ACAS: ACAS Improvements SNET: Increased Effectiveness of Ground-Based Safety Nets		
4	PIA: 1-2-3-4	All that apply	Training on Surveillance Systems Organization of seminars/workshops on surveillance, : <u>Team Leader: Secretariat</u> <u>Support:</u> ANSPs (ASECNA, ATNS, GCAA, NAMA) Regional /International Organization (ECOWAS/UEMOA, CEMAC, SADC, ITU, ATU, AFCAC) Industry (Intelsat, SITA, IATA.) References: • Report on previous ASI TF and APIRG meetings • ICAO Annex 10 (Vol. 4 • ICAO Training Manual (Doc. 7192 Part E-2 - Air Traffic Safety Electronic Personnel (ATSEP)	CNS/SG/6

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4D**

**Draft Terms of Reference of the AFI Aeronautical Surveillance Task Force (AFI ASI/TF)
Terms of Reference**

3-COMPOSITION

Cores members:

Working Group for the development of the AFI ENROUTE Surveillance strategy

Team Leader: Seychelles/CACAS

Members: South Africa-Nigeria-Ghana-DRC -Mauritius-Angola-IATA

Working Group for the development of the AFI TERMINAL AREA Surveillance strategy

Team Leader: ASECNA

Members: Zambia-South Africa- Tanzania- IATA

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4E1**

**Aeronautical Fixed Services
Performance Data Collection Forms**

Explanatory Notes

1: Performance of AFTN

Column 1: Country name
Columns 2 and 3: Terminal stations of individual links
Column 4: Network supporting the link
Column 5: Circuit communication protocol
Column 6: Circuit signaling speed
Column 7: Transit time between Terminal I and Terminal II
Column 8: Direct circuit or routed circuit between Terminal I and Terminal II
Columns 9-14: Monthly availability rates for six months
Column 15: Average availability rate for six months

2: Qualitative performance of ATS/DS

Column 1: Country name
Columns 2 and 3: Terminal stations of individual circuits
Column 4: Network supporting the link
Column 5: Connection time
Column 6: Number of attempts
Column 7: One way latency time
Column 8: Call set up time
Column 9: Qualitative assessment from 1 to 5 indicating voice strength and clarity
Columns 10-15: Monthly availability rates for six months
Column 16: Average availability rate for six months

3: Qualitative performance of ATN applications

Column 1: Country name
Columns 2 and 3: Terminal stations of individual links
Column 4: Network supporting the link
Column 5: ATN application
Column 6: Circuit communication protocol
Column 7: Circuit speed
Column 8: Transit time between Terminal I and Terminal II
Column 9: Routing indicates direct circuit or routed circuit between Terminal I and Terminal II
Columns 10-15: Monthly availability rates for six months
Column 16: Average availability rate for six months

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4E1**

**Aeronautical Fixed Services
Performance Data Collection Forms**

Explanatory Notes

Centre:

Date:

Parameters	Values
Fixed Parameters	
Intelsat link Name	IS 10-02 @ 359 Degrees East
Transponder Number	23/23
Satellite Earth Station Coordinates (WGS-84)	LONG = ddd, mm E/W
	LAT = dd, mm N/S
	AZ = ddd, mm E/W
	EL = dd, mm N/S
Antenna Type and Size	m
Antenna Gain	Tx : ... dBi Rx : ... dBi
SSPA type	X W
Up Converter Frequency	MHz
Down Converter Frequency	MHz
Dynamic parameters	
EIRP	
G/T	
C/N0	
BER	
MTBF	
MTTR	
Parameters for Carrier Performance	
Carrier failure rate	
C/N0	
BER	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4E1**

**Aeronautical Fixed Services
Performance Data Collection Forms**

Explanatory Notes

3: QUALITATIVE PERFORMANCE OF ATN APPLICATIONS

Country	Terminal 1	Terminal II	Support	Provided Service	COM Protocol	Speed	Transit Time	Routing	Monthly Availability 2014						Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									05	06	07	08	09	10	
Ethiopia	Addis Ababa	Mogadishu	NAFI-SAT	AIDC											
Ethiopia	Addis Ababa	Djibouti	NAFI-SAT	AMHS											

---000---

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4E2**

Integrated Regional Telecommunication Infrastructure Project

ACTION PLAN - TECHNICAL ASPECTS

- 1) Background of Work completed by the Technical Group of the AFI Aeronautical VSAT Managers (Douala, Cameroon, 28 February – 01 March 2012)
 - a) Design of ATN Overlay Architecture:
 - i) Based on the architecture design of original ATN Task Force
 - ii) Circuits were inserted to ensure at least two interconnections between adjacent networks
 - iii) Additional circuits included to provide further redundancy
 - iv) The results are shown in Appendix 3.4H to APIRG/18 report.
 - b) The technical solution for the ATN overlay network was based on the following fundamental criteria:
 - i) All four networks (AFISNET, CAFSAT, SADC, and NAFISAT) have made substantial investment in existing infrastructure, which must be retained and utilized.
 - ii) Three of the networks operate on the same satellite i.e. IS 1002 which will ensure seamless operation
 - iii) A single satellite access method is proposed for the technical solution to ensure interoperability
 - iv) Although the ATN network will mainly support IP based applications, legacy protocols must continue to be supported
 - v) The overlay network must be secure, i.e. independent of terrestrial services, etc.
 - c) The cost estimates calculated by the Technical Group are therefore based on the above criteria. The cost furthermore include the following line items:
 - i) RF Outdoor Equipment (SSPA where required)
 - ii) Indoor Unit
 - iii) Modem/Frame Relay Access Device
 - iv) Equipment Rack and Miscellaneous
 - v) Un-interrupted Power Supply (UPS)
 - vi) Spare Equipment
 - vii) Site Installation, Integration and Commissioning
 - viii) Engineering, Project Management and Training
 - ix) Packing, Freight and Insurance
 - x) Duties and Taxes

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4E2**

Integrated Regional Telecommunication Infrastructure Project

- d) The cost estimates of the proposed solution are shown in Table 1 below: The estimates are based on the following spares' options:
- i) Option 1: Total centralized maintenance, i.e. one set per network
 - ii) Option 2: Total decentralized maintenance, i.e. one set per VSAT node
 - iii) Option 3: Hybrid consisting of:
 - (1) Decentralised maintenance for CAFSAT & NAFISAT
 - (2) Centralized maintenance for SADC and NAFISAT
 - iv) Table 1 below is a summary of the initial cost calculations for the AFI ATN overlay network

Table 1

Cost Comparison of VSAT Solutions for an AFI ATN Network - IDU in 1 + 1 Configuration					
Region -->	NAFISAT Region	SADC Region	AFISNET Region	CAFSAT Region	Total Cost for AFI ATN Network
Excluding Spares Options					
Option D (TDMA) IDU7000	\$ 560,685.91	\$ 610,341.82	\$ 631,273.03	\$ 604,376.50	\$ 2,406,677.26
Including Option 1 Spares					
Option D (TDMA) IDU7000	\$ 583,615.91	\$ 671,671.82	\$ 692,603.03	\$ 627,306.50	\$ 2,575,197.26
Including Option 2 Spares					
Option D (TDMA) IDU7000	\$ 755,865.91	\$ 920,721.82	\$ 1,016,313.03	\$ 767,026.50	\$ 3,459,927.26
Including Option 3 Spares					
Option D (TDMA) IDU7000	\$ 593,215.91	\$ 662,071.82	\$ 1,016,313.03	\$ 767,026.50	\$ 3,038,627.26

2) Way Forward of Technical Group of Integrated Regional Telecommunication Infrastructure Task Force

The following topics must be addressed by the Technical Group and timelines proposed:

- a) Revise and Provide input to Financial and Administrative Groups:
 - i) Revisit the calculations shown in table 4.1 above, done for the recommended technical solution, as well as costing for the maintenance options, and submit to Financial & Administrative groups – Target date: **August 2013**
- b) Revision of the AFI ATN routing architecture
 - i) The AFI ATN routing architecture must be revised to include circuits between Addis Ababa and Cairo/Johannesburg. As part of the process ATNS will discuss

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4E2**

Integrated Regional Telecommunication Infrastructure Project

- the implementation of the AMHS circuits and the conducting of trials with Ethiopia
- ii) Revise the AFI ATN architecture, taking into account the re-alignment of the NAFISAT ANPs and SUPPs to the EUR and MID Regions – **ongoing**
 - c) Complete work in respect of maintenance options
 - i) This is still not completed and will be addressed by Technical Group – Target date: **November 2013**
 - d) Review and update the status of implementation of the best practices as adopted by the APIRG/18 Meeting
 - i) Initial analyses to be revisited by the Technical Group and report drafted – Target date: **November 2013**
 - e) Conduct a gap analysis against agreed best practices for networks
 - i) Initial analyses to be revisited by Technical Group and a report drafted
 - ii) Backup of satellite services: Technical discussions to be conducted with Intelsat to finalize calculations of backup options. It is foreseen that additional cost will have to be incurred that is not included in the initial cost calculation for the ATN Overlay – Target Date: **November 2013**
 - f) Develop a convergence plan with priorities and timelines to close identified gaps & other work for technical group
 - i) Align timelines with the timelines proposed in the AMHS Task Force:
 - (1) 2012 to 2014 – National deployment – domestic AMHS
 - (2) 2013 – 2015 - Regional deployment – AFI States will implement MTA to MTA, AMHS connections using TCP/IP via established AFI networks
 - (3) 2014 – 2018 – Inter-regional deployment – ATN/IPS connections
 - g) Alignment of Regional Air Navigation Plans & Supplementary Procedures:
 - i) Analyze the possible impact of the alignment of ANPs and SUPPs on its work
 - ii) Agree on the way forward for the development of an integrated regional telecommunication infrastructure for the Africa-Indian Ocean Region:
 - iii) Amendment proposal for AFI Regional Air Navigation Plan as appropriate

Architecture will have to be revised taking into account the re-alignment of the NAFISAT States, refer to paragraph 2 b) above
- 3) Timelines for Technical Group
- a) The timelines based on the target dates as proposed are shown in the Gantt chart below:

Explanatory Notes

ID	Task Name	Duration	Start	Finish	2014				2015				2016				2017				2018				2019
					Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	
1	Time Frame for Technical Team	1437 days?	Fri 13-06-28	Mon 18-12-31																					
2	Revisit cost estimates & Provide input to Financial & Admin. Groups	46 days	Mon 13-07-01	Mon 13-09-02																					
3	Revise AFI/ATN Routing Architecture	110 days	Mon 13-07-01	Sat 13-11-30																					
4	Complete work i.r.o. maintenance options	110 days	Mon 13-07-01	Sat 13-11-30																					
5	Review and update the status of implementation of the best practices as adopted	110 days	Mon 13-07-01	Sat 13-11-30																					
6	Conduct a gap analysis against agreed best practices for networks	110 days	Mon 13-07-01	Sat 13-11-30																					
7	Develop a convergence plan with priorities and timelines to close identified gaps	1437 days?	Fri 13-06-28	Mon 18-12-31																					
8	2012 to 2014 – National deployment	393 days?	Mon 13-07-01	Wed 14-12-31																					
9	2013 – 2015 – Regional deployment	655 days?	Fri 13-06-28	Thu 15-12-31																					
10	2014 – 2018 – Inter-regional deployment	1304 days?	Wed 14-01-01	Mon 18-12-31																					
11	Analyze possible impact of the alignment of ANPs and SUPPs on its work	284 days	Mon 13-07-01	Thu 14-07-31																					

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4E1**

**Aeronautical Fixed Services
Performance Data Collection Forms**

Explanatory Notes

ACTION PLAN - LEGAL AND ADMINISTRATIVE ASPECTS

A) Oversight Model

Type of Agreement – *International treaty or administrative agreement*

- Administrative agreements as are currently in place

Institutional framework – *Organization to set up, fund, maintain and operate Network*

- Keep the current structures that manage the various networks. Include an overall co-ordination body made up of representatives from the various network management groups, two members each that will rotate, one member from the secretariat (ICAO or AFCAC to be determined).

Funding Mechanism – *The costs involved are shared among the participating States in a fair and equitable manner*

- As currently decided by each body.
- Each body will financially support the costs related to the coordination body equally.

Oversight body – *Defines nature of organization to implement and manage facility*

- Strategic oversight will lie with the coordination body
Alignment of technology, rollout, requirements, services etc.
- Safety and technical oversight (audit function) will be coordinated with ICAO.
- Operational administrative, technical and safety oversight will continue as currently run within each network setup.

Mandate of Oversight body – *Ensure set up, operation, maintenance, expansion and funding*

- Ensure set up, operation, maintenance, expansion and funding as per the current network body structures of AFISNET, CAFSAT, NAFISAT and SADC VSAT
- The safety and technical audit function is to be carried out against applicable SARPS, regional plans and APIRG requirements in coordination with ICAO.

Mandate of Network provider – *Functions and supporting services*

- As currently mandated by the governing bodies of the AFISNET, CAFSAT, NAFISAT and SADC VSAT.
- Implement, operate, maintain the network and ensure present and future performance in line with strategic objectives and oversight body requirements

Any delegated ANSP aspects – *Information on expected consequences on the overall AFI air navigation system or any part thereof*

- Provision of aeronautical ground to ground interconnection services on behalf of States

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4E1**

**Aeronautical Fixed Services
Performance Data Collection Forms**

Explanatory Notes

Handling of Pre-implementation costs – *Determination of the costs attributed should be in a manner acceptable to all the participating States*

- States are responsible for costs within the current structures of AFISNET, CAFSAT, NAFISAT and SADC VSAT.

Cost Determination – *Format of annual costs, i.e. Capex, operational, maintenance, administrative overheads, depreciation and/or amortization and per-implementation*

- All expenses

Cost sharing – *Each state to assume responsibility for its share of the costs involved (partnership with users)*

- States are responsible for costs within the current structures of AFISNET, CAFSAT, NAFISAT and SADC VSAT.

Cost Recovery mechanism – *To be “multinationally” financed or refinanced by a State, group of States or by an agency as established under the authority of an agreement by States*

- Cost recovery is managed within the current structures of AFISNET, CAFSAT, NAFISAT and SADC VSAT.

Budget Approval – *Proper financial control will require costs and revenues to be estimated in advance*

- Budget approval is handled within the current structures of AFISNET, CAFSAT, NAFISAT and SADC VSAT.

Financial audit and taxation – *Addressed in the context of the overall operations*

- Managed within the current structures of AFISNET, CAFSAT, NAFISAT and SADC VSAT.
- It is however recommended that all bodies are audited by an external audit body annually and taxation is handled as per the requirements of the state.

Any other issues –

- None

B) States' Commitment

Financial, Managerial and other contracting aspects –

- There are currently agreements in place within the AFISNET, CAFSAT, NAFISAT and SADC VSAT structures that should continue, however the agreements that are in place should ensure that the following elements are defined:
 - o Objective
 - o Obligations of the parties
 - o Definition and description of the network and services
 - o Establishment, operation and maintenance of the network
 - o Legal, financial and other responsibilities and liabilities
- Proposed Coordinating body requires:
 - o Terms of reference / mandate

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4E1**

**Aeronautical Fixed Services
Performance Data Collection Forms**

Explanatory Notes

- Objective
- Defined membership
- Tenure
- Obligations of the parties
- Legal, financial and other responsibilities and liabilities

C, D and E) Legal, Governance and Financial Issues

Managerial and other contracting aspects should be included as listed:

- Governing bodies and decision making arrangements
- Organization and staffing
- Consultation
- Pre-implementation considerations
- Cost Determination
- Cost sharing
- Recovery of costs from users
- Budgeting
- Authority to approve the budget
- Financial auditing
- Taxation and other government levies
- Procedures for settlement of disputes
- Accessions, withdrawals, amendments to and termination of agreement
- Any other relevant business

Maintenance

The aspect of maintenance across all networks should be managed as part of the individual contracts with the applicable service providers in terms of the agreements in place in the AFISNET, CAFSAT, NAFISAT and SADC VSAT agreements as amended when necessary. This should include but not be limited to:

- Service level agreement
- Support plan

Participating members of the administrative group

- Botswana, Cameroon, Egypt, Ethiopia, Kenya (chairman), Libya, Mozambique, Nigeria, Seychelles, South Africa, Sudan and Zambia

-END-

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4F**

**Task Force on the Integrated Regional Telecommunication Infrastructure
Revised Terms of Reference (TORs)**

Revised Terms of Reference (TORs)

1. Vision

- a) Improve the contribution of the aeronautical telecommunication infrastructure in addressing safety endeavours in the AFI Region.
- b) Enhance Air Navigation Safety, Capacity and Efficiency through elimination of deficiencies associated with AFI aeronautical infrastructure.

2. Objectives

- a) Develop a sustainable and integrated/interoperable regional IP-based Data Communication Network primarily based on VSAT Technology to provide effective aeronautical telecommunications services in AFI region;
- b) Upgrade technical capabilities of existing VSAT networks to comply with the ICAO SARPs and guidance material, user requirements and global best practices;
- c) Ensure financial sustainability of the networks through equitable and fair allocation of costs to States and users;
- d) Create harmonious and seamless administrative oversight framework for the networks;
- e) Ensure States' commitment to this initiative;
- f) Develop the AFI ATN Strategy and Implementation Plan; and
- g) Apply appropriate cost-effective technologies aligned with the Global Air Navigation Plan (Doc 9750) Aviation System Block Upgrades (ASBU) Methodology and associated technology roadmaps for communications, navigation and surveillance (CNS), information management (IM) and avionics.

3. Deliverables

The deliverables expected from the Task Force include:

3.1. Technical:

Purpose of the multinational air navigation facility/service and its operational and technical justifications.

This should include the overall plan and targets for the development and the establishment of the facility/service.

The likely implications if any, on regulations, working routines, equipment, premises and maintenance should be included. Information on the expected consequences on the overall AFI air navigation system or any part thereof should also be included.

Deliverables

- a) *Detailed gap analysis based on ICAO SARPs and guidance material, user requirements and global best practices;*

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4F**

**Task Force on the Integrated Regional Telecommunication Infrastructure
Revised Terms of Reference (TORs)**

b) <i>Architectural requirements;</i> c) <i>Recommendations for a road-map, to be implemented by States; and</i> d) <i>Maintenance.</i>
Need for an amendment to the AFI Regional Air Navigation Plan. Assess the need if the establishment of a multinational facility/service will necessitate an amendment to the AFI Regional Air Navigation Plan, to be carried out in accordance with established procedures. <i>Deliverable</i> <i>Amendment proposals to the Air Navigation Plan as appropriate.</i>

Composition of the Technical Team:

- Egypt, Botswana, Mozambique, Nigeria, Rwanda, France/Reunion, South Africa (**Team Leader**), Swaziland, Tanzania, Uganda, ASECNA, Roberts FIR, IATA,

3.2. Financial

Financial implications and cost-effectiveness. Related information should include estimates of the total costs of the multinational facility/service covering, as required, research and development, implementation, operation and maintenance, administration, and capital costs. how all costs incurred prior to the operational phase will be financed; assessing savings which may accrue from the implementation of the facility/service and comparing these savings to the total cost estimates; proposals as to how cost shares of States participating in the provision of the project are to be determined. Also, assessment needs to be provided on impact on users from charges for the facility/service concerned. Financial aspects The participation of States in the provision of a multinational facility/service is based on the assumption that any State having supported and agreed to the implementation of such a facility/service and making use of it should also shoulder its respective share of the costs involved. <i>Deliverables</i> a) <i>Cost estimates;</i> b) <i>Funding (project teams and integrated network model);</i> c) <i>Cost recovery methods (cost sharing amongst States, billing); and</i> d) <i>Maintenance.</i>

Composition of the Financial Team:

- South Africa, France, Kenya, Uganda, ASECNA (**Team Leader**), IATA

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4F**

**Task Force on the Integrated Regional Telecommunication Infrastructure
Revised Terms of Reference (TORs)**

3.3 Administrative/Legal:

Managerial implications and other contractual aspects

The participating States would need to formalize in an agreement the terms under which the multinational facility/service is to be provided. A primary aim of the agreement should be to ensure that the costs involved are shared among the participating States in a fair and equitable manner.

Deliverables

- a) Oversight model;*
- b) States' commitment;*
- c) Legal issues; Governance;*
- d) Maintenance; and*
- e) Draft agreement(s)*

Composition of the Administrative/Legal Team:

- Egypt, Namibia, Kenya (**Team Leader**), South Africa Tanzania, ASECNA, IATA,

-END-

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4G**

List of Deficiencies in the Air Navigation Fields

AFTN

<i>State Name</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
Eritrea									
	AFTN Plan, AFI Rec. 9/7	Asmara AFTN centre	Circuit Asmara/Addis Ababa	1998	The circuit has been disconnected	To be restored	Eritrea, Ethiopia	30 September 2014	U
Ethiopia									
	AFTN Plan, AFI Rec. 9/7	Addis Ababa AFTN centre	Circuit Addis Ababa/Asmara	1998	This circuit has been disconnected	To be restored	Ethiopia, Eritrea	30 September 2014	U

APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4G
List of Deficiencies in the Air Navigation Fields

ATS DIRECT SPEECH

<i>State Name</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
Algeria	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Algiers ACC-FIC	Circuit Algiers/Tripoli	1998		Implement LTF circuit	Algeria, Libya	30 September 2014	U
Burundi	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bujumbura APP	Circuit/ Bujumbura/Kinshasa	1998	Not operational	VSAT implemented at Bujumbura and Kinshasa	Burundi, DR Congo	30 September 2014	A
Dem. Rep. of Congo	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bukavu TWR	Circuit Bukavu/Kigali	1996	Not implemented		DR Congo, Rwanda	30 September 2014	A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Kinshasa	Circuit Brazzaville/Kinshasa		unserviceable	Interconnection between AFISNET and SADC/2	DRC ASECNA	30 September 2014	A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Gbadolite TWR	Circuit Gbadolite/Bangui	2002	Not implemented	Could be implemented by interconnection between Bangu AFISNET and G'Badolite RVA domestic VSATs.	DR Congo, ASECNA	30 September 2014	A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Goma APP	Circuit Goma/Bujumbura	1998	Not implemented		DR Congo, Burundi	30 September 2014	A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Goma APP	Circuit Goma/Kigali	1998	Not implemented		DR Congo, Rwanda	30 September 2014	A
Eritrea	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Asmara ACC	Circuit Asmara/ Addis Ababa	1998	The circuit has been disconnected	To be restored. NAFISAT	Eritrea, Ethiopia	30 September 2014	U
Ethiopia	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Addis Ababa ACC/FIC	Circuit Addis Ababa/ Asmara	1998	The circuit has been disconnected	To be restored. NAFISAT	Ethiopia, Eritrea	30 September 2014	U
Ghana	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Accra ACC	Circuit Accra/Kano	2009	Unserviceable	To be restored AFISNET	Ghana Nigeria	30 September 2014	A
Rwanda	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Kigali ACC	Kigali/Kinshasa		Unserviceable	To be restored SADC//2	Rwanda, DR Congo	30 September 2014	A

APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4G
List of Deficiencies in the Air Navigation Fields

ARNS

<i>State Name</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
Angola	Nav aids AFI/7, Rec. 10/4	Huambo	VOR/DME	1998	Not implemented	Implement facility	ENANA	30 September 2014	A
	Nav aids AFI/7, Rec. 10/4	Kuito	VOR/DME	1998	Not implemented	Implement facility	ENANA	30 September 2014	A
	Nav aids AFI/7, Rec. 10/4	Luena	VOR/DME	1998	Not implemented	Implement facility	ENANA	30 September 2014	U
	Nav aids AFI/7, Rec. 10/4	Saurimo	VOR/DME	1998	Not implemented	Implement facility	ENANA	30 September 2014	U
Cameroon	Nav aids AFI/7, Rec. 10/4	Maroua	VOR	1998	Not implemented	Implement facility	Cameroon	30 September 2014	A
Guinea	Nav aids, AFI/7 Rec. 10/4	Kankan	VOR	1998	Not implemented	Implement facility	Guinea	30 September 2014	A
	Nav aids AFI/7 Rec. 10/4	Labe	VOR	1998	Not implemented	Implement facility	Guinea	30 September 2014	A
	Nav aids AFI/7 Rec. 10/4	Nzerekore	VOR	1998	Not implemented	Implement facility	Guinea	30 September 2014	A
Kenya	Nav aids AFI/7 Rec. 10/4	Mandera	VOR/DME	1998	Not implemented	Implement facility	Kenya	30 September 2014	U
Lesotho	Nav aids AFI/7 Rec. 10/4	Maseru	VOR/DME	2002	Not implemented	To implement	Lesotho	30 September 2014	U
Liberia	Nav aids AFI/7 Rec. 10/4	Robertsfield	ILS 04	1998	Not implemented	Implement facility	Liberia	30 September 2014	U
Libya	Nav aids AFI/7 Rec. 10/4	Sarir	VOR/DME	1998	Not implemented	Implement facility	Libya	30 September 2014	U
Madagascar	Nav aids AFI/7 Rec. 10/4	Antsiranana	VOR	1998	Not implemented	Implement facility	Madagascar	30 September 2014	U
	Nav aids AFI/7 Rec. 10/4	Maintirano	VOR	2002	Not implemented	Implement facility	Madagascar	30 September 2014	U
	Nav aids AFI/7 Rec. 10/4	Morondava	VOR	1998	Not implemented	Implement facility	Madagascar	30 September 2014	U
	Nav aids AFI/7 Rec. 10/4	Sainte Marie	VOR	1998	Not implemented	Implement facility	Madagascar	30 September 2014	A
	Nav aids AFI/7 Rec. 10/4	Toliara	VOR	1998	Not implemented	Implement facility	Madagascar	30 September 2014	U

APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4G
List of Deficiencies in the Air Navigation Fields

<i>State Name</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective action</i>	<i>Executing Body</i>	<i>Target date for implementation</i>	<i>Priority</i>
Sao Tome & Principe	Nav aids AFI/7 Rec. 10/4	Sao Tome	ILS 11	1998	Not implemented	Implement facility	Sao Tome & Principe	30 September 2014	A
Sierra Leone	Nav aids AFI/7 Rec. 10/4	Freetown/ Lungi	ILS 30	1999	Unserviceable	To repair	Sierra Leone	30 September 2014	U
	Nav aids AFI/7 Rec. 10/4	Freetown/ Lungi	VOR/DME	1999	Unserviceable	To repair	Sierra Leone	30 September 2014	U
Somalia	Nav aids AFI/7 Rec. 10/4	Hargeisa	VOR/DME	1998	Not implemented	Implement facility	Somalia	30 September 2014	U
	Nav aids AFI/7 Rec. 10/4	Mogadishu	VOR/DME	1998	Not implemented	Implement facility	Somalia	30 September 2014	U
Sudan	Nav aids AFI/7 Rec. 10/4	Geneina	VOR	1998	Not implemented	Implement facility	Sudan	30 September 2014	U
	Nav aids AFI/7 Rec. 10/4	Juba	ILS 13	1998	Not implemented	Implement facility	Sudan	30 September 2014	A
	Nav aids AFI/7 Rec. 10/4	Karina	VOR/DME	1998	Not implemented	Implement facility	Sudan	30 September 2014	U
Tanzania	Nav aids AFI/7 Rec. 10/4	Dodoma	VOR/DME	1998	Not implemented	Implement facility	Tanzania	30 September 2014	U
	Nav aids AFI/7 Rec. 10/4	Mbeya	VOR/DME	1998	Not implemented	Implement facility	Tanzania	30 September 2014	U
	Nav aids AFI/7 Rec. 10/4	Mwanza	DME	1998	Not implemented	Implement facility	Tanzania	30 September 2014	U
Zambia	Nav aids AFI/7 Rec. 10/4	Mongu	VOR	1998	Not implemented	Under installation	Zambia	30 September 2014	U
	Nav aids AFI/7 Rec. 10/4	Solwezi	VOR	1998	Not implemented	Sourcing for funds	Zambia	30 September 2014	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4H**

**Terms of Reference, Future Work Programme and Composition of the
Communications, Navigation and Surveillance Sub-Group (CNS/SG)**

1. TERMS OF REFERENCE

- a) Ensure the Continuous and coherent development of the AFI Regional Air Navigation Plan in the fields of aeronautical communications, navigation and surveillance (CNS), including the development of CNS elements of the AFI Air Navigation System Implementation Action Plan in the light of new developments, in harmony with the ICAO Global Air Navigation Plan (Doc 9750) and the plans for adjacent regions;
- b) Identify, review and monitor deficiencies that impede or affect the provision of efficient aeronautical telecommunications and recommend appropriate corrective action;
- c) Prepare, as necessary, CNS/ATM cost/benefit analyses for the implementation options of C, N and S elements; and
- d) Study, as necessary, institutional arrangements for the implementation of C, N and S systems in the AFI Region.

2. WORK PROGRAMME

Item	Task description	Priority	Target date
Communications			
1.	Follow up and monitor the implementation of VHF coverage in the AFI region in accordance with AFI/7 Rec. 5/12.	A	APIRG/20
2.	Update the AFI AFTN routing directory	A	APIRG/20
3.	In coordination with the ATM/AIM/SAR Sub-group, participate in the development of a communication infrastructure to support an AFI Central AIS Database (AFI CAD)	A	Continuous
4.	Monitor the development, and coordinate the implementation of guidance material for the implementation of the Aeronautical Telecommunication Network (ATN) and supported ground-ground and air-ground applications.	A	APIRG/20
5.	Review and update, if needed, the ICAO Register of AMHS managing domains and addressing information pertaining to AFI.	A	Continuous
Navigation			
6.	Follow up and monitor the implementation of the AFI GNSS Strategy.	A	Continuous
Surveillance			
7.	Analyse and review CNS aspects of the report of the Aeronautical Surveillance Implementation Task Force.	A	APIRG/20

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4H**

**Terms of Reference, Future Work Programme and Composition of the
Communications, Navigation and Surveillance Sub-Group (CNS/SG)**

Communications, Navigation and Surveillance – General matters			
8.	Analyse, review and monitor the implementation and operation of aeronautical communications, navigation and surveillance (CNS) systems, identify CNS deficiencies and propose measures for their elimination, as required.	A	Continuous
9.	Give further consideration, as necessary, to the concept of multinational ICAO AFI air navigation facility/service addressed in the AFI/7 Report under Agenda Item 14 (AFI/7, Conclusion 10/6c).	C	Continuous
10.	In co-ordination with the ATS/AIS/SAR Sub-group, continue the evolutionary and harmonized development of the AFI CNS/ATM Systems Implementation Plan (AFI/7 Concl. 13/1).	A	Continuous
11.	In co-ordination with the ATS/AIS/SAR Sub-group, develop, as necessary, comprehensive business cases for competing CNS/ATM elements implementation options for the identified routing areas.	B	Continuous
12.	Co-ordinate plans developed by States, international organizations, airlines and industry for the implementation of the regional CNS/ATM systems implementation plan; and monitor CNS/ATM systems research and development, trials and demonstrations within the AFI Region and information from other regions.	B	Continuous
13.	Coordinate the implementation of ICAO Global Air Navigation Plan, Aviation Systems Block Upgrades and Technology Roadmaps pertaining to CNS and develop associated regional performance objectives.	A	Continuous
Aeronautical Spectrum			
14.	Coordinate regional activities aimed at promoting ICAO position for ITU-WRC meetings, and improving aeronautical spectrum management and control in the Region.	A	Continuous
15	Review the report of the AFI Frequency Management Group	A	APIRG/20

Priority:

A: High priority tasks on which work should be speeded up;

B: Medium priority tasks, on which work should be undertaken as soon as possible, but without detriment to priority A tasks; and

C: Lesser priority tasks, on which work should be undertaken as time and resources permit, but without detriment to priority A and B tasks.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.4H**

**Terms of Reference, Future Work Programme and Composition of the
Communications, Navigation and Surveillance Sub-Group (CNS/SG)**

3. COMPOSITION:

Algeria, Angola, Cameroon, Congo, Côte d'Ivoire, D.R. of Congo, Egypt, Eritrea, Ethiopia, Gambia, Ghana, Guinea, Kenya, Malawi, Mali, Mauritius, Morocco, Niger, Nigeria, Senegal, South Africa, Spain, Sudan, Tanzania, Tunisia, Zambia, ACAC, ASECNA, IATA, and IFALPA.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5A**

Follow-up on APIRG/17 and 18 Conclusions and Decisions in the AIM Field

Conclusions/ Decisions No. Strategic Objectives	Title of Conclusions/ Decisions	Text of Conclusions/Decisions	Follow-up action by the Secretariat	To be initiated by	Deliverable/ Intended Outcome	Target Dates for follow up action by the Secretariat	Status of follow up action by the Secretariat
CONCLUSION 17/86:	TRANSITION FROM AIS TO AIM	That, recognizing the limitations of the current AIS, which does not meet the new global ATM system requirements envisioned by the ATM operational concept, and taking into consideration the ICAO roadmap for the transition from AIS to AIM: a) States that have not yet done so, are urged to develop national plans to implement the transition from AIS to AIM and send them to the ICAO ESAF and WACAF Regional Offices before 31 December 2010 ~~31 August 2012~~ ; and b) AFI AIM implementation task force monitor the progress of transition from AIS to AIM in the AFI Region and support regional and national planning efforts.	State letter T2/7-0476 of 16 June 2011 State Letter to T17/6.13 of 26 June 2011 to AFI AIM /TF members ~~State letter T2/7-0725 of 7 August 2012~~	WACAF	-Collaborate with States in the development of performance goals for the transition from AIS to AIM in the AFI Region and identify achievable milestones ~~National Performance Framework for the implementation of AIM on the bases of the Aviation System Block-Upgrades methodology (ASBU) and its impact on the e-ANP.~~		On-going
CONCLUSION 17/88:	e-TOD CHECKLIST	That, States be encouraged to use the e-TOD checklist at Appendix 3.6C to this ~~APIRG/17~~ report in order to assist them in the process of planning and implementation of the e-TOD provisions.	State letter T2/7-0476 of 16 June 2011 State Letter to T17/6.13 of 26 June 2011 to AFI AIM /TF members ~~State letter T2/7-0725 of 7~~	WACAF	Planning and implementation of the e-TOD provisions	7 July 2011 ~~1 December 2012~~	On-going

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5A**

Follow-up on APIRG/17 and 18 Conclusions and Decisions in the AIM Field

Conclusions/ Decisions No. Strategic Objectives	Title of Conclusions/ Decisions	Text of Conclusions/Decisions	Follow-up action by the Secretariat	To be initiated by	Deliverable/ Intended Outcome	Target Dates for follow up action by the Secretariat	Status of follow up action by the Secretariat
			~~August 2012~~				
CONCLUSION 17/89	ADOPTION OF THE e-TOD IMPLEMENTATION PLAN TEMPLATE AS A REGIONAL MODEL	That states be encouraged to use the: a) e-TOD implementation plan template at Appendix 3.6D to this ~~APIRG/17~~ report as regional model in order to assist them in the process of planning and implementation of the e-TOD provisions. b) national e-TOD implementation plan at Appendix 3.6E to this ~~APIRG/17~~ report as a sample when developing their national e-TOD plans	State letter T2/7-0476 of 16 June 2011 State Letter to T17/6.13 of 26 June 2011 to AFI AIM /TF members ~~State letter T2/7-0725 of 7 August 2012~~	ESAF for ESAF States WACAF for WACAF States	Development of national e-TOD implementation plan	7 July 2011 ~~1 December 2012~~	On-going
CONCLUSION 17/90:	IMPLEMENTATION OF WGS-84 AND ELECTRONIC TERRAIN AND OBSTACLE DATA	That: a) States adopt the revised AIM performance objective "Implementation of WGS-84 and Electronic Terrain and Obstacle Data" as contained in the Performance Framework Form in the Appendix 3.6F to this report as a strategy for implementation; b) The proposed FASID table at Appendix F be adopted for inclusion as a requirement in the AFI FASID (Document 7474, Vol.	State letter T2/7-0476 of 16 June 2011 State Letter to T17/6.13 of 26 June 2011 to AFI AIM /TF members ~~State letter T2/7-0725 of 7 August 2012~~	ESAF for ESAF States WACAF for WACAF States	Implementation of WGS-84 and Electronic Terrain and Obstacle Data as contained in the Performance Framework Form in the Appendix 3.6F to ~~APIRG/17~~ Report ~~National~~	7 July 2011 ~~1 December 2012~~	On-going

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5A**

Follow-up on APIRG/17 and 18 Conclusions and Decisions in the AIM Field

Conclusions/ Decisions No. Strategic Objectives	Title of Conclusions/ Decisions	Text of Conclusions/Decisions	Follow-up action by the Secretariat	To be initiated by	Deliverable/ Intended Outcome	Target Dates for follow up action by the Secretariat	Status of follow up action by the Secretariat
		H); e) The AFI Region e TOD implementation strategy under Appendix 3.6G to this report be adopted for implementation; and d) The revised Terms of Reference of the AFI Region e TOD working group are at Appendix 3.6H to this report be adopted.			~~Performance Framework for the implementation of AIM on the bases of the Aviation System Block Upgrades methodology (ASBU) and its impact on the e-ANP.~~		
CONCLUSION 17/91:	e-TOD IMPLEMENTATION AWARENESS CAMPAIGNS	That, States' AIS should take the lead and carry out awareness campaigns at national level to promote a better understanding of the planning and implementation issues related to e-TOD and training programmes.	State letter T2/7-0476 of 16 June 2011 State Letter to T17/6.13 of 26 June 2011 to AFI AIM /TF members ~~State letter T2/7-0725 of 7 August 2012~~	ESAF for ESAF States WACAF for WACAF States	awareness campaigns at national level to promote a better understanding of the planning and implementation issues related to e-TOD	7 July 2011 ~~1 December 2012~~	~~On-going~~

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5A**

Follow-up on APIRG/17 and 18 Conclusions and Decisions in the AIM Field

Conclusions/ Decisions No. Strategic Objectives	Title of Conclusions/ Decisions	Text of Conclusions/Decisions	Follow-up action by the Secretariat	To be initiated by	Deliverable/ Intended Outcome	Target Dates for follow up action by the Secretariat	Status of follow up action by the Secretariat
CONCLUSION 17/92:	DEVELOPMENT AND MANAGEMENT OF A NATIONAL e- TOD PROGRAMME	That, States, in accordance with sound management principles and procedures, should: a) Develop a framework and a detailed planning including priorities and timelines, for the implementation of a national e-TOD programme; b) Adopt/follow a collaborative approach, involving all concerned parties, in the implementation of e-TOD provisions; and c) Make an inventory of and evaluate the quality of existing terrain and obstacle data sources, and in the case of data collection, consider carefully the required level of details of collected terrain and obstacle data with particular emphasis on obstacle data and associated cost.	State letter T2/7-0476 of 16 June 2011 State Letter to T17/6.13 of 26 June 2011 to AFI AIM /TF members ~~State letter T2/7-0725 of 7 August 2012~~	ESAF for ESAF States WACAF for WACAF States	Collaborative approach, in the implementation of e-TOD provisions	7 July 2011 ~~1 December 2012~~	On-going
CONCLUSION 17/93:	COORDINATION BETWEEN STATES AND DATA PROVIDERS/INTEG RATORS FOR THE PROVISION OF e- TOD AND EXCHANGE OF EXPERIENCE FOR THE IMPLEMENTATION	That: a) Collaboration between States and data providers/integrators should be considered in the process of e-TOD provision; and b) Implementation of e-TOD provisions should be considered a global matter concerning all ICAO Regions, which thereby necessitates coordination and	State letter T2/7-0476 of 16 June 2011 State Letter to T17/6.13 of 26 June 2011 to AFI AIM /TF members ~~State letter T2/7-0725 of 7 August 2012~~	ESAF for ESAF States WACAF for WACAF States	Coordination and exchange of experience between States, ICAO and other national/international organizations and industry partners	7 July 2011 ~~1 December 2012~~	On-going

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5A**

Follow-up on APIRG/17 and 18 Conclusions and Decisions in the AIM Field

Conclusions/ Decisions No. Strategic Objectives	Title of Conclusions/ Decisions	Text of Conclusions/Decisions	Follow-up action by the Secretariat	To be initiated by	Deliverable/ Intended Outcome	Target Dates for follow up action by the Secretariat	Status of follow up action by the Secretariat
	~~OF e-TOD REQUIREMENTS~~	exchange of experience between States, ICAO and other national/international organizations and industry partners involved.					
CONCLUSION 17/94:	RESPONSIBILITY FOR THE PROVISION OF e- TOD	That, States, while maintaining the responsibility for data quality and availability, should consider the extent to which provision of electronic terrain and obstacle data could be delegated to national geodetic institutes/ agencies, based on Service Level Agreement (SLA) reflecting such delegation.	State letter T2/7-0476 of 16 June 2011 State Letter to T17/6.13 of 26 June 2011 to AFI AIM /TF members <i>State letter T2/7-0725 of 7 August 2012</i>	ESAF for ESAF States WACAF for WACAF States	Consideration of the extent to which provision of electronic terrain and obstacle data could be delegated to national geodetic institutes/ agencies, based on Service Level Agreement (SLA)	7 July 2011 <i>1 December 2012</i>	<i>On-going</i>
CONCLUSION 17/95:	PROVISION OF FINANCIAL RESOURCES AND ASSISTANCE FOR THE IMPLEMENTATION OF e-TOD	That: a) e-TOD implementation should be managed by each State as a national e- TOD programme supported by necessary resources, a high level framework and a detailed national plan including priorities and timelines for the implementation of the programme; and	State letter T2/7-0476 of 16 June 2011 State Letter to T17/6.13 of 26 June 2011 to AFI AIM /TF members <i>State letter T2/7-0725 of 7 August 2012</i>	ESAF for ESAF States WACAF for WACAF States	Establishment of a national e- TOD program supported by necessary resources, and a high level framework	7 July 2011 <i>1 December 2012</i>	<i>On-going</i>

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5A**

Follow-up on APIRG/17 and 18 Conclusions and Decisions in the AIM Field

Conclusions/ Decisions No. Strategic Objectives	Title of Conclusions/ Decisions	Text of Conclusions/Decisions	Follow-up action by the Secretariat	To be initiated by	Deliverable/ Intended Outcome	Target Dates for follow up action by the Secretariat	Status of follow up action by the Secretariat
		b) States encountering difficulties in the implementation of e TOD may seek assistance (individually or collectively) from ICAO and/or other States.					
CONCLUSION 17/97:	ADOPTION OF THE AIS TO AIM TRANSITION ROADMAP	That, States adopt the roadmap as guidance material to plan, manage and facilitate the global transition from AIS to AIM within the AFI Region including planning of the scope and prioritizing projects and actions for the transition to AIM.	State letter T2/7-0476 of 16 June 2011 State Letter to T17/6.13 of 26 June 2011 to AFI AIM /TF members <i>State letter T2/7-0725 of 7 August 2012</i>	ESAF for ESAF States WACAF for WACAF States	Adoption of the roadmap as guidance material to plan, manage and facilitate the global transition from AIS to AIM within the AFI Region	7 July 2011 <i>1 December 2012</i>	<i>On-going</i>
CONCLUSION 18/35:	QMS IMPLEMENTATION AND ESTABLISHMENT OF SERVICE LEVEL AGREEMENTS	That, in order to support the effective implementation of QMS, AFI States are urged to: a) take firm commitment at the level of Directors-General of CAA Administrations to implement QMS supported by ISO 9001:2008; b) share their QMS implementation experience and support with other States; and c) establish and maintain formal Service Level Agreements (SLA) between data originators and AIS Providers as per sample	<i>State letter T2/7-0725 of 7 August 2012</i>	<i>ESAF for ESAF States WACAF for WACAF States</i>	<i>Accomplishment of QMS in AIM Services requires commitment from the higher Authorities in CAA Administrations together with establishment of Service Level Agreements (SLA's) between data originators</i>	<i>1 December 2012</i>	<i>On-going</i>

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5A**

Follow-up on APIRG/17 and 18 Conclusions and Decisions in the AIM Field

Conclusions/ Decisions No. Strategic Objectives	Title of Conclusions/ Decisions	Text of Conclusions/Decisions	Follow-up action by the Secretariat	To be initiated by	Deliverable/ Intended Outcome	Target Dates for follow up action by the Secretariat	Status of follow up action by the Secretariat
		~~template at Appendix 3.5A.~~			~~and AIS Providers.~~		
~~DECISION 18/36:~~	~~PROPOSAL FOR AMENDMENT TO THE AFI ANP/FASID (Doc 7474) RELATED TO E- TOD:~~	~~That, ICAO circulates and processes the amendment proposal for the AFI ANP/FASID (Part VIII) at Appendix 3.5B and C.~~	~~State letter T2/7-0725 of 7 August 2012~~	~~ESAF for ESAF States WACAF for WACAF States~~	~~ICAO to process amendment Proposal to AFI ANP/FASID related to e-TOD~~	~~1 December 2012~~	~~On-going~~
~~CONCLUSION 18/37:~~	~~AFI REGION E- TOD IMPLEMENTATION SEMINAR/WORKSH OP~~	~~That ICAO: a) organize regional seminar/workshop for States to promote harmonized implementation of e-TOD and; b) encourage States to send participants to the workshop.~~	~~State letter T2/7-0725 of 7 August 2012~~	~~Both ESAF and WACAF conjointly for AFI States~~	~~Organization of a Regional Seminar/Worksh op to promote harmonized implementation of e-TOD~~	~~1 December 2012~~	~~On-going~~
~~DECISION 18/38:~~	~~AMENDMENT OF AFI BASIC ANP/FASID TO REFLECT THE TRANSITION FROM AIS TO AIM~~	~~That, ICAO circulate and process the AFI ANP/FASID (Doc 7474 Vol.1&2) amendment proposals relating to the Transition from AIS to AIM at Appendix 3.5G and Appendix 3.5F1 to 3.5F9.~~	~~State letter T2/7-0725 of 7 August 2012~~	~~ESAF for ESAF States WACAF for WACAF States~~	~~ICAO to process amendment of the AFI ANP/FASID proposals relating to the Transition from AIS to AIM~~	~~1 December 2012~~	~~On-going~~
19/xx	REGIONAL AND STATE PLANNING AND IMPLEMEN TATION OF	a) The region Develop performance goals for the transition from AIS to AIM in the AFI region in line with the AFI roadmap from AIS to AIM and Aviation		ICAO Secretariat and AFI States			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5A**

Follow-up on APIRG/17 and 18 Conclusions and Decisions in the AIM Field

Conclusions/ Decisions No. Strategic Objectives	Title of Conclusions/ Decisions	Text of Conclusions/Decisions	Follow-up action by the Secretariat	To be initiated by	Deliverable/ Intended Outcome	Target Dates for follow up action by the Secretariat	Status of follow up action by the Secretariat
	THE TRANSITIO N FROM AIS TO AIM	System Block Upgrades methodology b) The region and states identify achievable milestones in relation to the transition roadmap phase 1, 2 and 3 c) The region and states develop and implement progress reporting structures, processes and frequency in terms of the transition roadmap phase 1, 2 and 3 d) States develop and action implementation plans addressing the transition from AIS to AIM in line with the AFI AIS to AIM transition roadmap phases 1, 2 and 3 as well as aviation system block upgrades. e) States to review and amend					

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5A**

Follow-up on APIRG/17 and 18 Conclusions and Decisions in the AIM Field

Conclusions/ Decisions No. Strategic Objectives	Title of Conclusions/ Decisions	Text of Conclusions/Decisions	Follow-up action by the Secretariat	To be initiated by	Deliverable/ Intended Outcome	Target Dates for follow up action by the Secretariat	Status of follow up action by the Secretariat
		as required the AIS/AIM training programmes to encompass the required skills, competences and knowledge to transition from AIS to AIM in line with the AFI AIS to AIM transition roadmap					

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B1**

**TABLE AIM-1
Responsibility for the Provision of AIM Services**

EXPLANATION OF THE TABLE

Column:

1	Name of the State or territory
2	Designated international NOTAM Office (NOF)
3	Designated State for AIP production
4	Designated State for aeronautical charts (MAP) production
5	Designated State for the provision of the authoritative Integrated Aeronautical Information Database (IAID)
6	Designated State for the provision of the Pre-flight information services
7	Remarks — additional information, as appropriate.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B1**

**TABLE AIM-1
Responsibility for the Provision of AIM Services**

State	NOF	AIP	MAP	IAID	Pre-flight briefing	Remarks
1	2	3	4	5	6	7
Algeria	Alger	Algeria	Algeria	Algeria	Aerodrome AIS Unit	
Angola	Luanda	Angola	Angola	Angola	Aerodrome AIS Unit	
Benin	Accra/Dakar	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Burkina Faso	Dakar	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Botswana	Gaborone	Botswana	Botswana	Botswana	Aerodrome AIS Unit	
Burundi	Bujumbura	Burundi	Burundi	Burundi	Aerodrome AIS Unit	
Cameroon	Brazzaville	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Cape Verde	Sal	Cape Verde	Cape Verde	Cape Verde	Aerodrome AIS Unit	
Central African Republic	Brazzaville	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Chad	Brazzaville	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Comoros	Antananariv o	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Congo	Brazzaville	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Cote d'Ivoire	Dakar	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Democratic Republic of Congo (RDC)	Kinshasa (BNI)	AIP-RDC	MAP-RDC	RVA-RDC	RVA-RDC	RVA is the AIM Provider
Djibouti	Addis Ababa	Djibouti	Djibouti	Djibouti	Aerodrome AIS Unit	
Egypt	Cairo	Egypt	Egypt	Egypt	Aerodrome AIM Unit	
Equatorial Guinea	Brazzaville	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Eritrea	Asmara	Eritrea	Eritrea	Eritrea	Aerodrome AIS Unit	
Ethiopia	Addis Ababa	Ethiopia	Ethiopia	Ethiopia	Aerodrome AIS Unit	
Gabon	Brazzaville	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Gambia	DAKAR	GAMBIA	GAMBIA	GAMBIA	GAMBIA. Aerodrome AIS/M Unit	Outsourced To Jeppesen Map Production Company.
Ghana	ACCRA	GHANA	Outsource to map production company	GHANA	Aerodrome AIS Unit	Ghana in the process of installing software for the provision of PIB. common point of access to integrated aeronautical information not implemented.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B1**

**TABLE AIM-1
Responsibility for the Provision of AIM Services**

State	NOF	AIP	MAP	IAID	Pre-flight briefing	Remarks
1	2	3	4	5	6	7
Guinea	Robertsfield /Monrovia	Roberts FIR Secretariat	State Level	Roberts FIR Secretariat	Aerodrome AIS Unit	
Guinea Bissau	Dakar	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Kenya	Nairobi	Kenya	Kenya	Kenya	Aerodrome AIM Unit	
Lesotho	Maseru	Lesotho	Lesotho	Lesotho	Lesotho	Aerodrome AIS Unit
Liberia	Robertsfield /Monrovia	Roberts FIR Secretariat	Aerodrome AIM unit outsource to MAP production Company	Roberts FIR Secretariat	Aerodrome AIS Unit	Upgrade of the PIB and post flight information bulletin is ongoing in accordance with DOC 8126 specification.
Libya	Tripoli	Libya	Libya	Libya	Aerodrome AIS Unit	
Madagascar	Antananarivo	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Malawi						
Mali	Dakar	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Morocco						
Mauritania	Dakar	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Mauritius	Plaisance	Mauritius	Mauritius	Mauritius	Aerodrome AIM Unit	
Mozambique	Maputo	Mozambique	Mozambique	Mozambique	Aerodrome AIS Unit	
Namibia	Windhoek	Namibia	Namibia	Namibia	Aerodrome AIS Unit	
Niger	Dakar	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Nigeria	Lagos	Nigeria	Nigeria	Nigeria	Nigeria (Aerodrome Units)	
Rwanda	Kigali	Rwanda	Rwanda	Rwanda	Aerodrome AIS Unit	
Sao Tome and Principe	Brazzaville	Sao Tome and Principe	Sao Tome and Principe	Sao Tome and Principe	Aerodrome AIS Unit	
Senegal	Dakar	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Seychelles	Mahe	Seychelles	Seychelles	Seychelles	Aerodrome AIS Unit	
Sierra Leone	Roberts FIR/Monrovia	Roberts FIR Secretariat	Outsourced at State Level	Roberts FIR Secretariat	State Level	
Somalia	Mogadishu	Somalia	Somalia	Somalia	Aerodrome AIS Unit	
South Africa	Johannesburg	South Africa	South Africa	South Africa	ATNS	
South Sudan	Juba	South Sudan	South Sudan	South Sudan	Aerodrome AIS Unit	
Sudan	Khartoum	Sudan	Sudan	Sudan	Aerodrome	-

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B1**

**TABLE AIM-1
Responsibility for the Provision of AIM Services**

State	NOF	AIP	MAP	IAID	Pre-flight briefing	Remarks
1	2	3	4	5	6	7
					AIS Unit	
Swaziland	Manzini	Swaziland	Swaziland	Swaziland	Aerodrome AIS Unit	
Tunisia	Tunis	Tunisia	Tunisia	Tunisia	Aerodrome AIS Unit	
Togo	Accra- Dakar	ASECNA	ASECNA	ASECNA	Aerodrome AIM Unit	
Uganda	Kampala	Uganda	Uganda	Uganda	Aerodrome AIS Unit	
United Republic of Tanzania	Dar-es- salaam	Tanzania	Tanzania	Tanzania	Aerodrome AIS Unit	
Zambia	Lusaka	Zambia	Zambia	Zambia	Aerodrome AIS Unit	
Zimbabwe	Harare	ZIMBABWE	ZIMBABWE	N/A	ZIMBABWE	IAID NOT YET IMPLEMENTED

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B2**

**TABLE AIM-2
Provision of AIM Products and Services based on the Integrated
Aeronautical Information Database (IAID)**

EXPLANATION OF THE TABLE

Column:

1. Name of the State or territory for which the provision of AIM products and services based on the IAID is required.
2. Requirement for the implementation and designation of the authoritative IAID, shown by:

FI – Fully Implemented

PI – Partially Implemented

NI – Not Implemented

Note 1 — The IAID of a State is a single access point for one or more databases (AIS, Terrain, Obstacles, AMDB, etc). The minimum set of databases which should be integrated is defined in Annex 15.

Note 2 — Information providing detail of “PI” should be given in the Remarks column (the implemented components of the IAID).

Note 3 — The information related to the designation of the authoritative IAID should be published in the AIP (GEN 3.1)

3. Requirement for an IAID driven AIP production, shown by:

FC – Fully compliant (eAIP: Text, Tables and Charts)

PC – Partially compliant

NC – Not compliant

Note 4 — AIP production includes, production of AIP, AIP Amendments and AIP Supplements

4. Requirement for an IAID driven NOTAM production, shown by:

FC – Fully Compliant

NC – Not compliant

5. Requirement for an IAID driven SNOWTAM production, shown by:

FC – Fully Compliant

NC – Not compliant

6. Requirement for an IAID driven PIB production, shown by:

FC – Fully compliant

NC – Not compliant

7. Requirement for Charting systems to be interoperable with the IAID, shown by:

FC – Fully compliant

PC – Partially compliant

NC – Not compliant

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B2**

**TABLE AIM-2
Provision of AIM Products and Services based on the Integrated
Aeronautical Information Database (IAID)**

8. Requirement for Procedure design systems to be interoperable with the IAID, shown by:

FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented

Note 5 — full implementation includes the use of the IAID for the design of the procedures and for the storage of the encoded procedures in the IAID

9. Requirement for ATS systems to be interoperable with the IAID, shown by:

FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented

10. Action Plan — short description of the State's Action Plan with regard to the provision of AIM products and services based on the IAID, including planned date(s) of full compliance, as appropriate.
11. Remarks — additional information, including detail of "PC", "NC", "PI" and "NI", as appropriate.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B2**

**TABLE AIM-2
Provision of AIM Products and Services based on the Integrated
Aeronautical Information Database (IAID)**

**FASID TABLE AIM-2
Integrated Aeronautical Information Database (IAID)**

State	IAID	AIP	NOTAM	SNOWTAM	PIB	Charting	Procedure design	ATS	Action Plan	Remarks
1	2	3	4	5	6	7	8	9	10	11
Algeria										
Angola	FI	PC	FC	NC	FC	PC	FI	PI		
Benin	FI	FC	FC	-	FC	FC	FC	PI	PIB automation in 2013	
Burkina Faso	FI	FC	FC	-	FC	FC	FC	PI	PIB automation in 2013	
Botswana	PI	PC	FC	NC	FC	PC	PC	FI	The following AIS Systems will be installed and Integrated in 2013. • NOTAM Data base • Charting system • AIP System • Procedure Design • eTOD • eAIP	• Procedure Design out-sourced
Burundi										
Cameroon	FI	FC	FC	-	FC	FC	FC	PI	PIB automation in 2013	
Cape Verde	FI	FC	FC							

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B2**

**TABLE AIM-2
Provision of AIM Products and Services based on the Integrated
Aeronautical Information Database (IAID)**

State	IAID	AIP	NOTAM	SNOWTAM	PIB	Charting	Procedure design	ATS	Action Plan	Remarks
Central African Republic	FI	FC	FC	-	FC	FC	FC	PI	PIB automation in 2013	
Chad	FI	FC	FC	-	FC	FC	FC	PI	PIB automation in 2013	
Comoros	FI	FC	FC	-	FC	FC	FC	PI	PIB automation in 2013	
Congo	FI	FC	FC	-	FC	FC	FC	PI	PIB automation in 2013	
Cote d'Ivoire	FI	FC	FC	-	FC	FC	FC	PI	PIB automation in 2013	
Democratic Republic of Congo	NI	RC	NC	NC	NC	NC	NI	NI	Need of ICAO assistance	Need of ICAO assistance
Djibouti	FI	FC								
Egypt	FI	FC	FC							
Equatorial Guinea	FI	FC	FC	-	FC	FC	FC	PI	PIB automation in 2013	
Eritrea										
Ethiopia	FI	FC	FC							
Gabon	FI	FC	FC	-	FC	FC	FC	PI	PIB automation in 2013	
Gambia	FI	FC	FC	-	FC	NI	NI	NI	PIB automation in 2013	WGS-84 fully Implemented
Ghana	NI	NC	NC	NC	NC	NC	NI	NI	THE ELECTRONIC VERSION OF AIP PARTIALLY MIGRATED WGS-84 MAINTENANCE	On going WGS-84 fully Implemented

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B2**

**TABLE AIM-2
Provision of AIM Products and Services based on the Integrated
Aeronautical Information Database (IAID)**

State	IAID	AIP	NOTAM	SNOWTAM	PIB	Charting	Procedure design	ATS	Action Plan	Remarks
									SURVEY : OCTOBER2012 PBN AND PROCEDURE DESIGN :DECEMBER 2012	On-going
Guinea		FC	NC	NC	NC	NC	NC	NC	Awaiting Autonomous administration for implementation	
Guinea Bissau	FI	FC	FC	-	FC	FC	FC	PI	PIB automation in 2013	
Kenya	FI	FC	FC	FC	FC	FC	FI	FI		
Lesotho	NI	NC	NC	NC	NC	NC	NC	NC		
Liberia		FC	Information/D ata Provider on State level for the Promulgation of the integrated aeronautical information package (IAIP) to end users	NC	NC	NC	NC	NC		
Libya	FI	FC								
Madagascar	FI	FC	FC	-	FC	FC	FC	PI	PIB automation in 2013	
Malawi										
Mali	FI	FC	FC	-	FC	FC	FC	PI	PIB automation in	

[illegible][illegible]

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B2**

**TABLE AIM-2
Provision of AIM Products and Services based on the Integrated
Aeronautical Information Database (IAID)**

State	IAID	AIP	NOTAM	SNOWTAM	PIB	Charting	Procedure design	ATS	Action Plan	Remarks
South Africa	PI	PC	FC	-	FC	PC	PC	NI	FC of AIP & Charting by IAID by end 2013.	
South Sudan										
Sudan	PI	PI	FI	FI	FI	PI	PI	PI	NC	Will sign contract with consultant 2013.
Swaziland										
Tunisia										
Togo	FI	FC	FC	-	FC	FC	FC	PI	PIB automation in 2013	
Uganda	FI									
United Republic of Tanzania	PI	PC	FC	NC	FC	PC	PI	PI		
Zambia	FI									
Zimbabwe	PC	PC	PC	NA	FC	NC	NI	PI	TBA	NOTAM & BFO

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B3**

**TABLE AIM-3
Terrain and Obstacles datasets and Airport Mapping Databases (AMDB)**

EXPLANATION OF THE TABLE

Column

1	Name of the State or territory for which Terrain and Obstacles datasets and AMDB are required.
2	Compliance with requirement for the provision of Terrain datasets, shown by: FC – Fully compliant PC – Partially compliant NC – Not compliant
3	Compliance with requirement for the provision of Obstacle datasets, shown by: FC – Fully compliant PC – Partially compliant NC – Not compliant
4	Implementation of AMDB, shown by: FI – Fully Implemented PI – Partially Implemented NI – Not implemented
5	Action plan — short description of the State’s Action Plan with regard to compliance with the requirements for provision of Terrain and Obstacles datasets and implementation of AMDB.
6	Remarks— additional information, including detail of “PC” and “NC”, as appropriate.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B3**

**TABLE AIM-3
Terrain and Obstacles datasets and Airport Mapping Databases (AMDB)**

State	Terrain Datasets	Obstacle datasets	AMDB	Action Plan	Remarks
1	2	3	4	5	6
Algeria					
Angola	PC	PC	PC	PC	
Benin	NC	NC	NC	Planned for 2014/2016	
Burkina Faso	NC	NC	NC	Planned for 2014/2016	
Botswana	NC	NC	NC	A plan to implement Etod has been developed but due to financial and technical constraints the plan has not been implemented yet	
Burundi					
Cameroon	NC	NC	NC	Planned for 2014/2016	
Cape Verde					
Centr African Republic	NC	NC	NC	Planned for 2014/2016	
Chad	NC	NC	NC	Planned for 2014/2016	
Comoros	NC	NC	NC	Planned for 2014/2016	
Congo	NC	NC	NC	Planned for 2014/2016	
Cote d'Ivoire	NC	NC	NC	Planned for 2014/2016	
Democratic Republic of Congo	NC	NC	NI	Need of ICAO assistance	Need of ICAO assistance
Djibouti					
Egypt					
Equatorial Guinea	NC	NC	NC	Planned for 2014/2016	
Eritrea					
Ethiopia					
Gabon	NC	NC	NC	Planned for 2014/2016	
Gambia	NC	NC	NI	Planned for 2014/2016	
Ghana	NC	NC	NI	Upgrade communication infrastructure 2014	Survey of terrain and obstacles completed. data yet to be integrated in the database.
Guinea	NC	NC	NC	Shall be implemented when autonomous administration takes over	
Guinea Bissau	NC	NC	NC	Planned for 2014/2016	
Kenya	FC	FC	NI	Area 2 obstacle data processing ongoing.	Aerodrome mapping was made a recommendation for complex airport to support e-TOD area 3. Kenya e-TOD policy does not include implementation of area 3 as no complex airport exist
Lesotho	NC	NC	NC	NC	Need to be highly considered it is a major concern to the safety and smooth operations
Liberia	NC	NC	NC	A Plan to implement eTOD ongoing awaiting WGS 84 Survey	eTOD Areas survey of terrain and obstacle has been included in its strategies development plan

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B3**

**TABLE AIM-3
Terrain and Obstacles datasets and Airport Mapping Databases (AMDB)**

State	Terrain Datasets	Obstacle datasets	AMDB	Action Plan	Remarks
1	2	3	4	5	6
Libya					
Madagascar	NC	NC	NC	Planned for 2014/2016	
Malawi					
Mali	NC	NC	NC	Planned for 2014/2016	
Mauritanie	NC	NC	NC	Planned for 2014/2016	
Mauritius					
Morocco					
Mozambique					
Namibia					
Niger	NC	NC	NC	Planned for 2014/2016	
Nigeria	NC	PC	PC		
Rwanda					
Sao Tome and Principe					
Senegal	NC	NC	NC	Planned for 2014/2016	
Seychelles	PC	PC	PI	To be FC by end 2013	
Sierra Leone	NC	NC	NC	Planned for 2014/15	
Somalia					
South Africa	PC	PC	NI	Planned for 2014/2016	Terrain and Obstacle dataset exists, however they need to be quality assured.
South Sudan					
Sudan	NC	NC	NC	NC	-
Swaziland					
Togo	NC	NC	NC	Planned for 2014/2016	
Tunisia					
Uganda					
United Republic of Tanzania	PC	PC	PC	Policy in Place	Implementation will start on July 2013 depend on the availability of fund
Zambia					
Zimbabwe	NC	NC	NI	TBA	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B4**

**TABLE AIM-4
Aeronautical Data Quality**

EXPLANATION OF THE TABLE

Column:

1. Name of the State or territory.
 2. Compliance with the requirement for implementation of QMS for Aeronautical Information Services including safety and security objectives, shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
 3. Compliance with the requirement for the establishment of formal arrangements with approved data originators concerning aeronautical data quality, shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
 4. Implementation of digital data exchange with originators, shown by:
 - FI – Implemented
 - PI – Partially Implemented
 - NI – Not implemented
- Note 1 — Information providing detail of “PI” and “NI” should be given in the Remarks column (percentage of implementation).*
5. Compliance with the requirement for metadata, shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
 6. Compliance with the requirements related to aeronautical data quality monitoring (accuracy, resolution, timeliness, completeness), shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
 7. Compliance with the requirements related to aeronautical data integrity monitoring, shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
 8. Compliance with the requirements related to the AIRAC adherence, shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
 9. Action Plan — short description of the State’s Action Plan with regard to aeronautical data quality requirements implementation, including planned date(s) of full compliance, as appropriate.
 10. Remarks — additional information, including detail of “PC”, “NC”, “PI” and “NI”, as appropriate

[illegible]

[illegible]

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B4**

**TABLE AIM-4
Aeronautical Data Quality**

	QMS	Establishment of formal agreements	Digital data exchange with originators	Metadata	Data quality monitoring	Data integrity monitoring	AIRAC adherence	Action Plan	Remarks
State	2	3	4	5	6	7	8	9	10
Niger	FC	NC	NI	NC	FC	FC	FC	(3) and (4) planned	SLA for 2013/2014
Nigeria	NC	NC	NI	NC	PC	PC	PC		
Rwanda									
Sao Tome and Principe									
Senegal	FC	NC	NI	NC	FC	FC	FC	(3) and (4) planned	SLA for 2013/2014
Seychelles	NC	PC	PI	NC	PC	PC	FC	QMS beginning 2014	70%
Sierra Leone	PC	FC	NC	NC	PC	PC	PC		
Somalia									
South Africa	FC	PC	NI	PC	PC	PC	FC	FC at end 2013	
South Sudan									
Sudan	PC	PC	NC	PI	PC	PC	FC	PC	2013 will be FC
Swaziland									
Tunisia									
Togo	FC	NC	NI	NC	FC	FC	FC	(3) and (4) planned	SLA for 2013/2014
Uganda	PC	NC	NI	PC	PC	PC	PC	In the process of certification of QMS. Documentation done; in process of implementation	Awaiting certification
United Republic of Tanzania	FC	PC	PI	PC	PC	PC	PC		
Zambia									
Zimbabwe	PC	NC	NI	NC	PC	PC	PC	TBA	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B5**

**TABLE AIM-5
World Geodetic System-1984 (WGS-84)**

EXPLANATION OF THE TABLE

Column:

1. Name of the State or territory for which implementation of WGS-84 is required.
2. Compliance with the requirements for implementation of WGS-84 for FIR and Enroute points, shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
3. Compliance with the requirements for implementation of WGS-84 for Terminal Areas (arrival, departure and instrument approach procedures), shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
4. Compliance with the requirements for implementation of WGS-84 for Aerodrome, shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
5. Compliance with the requirements for implementation of Geoid Undulation, shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
6. Action Plan — short description of the State's Action Plan with regard to WGS-84 implementation, including planned date(s) of full compliance, as appropriate.
7. Remarks — additional information, including detail of "PC" and "NC", as appropriate.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B5**

**TABLE AIM-5
World Geodetic System-1984 (WGS-84)**

**FASID TABLE AIM-5
World Geodetic System-1984 (WGS-84)**

State	FIR/ENR	Terminal	AD	GUND	Action Plan	Remarks
1	2	3	4	5	6	7
Algeria						
Angola	FC	FC	PC	PC	FC	
Benin	FC	FC	FC	FC	Update survey in 2013	
Burkina Faso	FC	FC	FC	FC	Update survey in 2013	
Botswana	PC	PC	FC	NC	Relocated NAV AIDS will be surveyed in 2013/2014	All major Airports in Botswana have been recently developed/expanded and the AD Data was surveyed into WGS84 Routine Maintenance has not been carried out due to financial constraints.
Burundi						
Cameroon						
Cape Verde						
Central African Republic	FC	FC	FC	FC	Update survey in 2013	
Chad	FC	FC	FC	FC	Update survey in 2013	
Comoros	FC	FC	FC	FC	Update survey in 2013	
Congo	FC	FC	FC	FC	Update survey in 2013	
Cote d'Ivoire	FC	FC	FC	FC	Update survey in 2013	
Democratic Republic of Congo	NC	NC	PC	NC	Need of ICAO assistance	Need of ICAO assistance. Only 10 airports since +- 10 years
Djibouti						

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B5**

**TABLE AIM-5
World Geodetic System-1984 (WGS-84)**

State	FIR/ENR	Terminal	AD	GUND	Action Plan	Remarks
1	2	3	4	5	6	7
Egypt						
Equatorial Guinea	FC	FC	FC	FC	Update survey in 2013	
Eritrea						
Ethiopia						
Gabon	FC	FC	FC	FC	Update survey in 2013	
Gambia	FC	FC	FC	FC	Update survey in 2013	Maintenance Survey will be Conducted in 2013 in collaboration with ASECNA
Ghana	FC	FC	FC	FC	Routine Maintenance Survey every two years.	Routine Maintenance Survey Completed in December 2012
Guinea			WGS 84 implemen- ted on 11 April, 2003.		Planned to implement the rest when department becomes autonomous.	
Guinea Bissau	FC	FC	FC	FC	Update survey in 2013	
Kenya	FC	FC	FC	NI	Maintenance of 3 airport scheduled 2013/2014	
Lesotho	PC	PC	PC	NC	To be published soon	
Liberia	PC	PC	PC	PC	Update resurvey 2013-2014	ongoing
Libya						
Madagascar	FC	FC	FC	FC	Update survey in 2013	
Malawi						
Mali	FC	FC	FC	FC	Update survey in 2013	
Mauritania	FC	FC	FC	FC	Update survey in 2013	
Mauritius						
Morocco						
Mozambique						
Namibia						

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B5**

**TABLE AIM-5
World Geodetic System-1984 (WGS-84)**

State	FIR/ENR	Terminal	AD	GUND	Action Plan	Remarks
1	2	3	4	5	6	7
Niger	FC	FC	FC	FC	Update survey in 2013	
Nigeria	FC	FC	FC	FC		
Rwanda						
Sao Tome and Principe						
Senegal	FC	FC	FC	FC	Update survey in 2013	
Seychelles	FC	-	FC	FC	New charts await compliance	
Sierra Leone		NC	NC	NC	Planned for full implementation by 2014	
Somalia						
South Africa	FC	FC	FC	FC		
South Sudan						
Sudan	FC	FC	FC	NC	NC	31 Dec 2013 will have an Action Plan.
Swaziland						
Togo	FC	FC	FC	FC	Update survey in 2013	
Tunisia						
Uganda						
United Republic of Tanzania	FC	FC	PC	FC	Survey are going on in Category B Aerodromes in collaboration with Tanzania Airport Authority	
Zambia						
Zimbabwe	PC	FC	FC	PC	TBA	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B6**

**TABLE AIM-6
Aeronautical Charts**

EXPLANATION OF THE TABLE

Column

1	Name of the State or territory for which aeronautical charts are required.
2	Compliance with the requirements for the Enroute Chart — ICAO (ENRC) and the ATC Surveillance Minimum Altitude Chart — ICAO (ATCSMAC), shown by: FC – Fully compliant PC – Partially compliant NC – Not compliant
3	Compliance with requirements for charts related to terminal areas (IAC, ARC, SID, STAR, VAC) shown by: FC – Fully compliant PC – Partially compliant NC – Not compliant
4	Compliance with the requirement for Aerodrome charts (ADC, ADGMC and APDC), shown by: FC – Fully compliant PC – Partially compliant NC – Not compliant
5	Compliance with the requirements for Obstacle Charts (AOC-A, PATC, AOC-E) shown by: FC – Fully compliant PC – Partially compliant NC – Not compliant
6	Compliance with the requirement for WAC, shown by: FC – Fully compliant PC – Partially compliant NC – Not compliant
7	Action plan — short description of the State's Action Plan with regard to aeronautical charts implementation, including planned date(s) of full compliance, as appropriate.
8	Remarks— additional information, including detail of “PC” and “NC”, as appropriate.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B6**

**TABLE AIM-6
Aeronautical Charts**

State	ENR &ATCSM AC	Charts related to Terminal Areas	AD Charts	Obstacle Charts	WAC	Action Plan	Remarks
1	2	3	4	5	6	7	8
Algeria							
Angola	PC	PC	PC	PC	PC	PC	
Benin	FC	FC	FC	FC	PC		
Burkina Faso	FC	FC	FC	FC	PC		
Botswana	FC	FC	FC	FC	NC	WAC will be produced in 2014.	
Burundi							
Cameroon							
Cape Verde							
Central African Republic	FC	FC	FC	FC	PC		
Chad	FC	FC	PC	FC	PC		
Comoros	FC	FC	PC	FC	PC		
Congo	FC	FC	FC	FC	PC		
Cote d'Ivoire	FC	FC	FC	FC	PC		
Democratic Republic of Congo	NC	PC	NC	NC	NC	Need of ICAO assistance	Need of ICAO assistance
Djibouti							
Egypt							
Equatorial Guinea	FC	FC	FC	FC	PC		
Eritrea							
Ethiopia							
Gabon	FC	FC	FC	FC	PC		
Gambia	NC	NC	FC	FC	NC	Coordination with Jeppesen for production by end of 2013	
Ghana	NC	NC	NC	NC	NC	WGS-84 MAINTENANCE SURVEY IN DECEMBER 2012 - DONE COMPILATION OF OBSTACLE DATA - DONE	PRODUCTION OF CHARTS TO BE DONE BY MAP/CHART PRODUCTION COMPANY CHARTS/MAPS OUTDATED

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B6**

**TABLE AIM-6
Aeronautical Charts**

State	ENR &ATCSM AC	Charts related to Terminal Areas	AD Charts	Obstacle Charts	WAC	Action Plan	Remarks
1	2	3	4	5	6	7	8
Guinea		FC	FC	FC	NC	Awaiting autonomous administration	
Guinea Bissau	FC	FC	PC	FC	PC		
Kenya	FC	FC	FC	PC	FC	Update of Obstacle chart planned for development after completion of area 2 e-TOD and system training	
Lesotho	NC	NC	NC	NC		None	AUBI but not up to date hence NC
Liberia		FC	FC	FC	NC		
Libya							
Madagascar	FC	FC	FC	FC	PC		
Malawi							
Mali	FC	FC	FC	FC	PC		
Mauritanie							
Mauritius							
Morocco							
Mozambique							
Namibia							
Niger	FC	FC	FC	FC	PC		
Nigeria	PC	PC	PC	PC	NC		
Rwanda							
Sao Tome and Principe							
Senegal	FC	FC	FC	FC	PC		
Seychelles	FC	FC	FC	FC	-	-	
Sierra Leone		PC	PC	PC	NC		
Somalia							
South Africa	PC	FC	FC	FC	FC	ENRC will be published by end 2013. ATCSMAC already published.	ENRC will be published by end 2013. ATCSMAC already published.
South Sudan							
Sudan	NC	PC	FC	FC	NC	A Contract signed to establish PD & Charting Unit	Establishment 2011-2014
Swaziland							
Togo	FC	FC	FC	FC	PC	FC	
Tunisia							
Uganda							
United Republic of Tanzania	PC	PC	PC	PC	FC		For charts like ADGMC are not

APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B6

TABLE AIM-6
Aeronautical Charts

	ENR &ATCSM AC	Charts related to Terminal Areas	AD Charts	Obstacle Charts	WAC	Action Plan	Remarks
State	1	2	3	4	5	6	7
							applicable to our Country
Zambia							
Zimbabwe	FC	PC	PC	PC	FC	TBA	SIDS & STARS NOT IMPLEMENTED

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B7**

**FASID TABLE AIM-7
Production Responsibility for Sheets of the
World Aeronautical Chart – ICAO 1:1 000 000 (WAC)**

EXPLANATION OF THE TABLE

Column:

1. Name of the State accepting production responsibility.
2. World Aeronautical Chart — ICAO 1:1 000 000 sheet number(s) for which production responsibility is accepted.
3. Remarks.

Note 1— When Aeronautical Charts — ICAO 1:500 000 or Aeronautical Navigation Charts — ICAO Small Scale, are made available instead of the 1:1 000 000 chart, this is to be indicated in the Remarks column.

Note 2— In those instances where the production responsibility for certain sheets has been accepted by more than one State, these States by mutual agreement should define limits of responsibility for those sheets.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B7**

**FASID TABLE AIM-7
Production Responsibility for Sheets of the
World Aeronautical Chart – ICAO 1:1 000 000 (WAC)**

State	Sheet number(s)	Remarks
1	2	3
Algeria		
Angola		IGCA Instituto Nacional Geodetic de Angola
Benin	2816-2783	GHANA-NIGERIA
Burkina Faso	2695	ASECNA
Botswana		
Burundi		
Cameroon		
Cape Verde		
Central African Republic	2786-2812-2813	ASECNA
Chad	2664-2671-2692-2785	ASECNA
Comoros	3052-3156	ASECNA
Congo	2906-2935	ASECNA
Cote d'Ivoire	2781-2817	ASECNA
Democratic Republic of Congo	Nil	Jeppesen assistance
Djibouti		
Egypt		
Equatorial Guinea	2905	ASECNA
Eritrea		
Ethiopia		
Gabon	2936	ASECNA
Gambia	NIL	Coordination with Jeppesen for production before end of 2013
Ghana	1:1 000 000	1:500 000, 1: 250 000
Guinea	NIL	Awaiting autonomous administration
Guinea Bissau	2697	ASECNA
Kenya	Lake Turkana (2910), Kilimanjaro (2931)	
Lesotho		Staff shortage and training obstruct effective ops of AIS/AIM and financial constraints is one of the main issue for us staff recruitment and training is concerned
Liberia	NIL	Contacted outsource Mapping Company
Libya		
Madagascar	3156-3173-3174-3278-3297	ASECNA
Malawi		
Mali	2660-2696	ASECNA
Mauritania	2574-2658-2659	ASECNA
Mauritius		
Morocco		
Mozambique		
Namibia		
State	Sheet number(s)	Remarks
Niger	2570-2662-2663-2693-2694	ASECNA
Nigeria		
Rwanda		
Sao Tome and Principe		
Senegal	2697	ASECNA
Seychelles		
Sierra Leone	NIL	Agency contacted (ANSP)
Somalia		

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B7**

**FASID TABLE AIM-7
Production Responsibility for Sheets of the
World Aeronautical Chart – ICAO 1:1 000 000 (WAC)**

State	Sheet number(s)	Remarks
1	2	3
South Africa	Bulawayo (3275), Inhambane (3276), Vryburg (3301), Johannesburg (3300), Maputo (3299), Calvinia (3396), Bloemfontein (3397), Durban (3398), Cape Town (3422), Port Elizabeth (3421)	1:1 000 000 – WAC 1:500 000 – Southern Africa 1:250 000 – Topo-Cadastral
South Sudan		
Sudan		
Swaziland		
Tunisia		
Togo	2782-2817	GHANA
Uganda	2909	
United Republic of Tanzania	LAKE VICTORIA 2932 ,LAKE TANGANYIKA 3030 , ZANZIBAR ISLAND 3031, RUVUMA 3053	
Zambia		
Zimbabwe		

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B8**

**FASID TABLE AIM-8
Pre-Flight Information Services**

State	PIB				IAIP	Aeronautical Information and Meteorological information Integrated Briefing	Action Plan	Remarks
	AD	Area	FIR route	Narrow route				
1	2				3	4	5	6
Algeria								
Angola	PC				PC	PC	PC	
Benin	FC	FC	PC	FC	FC	NI		
Burkina Faso	FC	FC	FC	FC	FC	NI		
Botswana	FC	FC	FC	FC	FC	FC	Integrated Aeronautical Data Base for AIS Systems to be installed being installed 2013	PIB Service has been in place since 2004, upgraded in 2007 and improved AIS systems with integrated data base (AERODB) has been installed and will be in full operation in 2013.
Burundi								
Cameroon	FC	FC	PC	FC	FC	NI		
Cape Verde								
Central African Republic	FC	FC	PC	FC	FC	NI		
Chad	FC	FC	PC	FC	FC	NI		
Comoros	FC	FC	PC	FC	FC	NI		
Congo	FC	FC	FC	FC	FC	NI		
Cote d'Ivoire	FC	FC	FC	FC	FC	NI		
Democratic Republic of Congo	PC	PC	PC	NC	NC	NI	Need of ICAO assistance	Need of ICAO assistance
Djibouti								
Egypt								
Equatorial Guinea	FC	FC	PC	FC	FC	NI		
Eritrea								
Ethiopia								

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B8**

**FASID TABLE AIM-8
Pre-Flight Information Services**

State	PIB				IAIP	Aeronautical Information and Meteorological information Integrated Briefing	Action Plan	Remarks
	AD	Area	FIR route	Narrow route				
1	2				3	4	5	6
Gabon	FC	FC	PC	FC	FC	NI		
Gambia	FC	NI	NI	NI	FC	NI	Coordination with Central Forecast Office for integrated met briefing by end of 2013	
Ghana	NC	NC	NC	NC	NC	NI	Upgrade the New AMHS to generate PIB 2013 Upgrade the communication system to be interoperable with MET Systems.	In the process of installing new software for the provision of PIB
Guinea	FC	FC	FC			FI	By 2014 planned to upgrade AIS with integrated meteorological data	
Guinea Bissau	FC	FC	PC	FC	FC	NI		
Kenya	FC	FC	FC	FC	FC		--	
Lesotho	NC	NC	NC	NC	NC	No action taken as the country has not got its national airline depends on South Africa	Cannot be done unless more manpower is available	
Liberia	PC	PC	PC	PC	PC	FI		
Libya								
Madagascar	FC	FC	PC	FC	FC	NI		
Malawi								
Mali	FC	FC	PC	FC	FC	NI		
Mauritania	FC	FC	PC	FC	FC	NI		
Mauritius								

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B8**

**FASID TABLE AIM-8
Pre-Flight Information Services**

State	PIB				IAIP	Aeronautical Information and Meteorological information Integrated Briefing	Action Plan	Remarks
	AD	Area	FIR route	Narrow route				
1	2				3	4	5	6
Morocco								
Mozambique								
Namibia								
Niger	FC	FC	PC	FC	FC	NI		
Nigeria	PC	PC	PC	NC	PC	PI		
Rwanda								
Sao Tome and Principe								
Senegal	FC	FC	PC	FC	FC	NI		
Seychelles	-	-	-	-	FC	NI	-	
Sierra Leone	FC					PI		
Somalia								
South Africa	FC	FC	FC	FC	FC	FC		
South Sudan								
Sudan	FC	FC	FC	FC	PC	FC	-	-
Swaziland								
Togo	FC	FC	PC	FC	FC	NI		
Tunisia								
Uganda								
United Republic of Tanzania	FC	FC	FC	FC	FC	FC		
Zambia								
Zimbabwe	FC	FC	FC	FC	PC	PC	TBA	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B9**

**TABLE AIM-9
AIM Certification**

EXPLANATION OF THE TABLE

Column:

1. Name of the State or territory for which implementation of AIM Certification is required.

2. Availability of AIM Regulations, shown by:

FC – Fully compliant

PC – Partially compliant

NC – Not compliant

Note.— Please provide in the Remarks column detail of “PC” and “NC”.

3. Compliance with the requirements for the establishment of a Safety Oversight System for ensuring the effective implementation of safety-related policy and procedures in the area of AIM, shown by:

FC – Fully compliant

PC – Partially compliant

NC – Not compliant

Note 1.— Please provide in the Remarks column detail of “PC” and “NC”.

Note 2.—A Safety Oversight System is based on the eight (8) Critical Elements (CEs) as defined in the ICAO Safety Oversight Manual (Doc 9734, Part A).

Note 3.—As part of the Safety Oversight System, States should, in particular:

a) establish an entity responsible for the safety oversight of the AIS/AIM service provider(s) (not necessarily limited to the safety oversight of AIM) with clearly defined functions and responsibilities, or delegate this function to a Regional/Sub-Regional Organization;

b) ensure the availability of sufficient number of qualified AIM inspectors;

c) establish minimum qualifications and experience for the AIM inspectorate staff;

d) establish detailed job descriptions reflecting all the regulatory and safety oversight tasks for the AIM inspectorate staff;

e) establish the necessary procedures for the AIM inspectorate staff;

f) establish and implement a formal surveillance programme for the continuing supervision of the AIS/AIM service provider(s) and ensure that safety oversight is effectively conducted; and

g) establish and implement a mechanism/system for the elimination of deficiencies identified by the AIM inspectorate staff.

4. Compliance with the requirements for implementation of AIM certification, shown by:

FC – Fully compliant

PC – Partially compliant

NC – Not compliant

Note 4.— AIM Certification may be performed within the framework of ANS Certification

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B9**

**TABLE AIM-9
AIM Certification**

5. Action Plan — short description of the State’s Action Plan with regard to the implementation of the different requirements of AIM certification, including planned date(s) of full compliance, as appropriate.
6. Remarks — additional information, including detail of “PC” and “NC”,as appropriate.

DRAFT

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B9**

**FASID TABLE AIM-9
AIM Certification**

State	AIM Regulations	AIM Safety Oversight	AIM Certification	Action Plan	Remarks
1	2	3	4	5	6
Algeria					
Angola	FC	PC	PC	PC	
Benin					
Burkina Faso					
Botswana	PC	NC	NC	Draft AIM Regulation are available yet to be approved and implemented	SAFETY OVERSIGHT BODY FOR AIM/MAP SERVICE ESTABLISHED IN FEBRUARY 2013.
Burundi					
Cameroon					
Cape Verde					
Central African Republic					
Chad					
Comoros					
Congo					
Cote d'Ivoire					
Democratic Republic of Congo	NC	NC	NC	Need of ICAO assistance	Need of ICAO assistance
Djibouti					
Egypt					
Equatorial Guinea					
Eritrea					
Ethiopia					
Gabon					
Gambia	NC	NC	NC	Included in ANS training action plan for 2013	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B9**

**TABLE AIM-9
AIM Certification**

State	AIM Regulations	AIM Safety Oversight	AIM Certification	Action Plan	Remarks
1	2	3	4	5	6
Ghana	PC	NC	NC	Plan to train staff for the aim inspectorate entity 2014	Non availability of qualified AIM Inspectorate Staff. Safety Oversight body for AIS/AIM Service not yet established
Guinea	NC			Implementation by the future autonomous administration	
Guinea Bissau					
Kenya	PC	PC	PC	Documents for certification developed the process ongoing	Awaiting certification by 2013
Lesotho	NC	NC	NC	<i>No action plan in hand</i>	Staff Shortage , Training and financial constraint.
Liberia	PC	PC	NC	Upgrade AIS to AIM transition regulations at all levels, management, structure, delivery and control of all critical and relevant information for air traffic management (ATM) in term of their information management requirements.	Safety oversight responsibilities ongoing
Libya					
Madagascar					
Malawi					
Mali					
Mauritanie					
Mauritius					
Morocco					
Mozambique					

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5B9**

**TABLE AIM-9
AIM Certification**

State	AIM Regulations	AIM Safety Oversight	AIM Certification	Action Plan	Remarks
1	2	3	4	5	6
Namibia					
Niger					
Nigeria	NC	NC	NC		
Rwanda					
Sao Tome and Principe					
Senegal					
Seychelles	NC	NC	NC	2013-2015	
Sierra Leone	NC				
Somalia					
South Africa	FC	PC	FC		ANSP awaiting certification for publication of IAIP by 2013
South Sudan					
Sudan	PC	PC	NC	-	-
Swaziland					
Togo					
Tunisia					
Uganda					
United Republic of Tanzania	NC	NC	NC		
Zambia					
Zimbabwe	FC	PC	PC	TBA	

Note 1 : (Each ASECNA Member State will eventually provide its own data about this table)

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

1. National Plan for the transition from AIS to AIM

a) Have you developed a National Plan for the transition from AIS to AIM? If Yes, is it based on the ICAO Roadmap (Phases 1, 2 and 3) ?		YES	NO
Algeria			
Angola			
Benin	ASECNA Plan is based on ICAO Roadmap	X	
Burkina Faso	ASECNA Plan is based on ICAO Roadmap	X	
Botswana	National Plan for transition from AIS to AIM is not yet developed; most of the activities are included in the CAAB – ANS Training plan. The national plan for the transition from AIS to AIM based on ICAO Roadmap will be developed and the timeframe will be from 2011-2013. The implementation will be subject to availability of funds and request ICAO to assist in facilitating this massive training.	X	
Burundi			X
Cameroon	ASECNA Plan is based on ICAO Roadmap	X	
Cape Verde			X
Central African Republic	ASECNA Plan is based on ICAO Roadmap	X	
Chad	ASECNA Plan is based on ICAO Roadmap	X	
Comoros	ASECNA Plan is based on ICAO Roadmap	X	X
Congo	ASECNA Plan is based on ICAO Roadmap	X	
Cote d'Ivoire	ASECNA Plan is based on ICAO Roadmap	X	
Democratic Republic of Congo			X
Djibouti			X
Egypt	Our plan for the transition from AIS to AIM is presented through answering this questionnaire.	X	
Equatorial Guinea	ASECNA Plan is based on ICAO Roadmap	X	
Eritrea			X
Ethiopia			X
Gabon	ASECNA Plan is based on ICAO Roadmap	X	
Gambia		X	X
Ghana	National Plan based on ICAO Roadmap yet to be developed.		X
Guinea	Roberts FIR plan is based on ICAO Roadmap		X
Guinea Bissau	ASECNA Plan is based on ICAO Roadmap	X	
Kenya	National Plan is based on ICAO Roadmap	X	
Liberia	Roberts FIR plan is based on ICAO Roadmap	X	
Libya			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

a) Have you developed a National Plan for the transition from AIS to AIM? If Yes, is it based on the ICAO Roadmap (Phases 1, 2 and 3) ?		YES	NO
Lesotho			X
Madagascar	ASECNA Plan is based on ICAO Roadmap	X	
Malawi			X
Mali	ASECNA Plan is based on ICAO Roadmap	X	
Mauritania	ASECNA Plan is based on ICAO Roadmap	X	
Mauritius	No formal plan has been developed for the whole transition but a set of initiatives for several steps of the Roadmap have already been taken		X
Morocco			
Mozambique			X
Namibia	The Transition is based on ICAO Roadmap	X	
Niger	ASECNA Plan is based on ICAO Roadmap	X	X
Nigeria	Yes, it's based on the ICAO Roadmap (phase 1,2 and 3)	X	
Rwanda	An official National Plan for the transition from AIS to AIM has been prepared based on the ICAO roadmap as well as our national requirements.	X	
Sao Tome and Principe			X
Senegal	ASECNA Plan is based on ICAO Roadmap	X	
Seychelles			X
Sierra Leone	Roberts FIR plan is based on ICAO Roadmap		X
Somalia			X
South Africa	South African Plan is based on ICAO Roadmap	X	
South Sudan			
Sudan	A contract will be signed with Consultant Service Company, by the end of First Quarter of 2013 Sudan will have a National Plan, however a set of initiatives for several steps of the Roadmap Phases were fully covered by our initiatives		X
Swaziland			X
Togo	ASECNA Plan is based on ICAO Roadmap	X	
Tunisia	Yes, it's based on the ICAO Roadmap (phase 1,2 and 3)	X	
Uganda	Yes, we have a national plan based on ICAO roadmap. Phase 1 is ongoing. Phases 2 and 3; procuring of equipment is ongoing.	X	
United Republic of Tanzania	National Plan is based on ICAO Roadmap	X	
Zambia			X
Zimbabwe			X

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

2. Phase 1 – Consolidation (2009)

a)	What do you consider a realistic timeframe for the implementation of Phase 1?
Algeria	
Angola	
Benin	2014- due to data quality implementation-SLA are not yet established with data originators and the publisher (ASECNA)
Burkina Faso	2014- due to data quality implementation-SLA are not yet established with data originators and the publisher (ASECNA)
Botswana	2011-2013
Burundi	
Cameroon	2014- due to data quality implementation-SLA are not yet established with data originators and the publisher (ASECNA)
Cape Verde	
Central African Republic	2014- due to data quality implementation-SLA are not yet established with data originators and the publisher (ASECNA)
Chad	2014- due to data quality implementation-SLA are not yet established with data originators and the publisher (ASECNA)
Comoros	2014- due to data quality implementation-SLA are not yet established with data originators and the publisher (ASECNA)
Congo	2014- due to data quality implementation-SLA are not yet established with data originators and the publisher (ASECNA)
Cote d'Ivoire	2014- due to data quality implementation-SLA are not yet established with data originators and the publisher (ASECNA)
Democratic Republic of Congo	
Djibouti	
Egypt	Already Implemented
Equatorial Guinea	2014- due to data quality implementation-SLA are not yet established with data originators and the publisher (ASECNA)
Eritrea	
Ethiopia	
Gabon	2014- due to data quality implementation-SLA are not yet established with data originators and the publisher (ASECNA)
Gambia	2014- due to coordination with ASECNA.
Ghana	2014 –due to lack of data quality implementation- SLA are not yet established with data originators.
Guinea	Ordinance to establish a mechanism for Data Quality Resolution and Integrity ongoing. To review the service level agreement between the AIM and the data provider by 2014 (Roberts FIR).
Guinea Bissau	2014- due to data quality implementation-SLA are not yet established with data originators and the publisher (ASECNA)
Kenya	Two years (2010-2011)
Lesotho	
Liberia	Ordinance to establish a mechanism for Data Quality Resolution and Integrity ongoing. To review the service level agreement between the AIM and the data provider by 2014 (Roberts FIR).
Madagascar	2014- due to data quality implementation-SLA are not yet established with data originators and the publisher (ASECNA)
Malawi	
Mali	2014- due to data quality implementation-SLA are not yet established with data originators and the publisher (ASECNA)
Mauritania	2014- due to data quality implementation-SLA are not yet established with data originators and the publisher (ASECNA)
Mauritius	Implementation of Quality System is in progress and would be completed by August 2014

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

a) What do you consider a realistic timeframe for the implementation of Phase 1?	
Morocco	
Mozambique	
Namibia	
Niger	2014- due to data quality implementation-SLA are not yet established with data originators and the publisher (ASECNA)
Nigeria	2013 – 2015
Rwanda	
Sao Tome and Principe	
Senegal	2014 - due to data quality implementation-SLA are not yet established with data originators and the publisher (ASECNA)
Seychelles	
Sierra Leone	Ordinance to establish a mechanism for Data Quality Resolution and Integrity ongoing. To review the service level agreement between the AIM and the data provider by 2014 (Roberts FIR).
Somalia	2013
South Africa	2013
South Sudan	
Sudan	QMS implemented and will be certified during 2013. Incremental improvements in data quality achieved staff trained. Decree to establish a mechanism for Data Quality Resolution and Integrity ongoing. Plan to review, reinforce, amend and re-endorsement SLAs between AIM and Data Providers.
Swaziland	
Tunisia	The timeframe is realistic for the implementation of phase 1.
Togo	2014 - due to data quality implementation-SLA are not yet established with data originators and the publisher (ASECNA)
Uganda	June 2013- due to lack of SLAs implementation
United Republic of Tanzania	
Zambia	
Zimbabwe	

b) What is the status of implementation of the following steps of Phase 1 in your State?			
P-03 — AIRAC adherence monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	Full compliance with AIRAC	Monitored since 2009	Indicator is established to monitor the compliance of all publication (amendment-NOTAM-Supplement and AIC)
Burkina Faso	Full compliance with AIRAC	Monitored since 2009	Indicator is established to monitor the compliance of all publication

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 1 in your State?			
P-03 — AIRAC adherence monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
			(amendment-NOTAM-Supplement and AIC)
Botswana	Implemented ,the organisation has appointed AIS contact persons from different Directorates within the CAAB who are responsible for providing raw data to AIS for publication timely		Planning to introduce Service Letter of Agreement (SLA) with the aeronautical/data providers
Burundi			
Cameroon	Full compliance with AIRAC	Monitored since 2009	Indicator is established to monitor the compliance of all publication (amendment-NOTAM-Supplement and AIC)
Cape Verde			
Central African Republic	Full compliance with AIRAC	Monitored since 2009	Indicator is established to monitor the compliance of all publication (amendment-NOTAM-Supplement and AIC)
Chad	Full compliance with AIRAC	Monitored since 2009	Indicator is established to monitor the compliance of all publication (amendment-NOTAM-Supplement and AIC)
Comoros	Full compliance with AIRAC	Monitored since 2009	Indicator is established to monitor the compliance of all publication (amendment-NOTAM-Supplement and AIC)
Congo	Full compliance with AIRAC	Monitored since 2009	Indicator is established to monitor the compliance of all publication (amendment-NOTAM-Supplement and AIC)
Cote d'Ivoire	Full compliance with AIRAC	Monitored since 2009	Indicator is established to monitor the compliance of all publication (amendment-NOTAM-Supplement and AIC)
Democratic Republic of Congo			
Djibouti			
Egypt	x Through our CAA team;	We are planning to have access to Eurocontrol	One of the problems we are facing with the originators is convincing them with adhering to

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 1 in your State?			
P-03 — AIRAC adherence monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
	x feed back of the customer satisfaction.	pTracker web based tool	AIRAC cycles. Overcoming such problem is by holding meetings and exchanging mutual letters with them.
Equatorial Guinea	Full compliance with AIRAC	Monitored since 2009	Indicator is established to monitor the compliance of all publication (amendment-NOTAM-Supplement and AIC)
Eritrea			
Ethiopia			
Gabon	Full compliance with AIRAC	Monitored since 2009	Indicator is established to monitor the compliance of all publication (amendment-NOTAM-Supplement and AIC)
Gambia	Full compliance with AIRAC		
Ghana	Full compliance with AIRAC		
Guinea	FULLY Implemented (Roberts FIR)	Monitored Since the Introduction of AIP 1 st edition (Roberts FIR)	The compliance of integrated aeronautical information package (IAIP) publication, AIP including amendment service, Supplement to the AIP, AIC, NOTAM, and PIB on State (Roberts FIR)
Guinea Bissau	Full compliance with AIRAC	Monitored since 2009	Indicator is established to monitor the compliance of all publication (amendment-NOTAM-Supplement and AIC)
Kenya	Implemented up to the process step “publication” in the frame of the quality Management System Implemented using P-tracker tool		There seems currently no effective means available to monitor the process steps after “publication”, (which is beyond our influence and control (mailing) Data originators not keen on AIRAC date during submission of data
Lesotho			
Liberia	FULLY Implemented (Roberts FIR)	Monitored Since the Introduction of AIP 1 st edition	The compliance of integrated

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 1 in your State?			
P-03 — AIRAC adherence monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
		(Roberts FIR)	aeronautical information package (IAIP) publication, AIP including amendment service, Supplement to the AIP, AIC, NOTAM, and PIB on State (Roberts FIR)
Libya			
Madagascar	Full compliance with AIRAC	Monitored since 2009	Indicator is established to monitor the compliance of all publication (amendment-NOTAM-Supplement and AIC)
Malawi			
Mali	Full compliance with AIRAC	Monitored since 2009	Indicator is established to monitor the compliance of all publication (amendment-NOTAM-Supplement and AIC)
Mauritania	Full compliance with AIRAC	Monitored since 2009	Indicator is established to monitor the compliance of all publication (amendment-NOTAM-Supplement and AIC)
Mauritius	Fully implemented		
Morocco			
Mozambique			
Namibia			
Niger	Full compliance with AIRAC	Monitored since 2009	Indicator is established to monitor the compliance of all publication (amendment-NOTAM-Supplement and AIC)
Nigeria	Yes , manually	2015	
Rwanda			
Sao Tome and Principe			
Senegal	Full compliance with AIRAC	Monitored since 2009	Indicator is established to monitor the compliance of all publication (amendment-NOTAM-Supplement and AIC)
Seychelles			To be specified
Sierra Leone	FULLY Implemented (Roberts FIR)	Monitored Since the Introduction of AIP 1 st edition	The compliance of integrated

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 1 in your State?			
P-03 — AIRAC adherence monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
		(Roberts FIR)	aeronautical information package (IAIP) publication, AIP including amendment service, Supplement to the AIP, AIC, NOTAM, and PIB on State (Roberts FIR)
Somalia	YES , MANUALLY	2013 by making sure that the aeronautical information data is of the required quality and timely distributed /exchanged to recipients according ton AIRAC dates shown in Annex 15 and AIS Doc 8126	
South Africa	2011 continuous process	Implemented	iAIP are adhering ICAO requirements Standard and AIRAC Cycle publications are being monitored accordingly
South Sudan			
Sudan	Implemented up to the process step “publication” in the frame of the Quality Management System.		There seems currently no effective means available to monitor the process steps after “publication”, (which is beyond our influence and control (mailing).
Swaziland			
Tunisia	Implemented Tunisia AIS applies the quality control procedures for AIRAC		
Togo	Full compliance with AIRAC	Monitored since 2009	Indicator is established to monitor the compliance of all publication (amendment-NOTAM-Supplement and AIC)
Uganda	Implemented up to Distribution;	An online distribution plan - 2013	Challenges being faced within the delivery chain
United Republic of Tanzania	2009 continues	implemented	All publications are adhering ICAO requirement system
Zambia			
Zimbabwe			
b) What is the status of implementation of the following steps of Phase 1 in your State?			
P-04 — Monitoring of States’ differences to Annex 4 and Annex 15			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 1 in your State?			
P-03 — AIRAC adherence monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	Any differences specified in AIP		
Burkina Faso	Any differences specified in AIP		
Botswana	Implemented. When the new Standards are introduced, AIS identifies the differences and notifies ICAO of any differences and also publish them in the national AIP	Intending to introduce a monitoring format of making regular checks and evaluation twice a year from Jan 2012	
Burundi			
Cameroon	Any differences specified in AIP		
Cape Verde			
Central African Republic	Any differences specified in AIP		
Chad	Any differences specified in AIP		
Comoros	Any differences specified in AIP		
Congo	Any differences specified in AIP		
Cote d'Ivoire	Any differences specified in AIP		
Democratic Republic of Congo			
Djibouti			
Egypt	x Through our CAA team. x Through our QMS procedures.		
Equatorial Guinea	Any differences specified in AIP		
Eritrea			
Ethiopia			
Gabon	Any differences specified in AIP		
Gambia	Differences are specified in AIP but not much.		
Ghana			
Guinea	Fully Implemented (Roberts FIR)	In accordance to Roberts FIR AIP General (GEN) 1.7-1/2 no significant difference from ICAO standard, recommended practices and procedures (Roberts FIR)	The State have reported that no significant differences exist at this stage in the application of the regulatory materials in the three member states of the Roberts FIR; however the slight variations in the application need to be recognized for the future development

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 1 in your State?			
P-03 — AIRAC adherence monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Guinea Bissau	Any differences specified in AIP		
Kenya	Difference monitoring included as a continuous activity in KCAA strategic plan latest update on AIP GEN 1.7 dated July 2012 updated		
Lesotho			
Liberia	Fully Implemented (Roberts FIR)	In accordance to Roberts FIR AIP General (GEN) 1.7-1/2 no significant difference from ICAO standard, recommended practices and procedures (Roberts FIR)	The State have reported that no significant differences exist at this stage in the application of the regulatory materials in the three member states of the Roberts FIR; however the slight variations in the application need to be recognized for the future development
Libya			
Madagascar	Any differences specified in AIP		
Malawi			
Mali	Any differences specified in AIP		-
Mauritania	differences specified		
Morocco			
Mauritius	Implemented – Differences are notified to ICAO and published in AIP Mauritius		
Mozambique			
Namibia			
Niger	Any differences specified in AIP		
Nigeria	No		
Rwanda			
Sao Tome and Principe			
Senegal	Any differences specified in AIP		
Seychelles			
Sierra Leone	Fully Implemented (Roberts FIR)	In accordance to Roberts FIR AIP General (GEN) 1.7-1/2 no significant difference from ICAO standard, recommended practices and procedures (Roberts FIR)	The State have reported that no significant differences exist at this stage in the application of the regulatory materials in the three member states of the Roberts FIR;

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 1 in your State?			
P-03 — AIRAC adherence monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
			however the slight variations in the application need to be recognized for the future development
Somalia	No	2013 by sending surveyors to Somalia to work on Geographical coordinates and covert them in WGS 84	Geoid undulation not yet implemented No PBN without WGS 84
South Africa	2011-2015	Implemented continuous process	The findings are indicated in AIP, General 1: 7-1 onwards
South Sudan			
Sudan	Differences identified, not published	Ongoing plan to identify all annexes differences by newly established Department.	Sudan CAA plan to enforce ICAO e-notification, ongoing.
Swaziland			
Tunisia	Differences to annex 4 and annex 15 reglementation are published in Tunisia AIP		
Togo	Any differences specified in AIP		
Uganda	Differences have been published in the AIP	With AIS automation plan, most differences will be minimised	
United Republic of Tanzania	2009 continues	Implemented	The findings are indicated in AIP, General 1: 7-1 onwards
Zambia			
Zimbabwe			
b) What is the status of implementation of the following steps of Phase 1 in your State?			
P-05 — WGS-84 implementation			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	100% implemented for all important aerodromes	Maintenance and update are planned	Additional survey is planned for 2013
Burkina Faso	100% implemented for all important aerodromes	Maintenance and update are planned	Additional survey is planned for 2013
Botswana	Implemented and published in the national AIP		A planned re-survey of all major airports due to new ongoing constructions and to sign a Service Letter Agreement with

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 1 in your State?			
P-03 — AIRAC adherence monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
			Directorate of Airports as the main source of the data to ensure accuracy and traceability of information by 2012.
Burundi			
Cameroon	100% implemented for all important aerodromes	Maintenance and update are planned	Additional survey is planned for 2013
Cape Verde			
Central African Republic	100% implemented for all important aerodromes	Maintenance and update are planned	Additional survey is planned for 2013
Chad	100% implemented for all important aerodromes	Maintenance and update are planned	Additional survey is planned for 2013
Comoros	100% implemented for all important aerodromes	Maintenance and update are planned	Additional survey is planned for 2013
Congo	100% implemented for all important aerodromes	Maintenance and update are planned	Additional survey is planned for 2013
Cote d'Ivoire	100% implemented for all important aerodromes	Maintenance and update are planned	Additional survey is planned for 2013
Democratic Republic of Congo			
Djibouti			
Egypt	YES – Ref AIP A.R.E page GEN 2.1-2		
Equatorial Guinea	100% implemented for all important aerodromes	Maintenance and update are planned	Additional survey is planned for 2013
Eritrea			
Ethiopia			
Gabon	100% implemented for all important aerodromes	Maintenance and update are planned	Additional survey is planned for 2013
Gambia	Implemented and published in the AIP	Maintenance and update are planned for 2013	A planned re-survey will be conducted in 2013
Ghana			
Guinea	Survey 2003		The basic problem is to transform the national coordinates to WGS-84 and express all coordinates in the global system in relation to RNAV implementation.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 1 in your State?			
P-03 — AIRAC adherence monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Guinea Bissau	100% implemented for all important aerodromes	Maintenance and update are planned	Additional survey is planned for 2013
Kenya	Implemented since 2000. Maintenance Survey for 3 airports conducted last month and 3 others scheduled 2013/2014		
Lesotho			
Liberia	Survey 1996	Resurvey programmes 2013-2014	The basic problem is to transform the national coordinates to WGS-84 and express all coordinates in the global system in relation to RNAV implementation.
Libya			
Madagascar	100% implemented for all important aerodromes	Maintenance and update are planned	Additional survey is planned for 2013
Malawi			
Mali	100% implemented for all important aerodromes	Maintenance and update are planned	Additional survey is planned for 2013
Mauritania	100% implemented for all important aerodromes	Maintenance and update are planned	
Mauritius	Implemented – since 1998		
Morocco			
Mozambique			
Namibia			
Niger	100% implemented for all important aerodromes	Maintenance and update are planned	Additional survey is planned for 2013
Nigeria	100% implemented for all important aerodromes	Maintenance and update are planned	
Rwanda			
Sao Tome and Principe			
Senegal	100% implemented for all important aerodromes	Maintenance and update are planned	Additional survey is planned for 2013
Seychelles			
Sierra Leone	Survey 1997	Resurvey programmes 2013-2014	The basic problem is to transform the national coordinates to WGS-84 and express all coordinates in the global system in relation to RNAV implementation.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 1 in your State?			
P-03 — AIRAC adherence monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Somalia	Yes	By 2013 – showing the differences in the Somalia AIP – GEN section in order to be included in ICAO supplements and in Annex 4 and 15	Somalia AIP is obsolete.
South Africa	1990-2013	Implemented continuous process	To conduct WGS84 coordinates maintenance and resurvey the relocated ground navigational aids, airport facilities and convert waypoints coordinates
South Sudan			
Sudan	Implemented – since 1998, resurveyed 2010.		Geoid Undulation not yet implemented
Swaziland			
Tunisia	Implemented All coordinates mentioned in Tunisia AIP are based on WGS-84 coordinates system (fully implemented)		
Togo	100% implemented for all important aerodromes	Maintenance and update are planned	Additional survey is planned for 2013
Uganda	Part implementation since 2008	Complete Implementation – 2014	Geoid Undulation not yet implemented
United Republic of Tanzania	2010-2013	Ongoing	- Waypoints need to be converted - Survey the remained aerodromes
Zambia			
Zimbabwe			
b) What is the status of implementation of the following steps of Phase 1 in your State?			
P-17 — Quality			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	QMS is established in AIS aerodrome units. SLA with data originators elaboration are in progress. Automation system between aerodrome AIS units and NOF is on test	SLA establishment are in progress under regulatory authority	Automation with THALES system ANAIS and AIXM+

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 1 in your State?			
P-03 — AIRAC adherence monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Burkina Faso	QMS is established in AIS aerodrome units. SLA with data originators elaboration are in progress. Automation system between aerodrome AIS units and NOF is on test	SLA establishment are in progress under regulatory authority	Automation with THALES system ANAIS and AIXM+
Botswana		Planned for 2011-2013, and this will be done by training Management and staff on Quality Assurance. This will be carried out as a project which will involve the Top Management, AIS staff and aeronautical/data providers	
Burundi			
Cameroon	QMS is established in AIS aerodrome units. SLA with data originators elaboration are in progress. Automation system between aerodrome AIS units and NOF is on test	SLA establishment are in progress under regulatory authority	Automation with THALES system ANAIS and AIXM+
Cape Verde			
Central African Republic	QMS is established in AIS aerodrome units. SLA with data originators elaboration are in progress. Automation system between aerodrome AIS units and NOF is on test	SLA establishment are in progress under regulatory authority	Automation with THALES system ANAIS and AIXM+
Chad	QMS is established in AIS aerodrome units. SLA with data originators elaboration are in progress. Automation system between aerodrome AIS units and NOF is on test	SLA establishment are in progress under regulatory authority	Automation with THALES system ANAIS and AIXM+
Comoros	QMS is established in AIS aerodrome units. SLA with data originators elaboration are in progress. Automation system between aerodrome AIS units and NOF is on test	SLA establishment are in progress under regulatory authority	Automation with THALES system ANAIS and AIXM+
Congo	QMS is established in AIS aerodrome units and NOF. SLA with data originators elaboration are in progress. Automation system between aerodrome AIS units and NOF is on test	SLA establishment are in progress under regulatory authority	Automation with THALES system ANAIS and AIXM+

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 1 in your State?			
P-03 — AIRAC adherence monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Cote d'Ivoire	QMS is established in AIS aerodrome units. SLA with data originators elaboration are in progress. Automation system between aerodrome AIS units and NOF is on test	SLA establishment are in progress under regulatory authority	Automation with THALES system ANAIS and AIXM+
Democratic Republic of Congo			
Djibouti			
Egypt	ISO 9001:2000 certified since DEC 2007 and renewed as ISO 900 1/2008 on DEC 2010		
Equatorial Guinea	QMS is established in AIS aerodrome units. SLA with data originators elaboration are in progress. Automation system between aerodrome AIS units and NOF is on test	SLA establishment are in progress under regulatory authority	Automation with THALES system ANAIS and AIXM+
Eritrea			
Ethiopia			
Gabon	QMS is established in AIS aerodrome units. SLA with data originators elaboration are in progress. Automation system between aerodrome AIS units and NOF is on test	SLA establishment are in progress under regulatory authority	Automation with THALES system ANAIS and AIXM+
Gambia	QMS implementation is in the planning stages at the moment but not yet completed.	QMS implementation is in the planning stages at the moment but not yet completed.	QMS implementation is in the planning stages at the moment but not yet completed.
Ghana			
Guinea			
Guinea Bissau	QMS is established in AIS aerodrome units. SLA with data originators elaboration are in progress. Automation system between aerodrome AIS units and NOF is on test	SLA establishment are in progress under regulatory authority	Automation with THALES system ANAIS and AIXM+
Kenya	Implemented QMS and got certified in April 2011. Maintenance of QMS a continuous exercise		Aeronautical Data Quality Course scheduled for next year to empower data providers and AIS in implementation
Lesotho			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 1 in your State?			
P-03 — AIRAC adherence monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Liberia			
Libya			
Madagascar	QMS is established in AIS aerodrome units and NOF. SLA with data originators elaboration are in progress. Automation system between aerodrome AIS units and NOF is on test	SLA establishment are in progress under regulatory authority	Automation with THALES system ANAIS and AIXM+
Malawi			
Mali	QMS is established in AIS aerodrome units . SLA with data originators elaboration are in progress. Automation system between aerodrome AIS units and NOF is on test	SLA establishment are in progress under regulatory authority	Automation with THALES system ANAIS and AIXM+
Mauritania	QMS is established in AIS aerodrome units . SLA with data originators elaboration are in progress. Automation system between aerodrome AIS units and NOF is on test	SLA establishment are in progress under regulatory authority	Automation with THALES system ANAIS and AIXM+
Mauritius	Implementation of ISO 9001: 2008 is in progress		
Morocco			
Mozambique			
Namibia			
Niger	QMS is established in AIS aerodrome units . SLA with data originators elaboration are in progress. Automation system between aerodrome AIS units and NOF is on test	SLA establishment are in progress under regulatory authority	Automation with THALES system ANAIS and AIXM+
Nigeria	Implemented		
Rwanda			
Sao Tome and Principe			
Senegal	QMS is established in AIS aerodrome units and NOF SLA with data originators elaboration are in progress. Automation system between aerodrome AIS units and NOF is on test	SLA establishment are in progress under regulatory authority	Automation with THALES system ANAIS and AIXM+

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 1 in your State?			
P-03 — AIRAC adherence monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Seychelles			
Sierra Leone			
Somalia	Yes , Manually	2013 by introducing quality system which will contain the procedures and resources necessary for each stage and making sure that received, originated, collated, edited, published and stored aeronautical information meet the needs of the recipients.	Data exchange system will improve data integrity
South Africa	2011-2013	Implemented continuous process	Training of staff on QMS Implementation Module ongoing, to conduct Gap Analysis in the processes of Implementation. Audited and get certified with ISO 9001:2008
South Sudan			
Sudan	QMS implemented, will be certified during 2013.		
Swaziland			
Tunisia	Implemented Tunisia AIS and aerodrome AIS unit have got the certification of ISO 9001:2008 on JAN 2009		
Togo	QMS is established in AIS aerodrome units. SLA with data originators elaboration are in progress. Automation system between aerodrome AIS units and NOF is on test	SLA establishment are in progress under regulatory authority	Automation with THALES system ANAIS and AIXM+
Uganda	Implementation ongoing	Total implementation with AIM automation by – 2014	Implementation ongoing. However, we are faced with Challenges regarding data verification
United Republic of Tanzania	Implemented	2009-2010	Got certified with ISO 9001 of 2008
Zambia			
Zimbabwe			

3. Phase 2 – Going Digital (2009 – 2011)

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

a)	What do you consider a realistic timeframe for the implementation of Phase 2?
Algeria	
Angola	
Benin	2016- due to eTOD implementation which needs important means (technical and financial)
Burkina Faso	2016- due to eTOD implementation which needs important means (technical and financial)
Botswana	2 years
Burundi	
Cameroon	2016- due to eTOD implementation which needs important means (technical and financial)
Cape Verde	
Central African Republic	2016- due to eTOD implementation which needs important means (technical and financial)
Chad	2016- due to eTOD implementation which needs important means (technical and financial)
Comoros	2016- due to eTOD implementation which needs important means (technical and financial)
Congo	2016- due to eTOD implementation which needs important means (technical and financial)
Cote d'Ivoire	2016- due to eTOD implementation which needs important means (technical and financial)
Democratic Republic of Congo	
Djibouti	
Egypt	Mid of 2012
Equatorial Guinea	2016- due to eTOD implementation which needs important means (technical and financial)
Eritrea	
Ethiopia	
Gabon	2016- due to eTOD implementation which needs important means (technical and financial)
Gambia	
Ghana	
Guinea	
Guinea Bissau	2016- due to eTOD implementation which needs important means (technical and financial)
Kenya	Kenya's Phase 2 runs (2011-2012) and 70% so far completed. The other 30% is to be completed within 2012-2013 performance contract 3 year period is preferred to manage targets not met between 2011-2012.
Lesotho	
Liberia	
Libya	
Madagascar	2016- due to eTOD implementation which needs important means (technical and financial)
Malawi	
Mali	2016- due to eTOD implementation which needs important means (technical and financial)
Mauritania	2016- due to eTOD implementation which needs important means (technical and financial)
Mauritius	Many steps of Phase 2 are being implemented; however the entire scope of data will be covered by 2015.
Morocco	
Mozambique	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

a) What do you consider a realistic timeframe for the implementation of Phase 2?	
Namibia	
Niger	2016- due to eTOD implementation which needs important means (technical and financial)
Nigeria	2016
Rwanda	
Sao Tome and Principe	
Senegal	2016- due to eTOD implementation which needs important means (technical and financial)
Seychelles	
Sierra Leone	
Somalia	2014, by going digital in using computer technology or digital communication and introducing digital data from data base in our production process.
South Africa	2014 – 2016 - due to eTOD implementation which needs legislative, technical and financial input.
South Sudan	
Sudan	Transfer National Plan will be in place by the end of March 2013.
Swaziland	
Tunisia	The timeframe is not realistic for the implementation of phase 2.
Togo	2016- due to eTOD implementation which needs important means (technical and financial)
Uganda	Some of the activities will be implemented after AIM Automation: 2013 - 2015
United Republic of Tanzania	
Zambia	
Zimbabwe	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-01 — Data quality monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	A structured monitoring system is implemented in 2012. Quality-SLA must be established with data originators-Data quality indicator is available and monitored	SLA establishment is in progress	Closer and permanent collaboration and coordination between ASECNA and CAA for national data collection
Burkina Faso	A structured monitoring system is implemented in 2012. Quality-SLA must be established with data originators-Data quality indicator is available and monitored	SLA establishment is in progress	Closer and permanent collaboration and coordination between ASECNA and CAA for national data collection
Botswana	Not yet implemented AIS keeps records and checks all the Integrated Aeronautical Information Package	To introduce QMS Implementation by 2011-2013	The step will be fully implemented after QMS implementation during 2011-2013
Burundi			
Cameroon	A structured monitoring system is implemented in 2012. Quality-SLA must be established with data originators-Data quality indicator is available and monitored	SLA establishment is in progress	Closer and permanent collaboration and coordination between ASECNA and CAA for national data collection
Cape Verde			
Central African Republic	A structured monitoring system is implemented in 2012. Quality-SLA must be established with data originators-Data quality indicator is available and monitored	SLA establishment is in progress	Closer and permanent collaboration and coordination between ASECNA and CAA for national data collection
Chad	A structured monitoring system is implemented in 2012. Quality-SLA must be established with data originators-Data quality indicator is available and monitored	SLA establishment is in progress	Closer and permanent collaboration and coordination between ASECNA and CAA for national data collection
Comoros	A structured monitoring system is implemented in 2012. Quality-SLA must be established with data originators-Data quality indicator is available and monitored	SLA establishment is in progress	Closer and permanent collaboration and coordination between ASECNA and CAA for national data collection
Congo	A structured monitoring system is implemented in 2012. Quality-SLA must be established with data originators-Data quality indicator is available and monitored	SLA establishment is in progress	Closer and permanent collaboration and coordination between ASECNA and CAA for national data collection
Cote d'Ivoire	A structured monitoring system is implemented in 2012. Quality-SLA must be established with data originators-Data quality indicator is available and monitored.	SLA establishment is in progress	Closer and permanent collaboration and coordination between ASECNA and CAA for national data collection
Democratic Republic of Congo			
Djibouti			
Egypt	Implemented inside AIS by: x Applying quality control procedures for both technical check for the raw data and editorial check before	Development of KPIs software is ongoing, will be in operation by the end of JUL 2011. It is	Its will known that data quality monitoring is extended beyond the AIS (Data originators, End

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

	publication x Using an automated Archiving system for storing and retrieving of raw data.	intended to be measured on a quarterly basis.	users and sometimes commercial agents i.e Jeppessen). So applying such step on the wide range requires extra efforts especially from State AIS and that's apparent in Egypt through holding monthly meeting with the originators as well as some end users.
Equatorial Guinea	A structured monitoring system is implemented in 2012. Quality-SLA must be established with data originators-Data quality indicator is available and monitored	SLA establishment is in progress	Closer and permanent collaboration and coordination between ASECNA and CAA for national data collection
Eritrea			
Ethiopia			
Gabon	A structured monitoring system is implemented in 2012. Quality-SLA must be established with data originators-Data quality indicator is available and monitored	SLA establishment is in progress	Closer and permanent collaboration and coordination between ASECNA and CAA for national data collection
Gambia			
Ghana			
Guinea			
Guinea Bissau	A structured monitoring system is implemented in 2012. Quality-SLA must be established with data originators-Data quality indicator is available and monitored.	SLA establishment is in progress.	Closer and permanent collaboration and coordination between ASECNA and CAA for national data collection
Kenya	Implemented through continuous monitoring of QMS- Internal audits		Aeronautical Data Quality Course scheduled for the next year to empower data providers and AIS on implementation
Lesotho			
Liberia			
Libya			
Madagascar	A structured monitoring system is implemented in 2012. Quality-SLA must be established with data originators-Data quality indicator is available and monitored.	SLA establishment is in progress	Closer and permanent collaboration and coordination between ASECNA and CAA for national data collection
Malawi			
Mali	A structured monitoring system is implemented in 2012. Quality-SLA must be established with data originators-Data quality indicator is available and monitored.	SLA establishment is in progress	Closer and permanent collaboration and coordination between ASECNA and CAA for national data collection
Mauritania	A structured monitoring system is implemented in 2012. Quality-SLA must be established with data originators-Data quality indicator is available and monitored.	SLA establishment is in progress	Closer and permanent collaboration and coordination between ASECNA and CAA for national data collection
Mauritius	A structured monitoring system is not implemented. Introduction of QMS ISO 9001:2008 will resolve this issue.		<i>State policy under development</i>

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

Morocco			
Mozambique			
Namibia			
Niger	A structured monitoring system is implemented in 2012. Quality-SLA must be established with data originators-Data quality indicator is available and monitored.	SLA establishment is in progress	Closer and permanent collaboration and coordination between ASECNA and CAA for national data collection
Nigeria	Not yet implemented		
Rwanda			
Sao Tome and Principe			
Senegal	A structured monitoring system is implemented in 2012. Quality-SLA must be established with data originators-Data quality indicator is available and monitored.	SLA establishment is in progress	Closer and permanent collaboration and coordination between ASECNA and CAA for national data collection
Seychelles			
Sierra Leone			
Somalia	A structured monitoring system and quality system not implemented	2014, by making sure that the quality of aeronautical information given suits the recipients and that the recipients are provided with appropriate quality information	
South Africa	QMS (CHAIN, OPADD, etc) already implemented by ANSP. Data Quality Monitoring will be continually revised to incorporate new systems, technologies and associate processes.	The centralised repository for Aeronautical information (2013) would ensure quality within all systems across South Africa.	
South Sudan			
Sudan	A structured monitoring system is not implemented. Quality management in the chain is fractured.		State policy under development.
Swaziland			
Tunisia	Implemented Tunisia AIS applies the quality control procedures for the raw data and editorial check before publication and archiving system for storing and retrieving of raw data		
Togo	A structured monitoring system is implemented in 2012. Quality-SLA must be established with data originators-Data quality indicator is available and monitored.	SLA establishment is in progress	Closer and permanent collaboration and coordination between ASECNA and CAA for national data collection
Uganda	A structured monitoring system is not implemented. Quality management in the chain is fractured		Ensure that the procedure for data quality monitoring is adhered to
United Republic of Tanzania	Continues	Continues	geodatabase to be created for a reference to spatial data
Zambia			
Zimbabwe			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-02 — Data integrity monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	More awareness of actors to make a multiple check before publishing any data. Three checks are needed before data release (data originator-aerodrome AIS unit-NOF)	Since 2011	Post-checks are done in order to correct timely any mistakes in publication
Burkina Faso	More awareness of actors to make a multiple check before publishing any data. Three checks are needed before data release (data originator-aerodrome AIS unit-NOF)	Since 2011	Post-checks are done in order to correct timely any mistakes in publication
Botswana	Partially implemented AIS verify with the source information/data before publication		The step will be fully implemented after QMS implementation during 2011-2013
Burundi			
Cameroon	More awareness of actors to make a multiple check before publishing any data. Three checks are needed before data release (data originator-aerodrome AIS unit-NOF)	Since 2011	Post-checks are done in order to correct timely any mistakes in publication
Cape Verde			
Central African Republic	More awareness of actors to make a multiple check before publishing any data. Three checks are needed before data release (data originator-aerodrome AIS unit-NOF)	Since 2011	Post-checks are done in order to correct timely any mistakes in publication
Chad	More awareness of actors to make a multiple check before publishing any data. Three checks are needed before data release (data originator-aerodrome AIS unit-NOF)	Since 2011	Post-checks are done in order to correct timely any mistakes in publication
Comoros	More awareness of actors to make a multiple check before publishing any data. Three checks are needed before data release (data originator-aerodrome AIS unit-NOF)	Since 2011	Post-checks are done in order to correct timely any mistakes in publication
Congo	More awareness of actors to make a multiple check before publishing any data. Three checks are needed before data release (data originator-aerodrome AIS unit-NOF)	Since 2011	Post-checks are done in order to correct timely any mistakes in publication
Cote d'Ivoire	More awareness of actors to make a multiple check before publishing any data. Three checks are needed before data release (data originator-aerodrome AIS unit-NOF)	Since 2011	
Democratic Republic of Congo			
Djibouti			
Egypt	Cyclic Redundancy Check (CRC) values are applied inside Egypt AIS through an automated system based on AIXM	Intention to use Standard Input Forms (SIF) which will enable data to be processed	Since exchanging of data is done in paper form

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-02 — Data integrity monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
	4.5 DB	electronically avoiding human interference and numerous manual re-entries. (under study)	the only method used for the time being is the manual check on every entry
Equatorial Guinea	More awareness of actors to make a multiple check before publishing any data. Three checks are needed before data release (data originator-aerodrome AIS unit-NOF)	Since 2011	Post-checks are done in order to correct timely any mistakes in publication
Eritrea			
Ethiopia			
Gabon	More awareness of actors to make a multiple check before publishing any data. Three checks are needed before data release (data originator-aerodrome AIS unit-NOF)	Since 2011	Post-checks are done in order to correct timely any mistakes in publication
Gambia			
Ghana			
Guinea			
Guinea Bissau	More awareness of actors to make a multiple check before publishing any data. Three checks are needed before data release (data originator-aerodrome AIS unit-NOF)	Since 2011	Post-checks are done in order to correct timely any mistakes in publication
Kenya	Data Integrity monitoring processes are implemented within automated AIS Systems		A 3 Step validation process before data is accepted in the database
Lesotho			
Liberia			
Libya			
Madagascar	More awareness of actors to make a multiple check before publishing any data. Three checks are needed before data release (data originator-aerodrome AIS unit-NOF)	Since 2011	Post-checks are done in order to correct timely any mistakes in publication
Malawi			
Mali	More awareness of actors to make a multiple check before publishing any data. Three checks are needed before data release (data originator-aerodrome AIS unit-NOF)	Since 2011	Post-checks are done in order to correct timely any mistakes in publication
Mauritania	More awareness of actors to make a multiple check before publishing any data. Three checks are needed before data release (data originator-aerodrome AIS unit-NOF)	Since 2011	Post-checks are done in order to correct timely any mistakes in publication
Mauritius	Partially implemented	Introduction of QMS ISO 9001: 2008 and the implementation of AIXM 5.1 Implementation date: June 2013	
Morocco			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-02 — Data integrity monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Mozambique			
Namibia			
Niger	More awareness of actors to make a multiple check before publishing any data. Three checks are needed before data release (data originator-aerodrome AIS unit-NOF)	Since 2011	Post-checks are done in order to correct timely any mistakes in publication
Nigeria	Partially implemented. AIS verifies information/data with the source before publication		
Rwanda			
Sao Tome and Principe			
Senegal	More awareness of actors to make a multiple check before publishing any data. Three checks are needed before data release (data originator-aerodrome AIS unit-NOF)	Since 2011	Post-checks are done in order to correct timely any mistakes in publication
Seychelles			
Sierra Leone			
Somalia	Not implemented	2014, by making sure those safety objectives are measurable and adequate.	
South Sudan			
Sudan	Not implemented.	Staff trained, a mechanism for data monitoring ongoing.	
South Africa	Partially Implemented. QMS (CHAIN, OPADD, etc) already implemented by ANSP. Data Integrity Monitoring will be continually revised to incorporate new systems, technologies and associate processes.	The centralised repository for Aeronautical information (2013) would ensure integrity within all systems across South Africa.	
Swaziland			
Tunisia	Implemented Only for paper form, Tunisia AIS applies the quality control procedures from the raw data until publication	Will be planned when the integrated aeronautical information database will be implemented	
Togo	More awareness of actors to make a multiple check before publishing any data. Three checks are needed before data release (data originator-aerodrome AIS unit-NOF)	Since 2011	Post-checks are done in order to correct timely any mistakes in publication
Uganda	No data integrity monitoring system in place yet	CRC tool to be procured with AIM Automation	Procurement ongoing
United Republic of Tanzania	August 2011-august 2012	To be implemented	Purchasing AMHS with new FLP Model/AIS

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-02 — Data integrity monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
			Database System/FDPS/ATIS • Training needed and software to read AIXM/AICM e.g. XmlSpy
Zambia			
Zimbabwe			
b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-06 — Integrated aeronautical information database			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	Static data base is implemented	static data migration in progress. Dynamic data base under test.	Implementation with THALES solution Static data base : ANAIS Dynamic data base : NOPIA
Burkina Faso	Static data base is implemented	static data migration in progress. Dynamic data base under test.	Implementation with THALES solution Static data base : ANAIS Dynamic data base : NOPIA
Botswana	AIS Databases are available as follows: - Flight Plan Management database - NOTAM database (generates PIB's) - OPMET (generates weather information) - AIP database (web- based) The first three items are not integrated to the AIP database and the chart production system is not linked to any of the databases.		• In addition, the organization has ESRI ArcGIS and Adobe Illustrator for in-house aeronautical chart production • AIP and current AIC's, NOTAM Summaries and AIP Supplements are viewed at all the major airports in Botswana In order to have all the systems linked to each other, the organisation has an AIXM, but the

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-02 — Data integrity monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
			challenge is that we do not have the knowledge of AIXM
Burundi			
Cameroon	Static data base is implemented	static data migration in progress. Dynamic data base under test.	Implementation with THALES solution Static data base : ANAIS Dynamic data base : NOPIA
Cape Verde			
Central African Republic	Static data base is implemented	static data migration in progress. Dynamic data base under test.	Implementation with THALES solution Static data base : ANAIS Dynamic data base : NOPIA
Chad	Static data base is implemented	static data migration in progress. Dynamic data base under test.	Implementation with THALES solution Static data base : ANAIS Dynamic data base : NOPIA
Comoros	Static data base is implemented	static data migration in progress. Dynamic data base under test.	Implementation with THALES solution Static data base : ANAIS Dynamic data base : NOPIA
Congo	Static data base is implemented	static data migration in progress. Dynamic data base under test.	Implementation with THALES solution Static data base : ANAIS Dynamic data base : NOPIA
Cote d'Ivoire	Static data base is implemented	static data migration in progress. Dynamic data base under test.	Implementation with THALES solution Static data base : ANAIS Dynamic data base : NOPIA
Democratic Republic of Congo			
Djibouti			
Egypt		Egypt is intending to have a system based on Integrated DB (AIXM5.1) between NOTAM, Briefing, AIP, Chart and procedure design as well. It will be in operation on the MID of 2012.	The integration of AIS DB with other DBs (ATS, MET etc) is taken in our concern and practical steps is on the way.
Equatorial Guinea	Static data base is implemented	static data migration in progress. Dynamic data base under test.	Implementation with THALES solution Static data base : ANAIS Dynamic data base : NOPIA
Eritrea			
Ethiopia			
Gabon	Static data base is implemented	static data migration in progress. Dynamic data base under test.	Implementation with THALES solution Static data base : ANAIS Dynamic data base : NOPIA

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-02 — Data integrity monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Gambia	eAIP is available in PDF	Since 2003	AIP available in digital format (PDF) on CD and on the web
Ghana			
Guinea	Dynamic database implemented and Static database is ongoing (Roberts FIR)	Upgrade of the AIXM 8.0 to AIXM 5.1 2013-2014 ongoing (Roberts FIR)	Implementation with COMSOFT's or ATALIS solutions
Guinea Bissau	Static data base is implemented	static data migration in progress. Dynamic data base under test.	Implementation with THALES solution Static data base : ANAIS Dynamic data base : NOPIA
Kenya	AIXM 4.5 database implemented currently supporting AIP Charts since 2009	Integrating for NOTAM and other real time data intended during the upgrade to AIXM 5.1	Kenya is awaiting ICAO to adopt AIXM 5.1 before upgrading
Lesotho			
Liberia	Dynamic database implemented and Static database is ongoing (Roberts FIR)	Upgrade of the AIXM 8.0 to AIXM 5.1 2013-2014 ongoing (Roberts FIR)	Implementation with COMSOFT's or ATALIS solutions
Libya			
Madagascar	Static data base is implemented	static data migration in progress. Dynamic data base under test.	Implementation with THALES solution Static data base : ANAIS Dynamic data base : NOPIA
Malawi			
Mali	Static data base is implemented	static data migration in progress. Dynamic data base under test.	Implementation with THALES solution Static data base : ANAIS Dynamic data base : NOPIA
Mauritania	Static data base is implemented	static data migration in progress. Dynamic data base under test.	Implementation with THALES solution Static data base : ANAIS Dynamic data base : NOPIA
Mauritius	Not implemented	With the Introduction of a system based on AIXM 5.1 an integration of the static and dynamic database is expected. The deadline for the transition to AIXM 5.1 is December 2014	
Morocco			
Mozambique			
Namibia			
Niger	Static data base is implemented	static data migration in progress. Dynamic data base under test.	Implementation with THALES solution Static data base : ANAIS Dynamic data base : NOPIA
Nigeria			
Rwanda			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-02 — Data integrity monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Sao Tome and Principe			
Senegal	Static data base is implemented	static data migration in progress. Dynamic data base under test.	Implementation with THALES solution Static data base : ANAIS Dynamic data base : NOPIA
Seychelles			
Sierra Leone	Dynamic database implemented and Static database is on-going (Roberts FIR)	Upgrade of the AIXM 8.0 to AIXM 5.1 2013-2014 on-going (Roberts FIR)	Implementation with COMSOFT's or ATALIS solutions
Somalia	Not implemented	2014, by establishing and maintaining a database where digital aeronautical data is integrated and used to produce current and future AIM products and services.	
South Africa	Implemented. NOTAM database linked to Flight Planning System for PIB. These systems to be integrated into the Centralised Aeronautical Database.	The implementation of a centralised repository (2013) for Aeronautical information (CAD) would ensure integrity within all systems across South Africa.	
South Sudan			
Sudan	Partially implemented.	We got phase 1 of THALES AIM TOP-Sky (MET, Static and dynamic DB) phase 2 will be within 2013 included AIXM 5.1 and eAIP.	
Swaziland			
Tunisia	Implemented only for NOTAM, SNOWTAM and PIB	Plan for the another Integrated aeronautical information elements	
Togo	Static data base is implemented	static data migration in progress. Dynamic data base under test.	Implementation with THALES solution Static data base : ANAIS Dynamic data base : NOPIA
Uganda	UGANDA Database not yet in place	With AIM automation, centralized database is expected -2014	
United Republic of Tanzania			
Zambia			
Zimbabwe			
b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-07 — Unique identifiers			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-02 — Data integrity monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	ASECNA Static data base named “AIMANT” is compliant with the specifications of AIXM/AICM	2013	
Burkina Faso	ASECNA Static data base named “AIMANT” is compliant with the specifications of AIXM/AICM	2013	
Botswana			Civil Aviation authority of Botswana (CAAB) needs the assistance of your office in this area, we do not understand what the unique identifiers are, and how it will be implemented
Burundi			
Cameroon	ASECNA Static data base named “AIMANT” is compliant with the specifications of AIXM/AICM	2013	
Cape Verde			
Central African Republic	ASECNA Static data base named “AIMANT” is compliant with the specifications of AIXM/AICM	2013	
Chad	ASECNA Static data base named “AIMANT” is compliant with the specifications of AIXM/AICM	2013	
Comoros	ASECNA Static data base named “AIMANT” is compliant with the specifications of AIXM/AICM	2013	
Congo	ASECNA Static data base named “AIMANT” is compliant with the specifications of AIXM/AICM	2013	
Cote d’Ivoire	ASECNA Static data base named “AIMANT” is compliant with the specifications of AIXM/AICM	2013	
Democratic Republic of Congo			
Djibouti			
Egypt	Implemented as our data base is based on AIXM 4.5		From Egypt’s point of view this step should be omitted from the road map steps as it only concerns the IT developers rather than the States
Equatorial Guinea	ASECNA Static data base named “AIMANT” is compliant with the specifications of AIXM/AICM	2013	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-02 — Data integrity monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Eritrea			
Ethiopia			
Gabon	ASECNA Static data base named “AIMANT” is compliant with the specifications of AIXM/AICM	2013	
Gambia	Not Implemented	Planned for 2014/2015	
Ghana			
Guinea	The data model AIXM 8.0 implemented (Roberts FIR)	Upgrade data model to AIXM 5.1 to have a complete and integrated solution for data processing automation 2013-2014 ongoing (Roberts FIR)	COMSOFT’s or ATALIS solutions
Guinea Bissau	ASECNA Static data base named “AIMANT” is compliant with the specifications of AIXM/AICM	2013	
Kenya	So far Kenya has implemented unique identifier accommodated in AIXM 4.5 only	Advance unique identifiers available in AIXM 5.1 will be implemented after the upgrade as above	
Lesotho			
Liberia	The data model AIXM 8.0 implemented (Roberts FIR)	Upgrade data model to AIXM 5.1 to have a complete and integrated solution for data processing automation 2013-2014 ongoing (Roberts FIR)	COMSOFT’s or ATALIS solutions
Libya			
Madagascar	ASECNA Static data base named “AIMANT” is compliant with the specifications of AIXM/AICM	2013	
Malawi			
Mali	ASECNA Static data base named “AIMANT” is compliant with the specifications of AIXM/AICM	2013	
Mauritania	ASECNA Static data base named “AIMANT” is compliant with the specifications of AIXM/AICM	2013	
Mauritius	Not implemented	With the introduction of a system based on AIXM 5.1 the universally unique identifier (UUID) model will be implemented. We expect possible difficulties in the transition process to the new unique identifiers. The deadline for the transition to AIXM 5.1 is December 2014	
Morocco			
Mozambique			
Namibia			
Niger	ASECNA Static data base named “AIMANT” is compliant with the specifications of AIXM/AICM	2013	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-02 — Data integrity monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Nigeria	Not implemented		
Rwanda			
Sao Tome and Principe			
Senegal	ASECNA Static data base named “AIMANT” is compliant with the specifications of AIXM/AICM	2013	
Seychelles			
Sierra Leone	The data model AIXM 8.0 implemented (Roberts FIR)	Upgrade data model to AIXM 5.1 to have a complete and integrated solution for data processing automation 2013-2014 ongoing (Roberts FIR)	COMSOFT’s or ATALIS solutions
Somalia	Not implemented	2014, by improving the existing mechanism for the unique identification of aeronautical features so as to increase the effectiveness of information exchanged without the human intervention	
South Africa	Implemented. CAD is compliant with AIXM/AICM specifications.	The centralised repository (2013) for Aeronautical information (CAD) would ensure compliance with AIXM/AICM specifications (AIXM 4.5).	
South Sudan			
Sudan	Not implemented.	Within the implementation of Sudan NP.	
Swaziland			
Tunisia	Not yet implemented	Planned (2013-2014)	
Togo	ASECNA Static data base named “AIMANT” is compliant with the specifications of AIXM/AICM	2013	
Uganda	AISP uses a model of unique feature identification based on natural keys in compliance with AIXM 4.5.	With the introduction of a system based on AIXM 5.1 the universally unique identifier (UUID) model will be implemented. We expect possible difficulties in the transition process to the new unique identifiers.	
United Republic of Tanzania	August 2011-august 2012	To be implemented	- Purchasing AMHS with new FLP Model/AIS Database System/FDPS/ATIS - Training needed and software to read AIXM/AICM e.g. XmlSpy
Zambia			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-02 — Data integrity monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Zimbabwe			
b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-08 — Aeronautical information conceptual model			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	The data model which is used by AIXM 4.5 is implemented.		
Burkina Faso	The data model which is used by AIXM 4.5 is implemented.		
Botswana			(CAAB) needs the assistance of your office in this area, we do not understand Aeronautical information conceptual model
Burundi			
Cameroon	The data model which is used by AIXM 4.5 is implemented.		
Cape Verde			
Central African Republic	The data model which is used by AIXM 4.5 is implemented.		
Chad	The data model which is used by AIXM 4.5 is implemented		
Comoros	The data model which is used by AIXM 4.5 is implemented		
Congo	The data model which is used by AIXM 4.5 is implemented.		
Cote d'Ivoire	The data model which is used by AIXM 4.5 is implemented.		
Democratic Republic of Congo			
Djibouti			
Egypt	Implemented as Egypt has an automated system based on AICM/AIXM 4.5	Coordination with our supplier to upgrade our Data from AICM/AIXM 4.5 to AICM/AIXM 5.1 Mid of 2012	
Equatorial Guinea	The data model which is used by AIXM 4.5 is implemented.		
Eritrea			
Ethiopia			
Gabon			
Gambia			
Ghana			
Guinea	The AIXM/AICM 8.0 implemented described services and related	Upgrade to AIXM conceptual model 5.1 to have a	COMSOFT's or ATALIS solutions

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-02 — Data integrity monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
	aeronautical data	complete and integrated solution for data processing automation 2013-2014 ongoing (Roberts FIR)	
Guinea Bissau	The data model which is used by AIXM 4.5 is implemented.		
Kenya			
Lesotho			
Liberia	The AIXM/AICM 8.0 implemented described services and related aeronautical data	Upgrade to AIXM conceptual model 5.1 to have a complete and integrated solution for data processing automation 2013-2014 ongoing (Roberts FIR)	COMSOFT's or ATALIS solutions
Libya			
Madagascar	The data model which is used by AIXM 4.5 is implemented.		
Malawi			
Mali	The data model which is used by AIXM 4.5 is implemented.		
Mauritania			
Mauritius	Not implemented	With the introduction of a system based on AIXM 5.1 the appropriate data model will be implemented The deadline for the transition to AIXM 5.1 is December 2013	
Morocco			
Mozambique			
Namibia			
Niger	The data model which is used by AIXM 4.5 is implemented.		
Nigeria	Not implemented		
Rwanda			
Sao Tome and Principe			
Senegal	The data model which is used by AIXM 4.5 is implemented.		
Seychelles			
Sierra Leone	The AIXM/AICM 8.0 implemented described services and related aeronautical data	Upgrade to AIXM conceptual model 5.1 to have a complete and integrated solution for data processing automation 2013-2014 on-going (Roberts FIR)	COMSOFT's or ATALIS solutions
Somalia	Not implemented	2013, by installing an aeronautical information model which will manage digital data structures	
South Africa	Implemented. CAD is compliant with AIXM/AICM specifications.	The centralised repository (2013) for Aeronautical information (CAD) would ensure compliance with AIXM/AICM specifications	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-02 — Data integrity monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
		(AIXM 4.5).	
South Sudan			
Sudan	Not implemented	Phase 2 of THALES/Sudan roadmap, within 2013	
Swaziland			
Tunisia	Not yet implemented	Planned (2013-2014)	
Togo			
Uganda	Not implemented	Should be implemented with AIM automation – 2013	
United Republic of Tanzania	August 2011-august 2012	To be implemented	- Purchasing AMHS with new FLP Model/AIS Database System/FDPS/ATIS - Training needed and software to read AIXM/AICM e.g. XmlSpy
Zambia			
Zimbabwe			
b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-11 — Electronic AIP			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	eAIP is available in PDF and HTML format	Since 2006	AIP available in digital format (PDF) on CD and on the web
Burkina Faso	eAIP is available in PDF and HTML format	Since 2006	AIP available in digital format (PDF) on CD and on the web
Botswana		First version of the AIP is planned to be available in July 2012, and it will be in the form of PDF's saved in CD's.	
Burundi			
Cameroon	eAIP is available in PDF and HTML format	Since 2006	AIP available in digital format (PDF) on CD and on the web
Cape Verde			
Central African Republic	eAIP is available in PDF and HTML format	Since 2006	AIP available in digital format (PDF) on CD and on the web
Chad	eAIP is available in PDF and HTML format	Since 2006	AIP available in digital format

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-02 — Data integrity monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
			(PDF) on CD and on the web
Comoros	eAIP is available in PDF and HTML format	Since 2006	AIP available in digital format (PDF) on CD and on the web
Congo	eAIP is available in PDF and HTML format	Since 2006	AIP available in digital format (PDF) on CD and on the web
Cote d'Ivoire	eAIP is available in PDF and HTML format	Since 2006	AIP available in digital format (PDF) on CD and on the web
Democratic Republic of Congo			
Djibouti			
Egypt	In course of implementation	We already have the eAIP module in our AIP automated system and we are expecting to produce it by the End of 2011	
Equatorial Guinea	eAIP is available in PDF and HTML format	Since 2006	AIP available in digital format (PDF) on CD and on the web
Eritrea			
Ethiopia			
Gabon	eAIP is available in PDF and HTML format	Since 2006	AIP available in digital format (PDF) on CD and on the web
Gambia			
Ghana			
Guinea	eAIP not yet available (Roberts FIR)	Upgrade to AIXM 5.1 database management we will have a complete and integrated solution for data processing automation eAIP and AIS website (Roberts FIR)	AIP and eAIP publication features, based on AIXM exchange standards
Guinea Bissau	eAIP is available in PDF and HTML format	Since 2006	AIP available in digital format (PDF) on CD and on the web
Kenya	Implemented online the intranet and CD	External online version on kcaa website scheduled for Dec 2012	
Lesotho			
Liberia	eAIP not yet available (Roberts FIR)	Upgrade to AIXM 5.1 database management we will have a complete and integrated solution for data processing automation eAIP and AIS website (Roberts FIR)	AIP and eAIP publication features, based on AIXM exchange standards

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-02 — Data integrity monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Libya			
Madagascar	eAIP is available in PDF and HTML format	Since 2006	AIP available in digital format (PDF) on CD and on the web
Malawi			
Mali	eAIP is available in PDF and HTML format	Since 2006	AIP available in digital format (PDF) on CD and on the web
Mauritania	eAIP is available in PDF and HTML format	Since 2006	AIP available in digital format (PDF) on CD and on the web
Mauritius	Partially implemented	Initial e-AIP produced as from June 2013	AIP available on Website in PDF version
Morocco			
Mozambique			
Namibia			
Niger	eAIP is available in PDF and HTML format	Since 2006	AIP available in digital format (PDF) on CD and on the web
Nigeria	Nigeria provides its AIP on CD ROM		
Rwanda			
Sao Tome and Principe			
Senegal	eAIP is available in PDF and HTML format	Since 2006	AIP available in digital format (PDF) on CD and on the web
Seychelles			
Sierra Leone	eAIP not yet available (Roberts FIR)	Upgrade to AIXM 5.1 database management we will have a complete and integrated solution for data processing automation eAIP and AIS website (Roberts FIR)	AIP and eAIP publication features, based on AIXM exchange standards
Somalia	Not implemented	2014, compiling e AIP in a printable document and one that can be viewed by web browsers in CACAS website.	Somalia AIP at the moment is obsolete
South Africa	Implemented. Supplements, AIC and Charts (PDF format) already published in electronic form on SACAA website.	IAIP to be published via CAD by end 2013.	
South Sudan			
Sudan	Not implemented.	Phase 2 of THALES/Sudan roadmap, within 2013	
Swaziland			
Tunisia	Tunisia provides its AIP on CD ROM and on internet since 2001		Tunisia AIP may be accessible for printing and/or for navigation via

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-02 — Data integrity monitoring			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
			WEB browser tool
Togo	eAIP is available in PDF and HTML format	Since 2006	AIP available in digital format (PDF) on CD and on the web
Uganda	eAIP not in place	Will be implemented with automation - 2014	Acquisition of equipment on going
United Republic of Tanzania	eAIP on CD (august 2011-June 2012) eAIP online (august 2011-2012)	Ongoing To be implemented	• Assembling data systematically • Purchasing working equipments • Need training on eAIP as well as its associated web application technologies
Zambia			
Zimbabwe			

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-13 — Terrain			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria	Not implemented	APIRG/19 Meeting Report	
Angola		Report on Agenda Item 3	
Benin		Appendix 3.5C	
Burkina Faso		Planned for 2014/2015	
Botswana		Planned for 2014/2015	
Burundi	Not implemented	Follow-up to APIRG/17 Conclusion 17.86 (AIM)	Due to financial constraints we request ICAO to assist in funding the project and also provide expertise
Cameroon		Ref. p. 12/7-0725 dated 7 August 2012	
Cape Verde			
Central African Republic			
Chad			
Comoros	Not implemented		
Congo			
Cote d'Ivoire			
Democratic Republic of Congo			
Djibouti			
Egypt	Not implemented		
Equatorial Guinea		Planned for 2014/2015	
Eritrea			
Ethiopia			
Gabon		Planned for 2014/2015	
Gambia	Not Implemented	Planned for 2014/2015	
Ghana			
Guinea		Implemented WGS 84 Survey 2003	
Guinea Bissau		Planned for 2014/2015	
Kenya		Digital terrain for 6 airports already available and undergoing processing and verification.	
Lesotho	Not yet implemented require resurvey	Implementation scheduled between 2013 -2015 based on the airport	
Liberia		Resurvey for eTOD implementation 2013-2014 area 1, 2, 3, 4 respectively	We have to ensure the availability of electronic TOD, in accordance with stringent numerical requirements established for 4 distinct areas
Madagascar		Planned for 2014/2015	
Malawi			
Mali		Planned for 2014/2015	
Mauritania		Planned for 2014/2015	
Mauritius	Partially implemented	Terrain datasets are available, but unfit to cover all eTOD requirements. Implementation is planned until December 2014	Survey of terrain is carried by qualified government organisation
Morocco			
Mozambique			
Namibia			
Niger		Planned for 2014/2015	
Nigeria	Not yet implemented		

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-14 — Obstacles			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	Not implemented	Planned for 2014/2015	
Burkina Faso	Not implemented	Planned for 2014/2015	
Botswana	Not yet implemented	Planned for 2009-2014 year, this will be carried out as project involving all stakeholders. This is subject to availability of funds	Due to financial constraints we request ICAO to assist in funding the project and also provide expertise
Burundi			
Cameroon			
Cape Verde			
Central African Republic	Not implemented	Planned for 2014/2015	
Chad	Not implemented	Planned for 2014/2015	
Comoros	Not implemented	Planned for 2014/2015	
Congo	Not implemented	Planned for 2014/2015	
Cote d'Ivoire	Not implemented	Planned for 2014/2015	
Democratic Republic of Congo			
Djibouti			
Egypt			
Equatorial Guinea	Not implemented	Planned for 2014/2015	
Eritrea			
Ethiopia			
Gabon	Not implemented	Planned for 2014/2015	
Gambia	Not Implemented	Planned for 2014/2015	
Ghana			
Guinea	Implemented WGS-84 Survey 2003		
Guinea Bissau	Not implemented	Planned for 2014/2015	
Kenya	Area 1 obstacle data available on AIXM database	Area 2 obstacle survey for 4 airports conducted in Oct-Nov 2012. Data undergoing processing	
Lesotho			
Liberia	Partially implemented need resurvey	Electronic TOD implementation requirements planned for 2013-2014	Terrain and obstacle are in the same criteria in accordance to roadmap framework and guidance material

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-14 — Obstacles			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Libya			
Madagascar	Not implemented	Planned for 2014/2015	
Malawi			
Mali	Not implemented	Planned for 2014/2015	
Mauritania	Not implemented	Planned for 2014/2015	
Mauritius	Implemented		
Morocco			
Mozambique			
Namibia			
Niger	Not implemented	Planned for 2014/2015	
Nigeria	Not yet implemented		
Rwanda			
Sao Tome and Principe			
Senegal	Not implemented	Planned for 2014/2015	
Seychelles			
Sierra Leone	Partially implemented need resurvey	Electronic TOD implementation requirements planned for 2013-2014	Terrain and obstacle are in the same criteria in accordance to roadmap framework and guidance material
Somalia	Not implemented	2014, by compiling obstacles data in Geodetic form	Most of the obstacles in Somalia not verified
South Africa	Implemented by Regulator		
South Sudan			
Sudan	Data collected and published for most of ADs	Planed within 2013 to be completed.	
Swaziland			
Tunisia	Not yet implemented	Planned (2013-2014)	
Togo	Not implemented	Planned for 2014/2015	
Uganda	Partially provided for in the AIP but not compliant with chapter10,		
United Republic of Tanzania			
Zambia			
Zimbabwe			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-15 — Aerodrome mapping			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	Available on PDF version	Planned for structured format in 2015	
Burkina Faso	Available on PDF version		
Botswana		Planned for 2009-2014 year, this will be carried out as project involving all stakeholders. This is subject to availability of funds	
Burundi			
Cameroon	Available on PDF version	Planned for structured format in 2015	
Cape Verde			
Central African Republic	Available on PDF version	Planned for structured format in 2015	
Chad	Available on PDF version	Planned for structured format in 2015	
Comoros	Available on PDF version	Planned for structured format in 2015	
Congo	Available on PDF version	Planned for structured format in 2015	
Cote d'Ivoire	Available on PDF version	Planned for structured format in 2015	
Democratic Republic of Congo			
Djibouti			
Egypt			
Equatorial Guinea	Available on PDF version	Planned for structured format in 2015	
Eritrea			
Ethiopia			
Gabon	Available on PDF version	Planned for structured format in 2015	
Gambia			
Ghana			
Guinea	Implemented WGS 84 survey 2003 but no complex airports exist in Guinea to support eTOD area 3 so far.		
Guinea Bissau	Available on PDF version	Planned for structured format in 2015	
Kenya	Aerodrome mapping was made a recommendation for complex airports to support eTOD Area 3. Kenya eTOD policy does not include implementation of Area 3 as no complex airports exist in Kenya so far		
Lesotho			
Liberia	Not yet implemented to support eTOD area 3 as no complex	Resurvey WGS 84 2013-2014	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-14 — Obstacles			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
	airports exist in Liberia so far		
Libya			
Madagascar	Available on PDF version	Planned for structured format in 2015	
Malawi			
Mali	Available on PDF version	Planned for structured format in 2015	
Mauritania	Available on PDF version	Planned for structured format in 2015	
Mauritius	Not implemented	No concrete planning available yet, still under review	
Morocco			
Mozambique			
Namibia			
Niger	Available on PDF version	Planned for structured format in 2015	
Nigeria	Partially implemented		
Rwanda			
Sao Tome and Principe			
Senegal	Available on PDF version	Planned for structured format in 2015	
Seychelles			
Sierra Leone	Not yet implemented to support eTOD area 3 as no complex airports exist in Liberia so far	Resurvey WGS 84 2013-2014	
Somalia	Not implemented	2014, no concrete planning available yet	
South Africa	2015-2015	To be implemented	Establishment of aerodrome Mapping Database. Assembling and storage of aerodrome data systematically.
South Sudan			
Sudan	Not implemented.	No concrete planning available yet, still under review.	
Swaziland			
Tunisia	Not yet implemented	Planned (2013-2014)	
Togo	Available on PDF version	Planned for structured format in 2015	
Uganda	Negotiations are ongoing for the procurement of a consultant to carryout LIDAR survey for e-TOD areas 4 & 3	LIDAR survey data to be used for Aerodrome mapping	
United Republic of Tanzania	2012-2015	To be implemented	Training needed on AD mapping electronic displays and

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 2 in your State?			
P-14 — Obstacles			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
			assembling of ad mapping data
Zambia			
Zimbabwe			

4. Phase 3 – Information Management (2011 – 2016)

a) What do you consider a realistic timeframe for the implementation of Phase 3?	
Algeria	
Angola	
Benin	We believe that the foreseen implementation time frame of Phase 3 is too ambitious and think that 2015-2020 would be a more realistic time frame.
Burkina Faso	We believe that the foreseen implementation time frame of Phase 3 is too ambitious and think that 2015-2020 would be a more realistic time frame.
Botswana	4 years
Burundi	
Cameroon	We believe that the foreseen implementation time frame of Phase 3 is too ambitious and think that 2015-2020 would be a more realistic time frame.
Cape Verde	
Central African Republic	We believe that the foreseen implementation time frame of Phase 3 is too ambitious and think that 2015-2020 would be a more realistic time frame.
Chad	We believe that the foreseen implementation time frame of Phase 3 is too ambitious and think that 2015-2020 would be a more realistic time frame.
Comoros	We believe that the foreseen implementation time frame of Phase 3 is too ambitious and think that 2015-2020 would be a more realistic time frame.
Congo	We believe that the foreseen implementation time frame of Phase 3 is too ambitious and think that 2015-2020 would be a more realistic time frame.
Cote d'Ivoire	We believe that the foreseen implementation time frame of Phase 3 is too ambitious and think that 2015-2020 would be a more realistic time frame.
Democratic Republic of Congo	
Djibouti	
Egypt	
Equatorial Guinea	We believe that the foreseen implementation time frame of Phase 3 is too ambitious and think that 2015-2020 would be a more realistic time frame.
Eritrea	
Ethiopia	
Gabon	We believe that the foreseen implementation time frame of Phase 3 is too ambitious and think that 2015-2020 would be a more realistic time frame.
Gambia	
Ghana	
Guinea	AIM data products and services will be based on requirements identified for each ATM component by 2014 (Roberts FIR).

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

a) What do you consider a realistic timeframe for the implementation of Phase 3?	
Guinea Bissau	We believe that the foreseen implementation time frame of Phase 3 is too ambitious and think that 2015-2020 would be a more realistic time frame.
Kenya	Kenya phase 3 runs 2012-2016. We believe a 5 year period is more realistic. Preferably 2013-2018 to allow room for overflow on unaccomplished projects.
Lesotho	
Liberia	AIM data products and services will be based on requirements identified for each ATM component by 2014(Roberts FIR).
Libya	
Madagascar	We believe that the foreseen implementation time frame of Phase 3 is too ambitious and think that 2015-2020 would be a more realistic time frame.
Malawi	
Mali	We believe that the foreseen implementation time frame of Phase 3 is too ambitious and think that 2015-2020 would be a more realistic time frame.
Mauritania	We believe that the foreseen implementation time frame of Phase 3 is too ambitious and think that 2015-2020 would be a more realistic time frame.
Mauritius	We believe that the foreseen implementation time frame of Phase 3 is too ambitious and think that 2013-2018 would be a more realistic time frame.
Morocco	
Mozambique	
Namibia	
Niger	We believe that the foreseen implementation time frame of Phase 3 is too ambitious and think that 2015-2020 would be a more realistic time frame.
Nigeria	We believe that the foreseen implementation time frame of Phase 3 can only be realistic after phase 1 & 2 is implemented. 2015-2020 would be a more realistic time frame to allow room for overflow on unaccomplished projects.
Rwanda	
Sao Tome and Principe	
Senegal	We believe that the foreseen implementation time frame of Phase 3 is too ambitious and think that 2015-2020 would be a more realistic time frame.
Seychelles	
Sierra Leone	AIM data products and services will be based on requirements identified for each ATM component by 2014 (Roberts FIR).
Somalia	We consider 2013 to 2018 the realistic time frame for the implementation of Phase 3
South Africa	2017 – 2020 is a more realistic timeframe
South Sudan	
Sudan	Sudan NP will be in place by end of March 2013 all phase will be in a timeline to capture AFI Plan.
Swaziland	
Tunisia	The timeframe is not realistic for the implementation of phase 3
Togo	We believe that the foreseen implementation time frame of Phase 3 is too ambitious and think that 2015-2020 would be a more realistic time frame.
Uganda	2014 – 2018 is a more realistic time frame
United Republic of Tanzania	
Zambia	
Zimbabwe	

b) What is the status of implementation of the following steps of Phase 3 in your State?

P-09 — Aeronautical data exchange

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	An AIXM interface from/to the central aeronautical database (refer to P-06) is available.	It is planned to implement the exchange model and mechanisms together with AICM 4.5. This starts in 2013	Exchange with AFICAD and EAD are to be established
Burkina Faso	An AIXM interface from/to the central aeronautical database (refer to P-06) is available.	It is planned to implement the exchange model and mechanisms together with AICM 4.5. This starts in 2013	Exchange with AFICAD and EAD are to be established
Botswana	Not implemented	Planned for 2012-2013 by going AMHS way.	
Burundi			
Cameroon	An AIXM interface from/to the central aeronautical database (refer to P-06) is available.	It is planned to implement the exchange model and mechanisms together with AICM 4.5. This starts in 2013	Exchange with AFICAD and EAD are to be established
Cape Verde			
Central African Republic	An AIXM interface from/to the central aeronautical database (refer to P-06) is available.	It is planned to implement the exchange model and mechanisms together with AICM 4.5. This starts in 2013	Exchange with AFICAD and EAD are to be established
Chad	An AIXM interface from/to the central aeronautical database (refer to P-06) is available.	It is planned to implement the exchange model and mechanisms together with AICM 4.5. This starts in 2013	Exchange with AFICAD and EAD are to be established
Comoros	An AIXM interface from/to the central aeronautical database (refer to P-06) is available.	It is planned to implement the exchange model and mechanisms together with AICM 4.5. This starts in 2013	Exchange with AFICAD and EAD are to be established
Congo	An AIXM interface from/to the central aeronautical database (refer to P-06) is available.	It is planned to implement the exchange model and mechanisms together with AICM 4.5. This starts in 2013	Exchange with AFICAD and EAD are to be established
Cote d'Ivoire	An AIXM interface from/to the central aeronautical database (refer to P-06) is available.	It is planned to implement the exchange model and mechanisms together with AICM 4.5. This starts in 2013	Exchange with AFICAD and EAD are to be established
Democratic Republic of Congo			
Djibouti			
Egypt			
Equatorial Guinea	An AIXM interface from/to the central aeronautical database (refer to P-06) is available.	It is planned to implement the exchange model and mechanisms together with AICM 4.5. This starts in 2013	Exchange with AFICAD and EAD are to be established
Eritrea			
Ethiopia			
Gabon	An AIXM interface from/to the central aeronautical	It is planned to implement the exchange model	Exchange with AFICAD and EAD

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-09 — Aeronautical data exchange			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
	database (refer to P-06) is available.	and mechanisms together with AICM 4.5. This starts in 2013	are to be established
Gambia			
Ghana			
Guinea	AIXM interface is dynamic not yet static to connect with other systems (Roberts FIR)	Upgrade to AIXM 5.1 interface dynamic and Static to exchange with other compatible systems 2013-2014 (Roberts FIR)	To exchange with other systems that are compatible to our systems (Roberts FIR)
Guinea Bissau	An AIXM interface from/to the central aeronautical database (refer to P-06) is available.	It is planned to implement the exchange model and mechanisms together with AICM 4.5. This starts in 2013	Exchange with AFICAD and EAD are to be established
Kenya	Current data exchange implemented on AIXM 4.5 between AIP/MAP system and ATC strip processing systems in 5 Airports but not directly online. We use a CD-ROM to physically transport static airport data from AIP/MAP AIXM 4.5 database. Also direct exchange from AIP/MAP database to Procedure design software (geotitan) in available. The goal is to implement an online exchange with all AIS, ATc and a=data originators by 2016		
Lesotho			
Liberia	AIXM interface is dynamic not yet static to connect with other systems (Roberts FIR)	Upgrade to AIXM 5.1 interface dynamic and Static to exchange with other compatible systems 2013-2014 (Roberts FIR)	To exchange with other systems that are compatible to our systems (Roberts FIR)
Libya			
Madagascar	An AIXM interface from/to the central aeronautical database (refer to P-06) is available.	It is planned to implement the exchange model and mechanisms together with AICM 4.5. This starts in 2013	Exchange with AFICAD and EAD are to be established
Malawi			
Mali	An AIXM interface from/to the central aeronautical database (refer to P-06) is available.	It is planned to implement the exchange model and mechanisms together with AICM 4.5. This starts in 2013	Exchange with AFICAD and EAD are to be established
Mauritanie	An AIXM interface from/to the central aeronautical database (refer to P-06) is available.	It is planned to implement the exchange model and mechanisms together with AICM 4.5. This starts in 2013	Exchange with AFICAD and EAD are to be established
Mauritius	Not implemented	e-AIP/Chart under AIXM 5.1 will be put into operation in December 2013	
Morocco			
Mozambique			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-09 — Aeronautical data exchange			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Namibia			
Niger	An AIXM interface from/to the central aeronautical database (refer to P-06) is available.	It is planned to implement the exchange model and mechanisms together with AICM 4.5. This starts in 2013	Exchange with AFICAD and EAD are to be established
Nigeria	Not yet implemented		
Rwanda			
Sao Tome and Principe			
Senegal	An AIXM interface from/to the central aeronautical database (refer to P-06) is available.	It is planned to implement the exchange model and mechanisms together with AICM 4.5. This starts in 2013	Exchange with AFICAD and EAD are to be established
Seychelles			
Sierra Leone	AIXM interface is dynamic not yet static to connect with other systems (Roberts FIR)	Upgrade to AIXM 5.1 interface dynamic and Static to exchange with other compatible systems 2013-2014 (Roberts FIR)	To exchange with other systems that are compatible to our systems (Roberts FIR)
Somalia	Not implemented	2013, by installing exchange model in consideration of internet	
South Africa	South African CAD synchronized with European Aeronautical Database	Implemented	
South Sudan			
Sudan	Not implemented.	It is planned to implement the exchange model AIXM 5.1. This will start in 2013.	Fax QMS Format implemented between data providers and AIS.
Swaziland			
Tunisia	Not yet implemented	Planned (2013-2014)	
Togo	An AIXM interface from/to the central aeronautical database (refer to P-06) is available.	It is planned to implement the exchange model and mechanisms together with AICM 4.5. This starts in 2013	Exchange with AFICAD and EAD are to be established
Uganda	AICM/AIXM partially available within ArcGIS software for charts/maps	Full implementation of the exchange model AICM/AIXM5.1 is planned for with AIM automation	
United Republic of Tanzania	2014-2015	To be implemented	Training needed for web exchanging languages e.g. XML, HTML
Zambia			
Zimbabwe			
b) What is the status of implementation of the following steps of Phase 3 in your State?			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

P-10 — Communication networks			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	AFTN and INTERNET are use	Migration to AMHS is planned for 2013-2014 Internet width path is be improved for 2013-2014 IP network planned for 2014/2015	
Burkina Faso	AFTN and INTERNET are use	Migration to AMHS is planned for 2013-2014 Internet width path is be improved for 2013-2014 IP network planned for 2014/2015	
Botswana	Not implemented	Planned for 2012-2013 by going AMHS way.	
Burundi			
Cameroon			
Cape Verde			
Central African Republic	AFTN and INTERNET are use	Migration to AMHS is planned for 2013-2014 Internet width path is be improved for 2013-2014 IP network planned for 2014/2015	
Chad	AFTN and INTERNET are use	Migration to AMHS is planned for 2013-2014 Internet width path is be improved for 2013-2014 IP network planned for 2014/2015	
Comoros	AFTN and INTERNET are use	Migration to AMHS is planned for 2013-2014 Internet width path is be improved for 2013-2014 IP network planned for 2014/2015	
Congo	AFTN and INTERNET are use	Migration to AMHS is planned for 2013-2014 Internet width path is be improved for 2013-2014	
Cote d'Ivoire	AFTN and INTERNET are use	Migration to AMHS is planned for 2013-2014 Internet width path is be improved for 2013-2014 IP network planned for 2014/2015	
Democratic Republic of Congo			
Djibouti			
Egypt			
Equatorial Guinea	AFTN and INTERNET are use	Migration to AMHS is planned for 2013-2014 Internet width path is be improved for 2013-2014 IP network planned for 2014/2015	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-09 — Aeronautical data exchange			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Eritrea			
Ethiopia			
Gabon	AFTN and INTERNET are use	Migration to AMHS is planned for 2013-2014 Internet width path is be improved for 2013-2014 IP network planned for 2014/2015	
Gambia	AFTN and INTERNET are in use	Migration to AMHS is planned for 2013-2014	
Ghana			
Guinea	Direct speech, VSAT, IDD, Internet, FDPS, VHF, HF, AMHS and line phone implemented (Roberts FIR)	AMHS implemented 2012 (Roberts FIR)	Aeronautical information/data deliver to end users via AMHS, email, and hand delivery.
Guinea Bissau	AFTN and INTERNET are use	Migration to AMHS is planned for 2013-2014 Internet width path is be improved for 2013-2014 IP network planned for 2014/2015	
Kenya	VSAT and AFTN currently in use	AMHS scheduled for implementation by 2013	
Lesotho			
Liberia	Direct speech, VSAT, IDD, Internet, FDPS, VHF, HF, AMHS and line phone implemented (Roberts FIR)	AMHS implemented 2012 (Roberts FIR)	Aeronautical information/data deliver to end users via AMHS, email, and hand delivery.
Libya			
Madagascar			
Malawi			
Mali	AFTN and INTERNET are use	Migration to AMHS is planned for 2013-2014 Internet width path is be improved for 2013-2014 IP network planned for 2014/2015	
Mauritania	AFTN and INTERNET are use	Migration to AMHS is planned for 2013-2014 Internet width path is be improved for 2013-2014	
Mauritius	AISP has been using the Internet for static and dynamic data exchange for some time already. AFTN is also being used.	Dynamic data exchange is still in planning stage. Implementation date not yet defined	
Morocco			
Mozambique			
Namibia			
Niger	AFTN and INTERNET are use	Migration to AMHS is planned for 2013-2014 Internet width path is be improved for 2013-2014 IP network planned for 2014/2015	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-09 — Aeronautical data exchange			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Nigeria	AFTN and INTERNET are in use		
Rwanda			
Sao Tome and Principe			
Senegal	AFTN and INTERNET are use	Migration to AMHS is planned for 2013-2014 Internet width path is be improved for 2013-2014 IP network planned for 2014/2015	
Seychelles			
Sierra Leone	Direct speech, VSAT, IDD, Internet, FDPS, VHF, HF, AMHS and line phone implemented (Roberts FIR)	AMHS implemented 2012 (Roberts FIR)	Aeronautical information/data deliver to end users via AMHS, email, and hand delivery.
Somalia	We are still using AFTN	2013, by making sure that data exchange on ground network is on internet so as to cope with future data needs.	ANSP deliver aeronautical data to customers via AFTN, Email or by hand. All airfields in Somalia have no AFTN.
South Africa	Implemented.	AMHS implemented. Communication networks within South Africa already IP based. Implemented	
South Sudan			
Sudan	Implemented	Transfer to AIM's steps, was set as Scope of work for contracted Consultant, ongoing	Within the frame QMS, improvements planned.
Swaziland			
Tunisia	Implemented AMHS was installed in Tunis COM Center since NOV 2008	Planned Tunis AMHS will be up graded by the end of 2011 to support IPV6 protocol. The AMHS interoperability test is planned during 2012	
Togo	AFTN and INTERNET are use	Migration to AMHS is planned for 2013-2014 Internet width path is be improved for 2013-2014 IP network planned for 2014/2015	
Uganda	Internet and postal service for static data and AFTN for dynamic data	AMHS is a future upgrade plan - 2015	
United Republic of Tanzania	2011-2012	To be implemented	• Benchmarking • AMHS training

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-09 — Aeronautical data exchange			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Zambia			
Zimbabwe			

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-12 — Aeronautical information briefing			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	Briefing is provided by using NOTAM criteria Self-briefing or home briefing is possible from the WEB	Integrated briefing is planned for 2013 (NOTAM-MET-FPL)	With THALES solution ANAIS
Burkina Faso	Briefing is provided by using NOTAM criteria Self-briefing or home briefing is possible from the WEB	Integrated briefing is planned for 2013 (NOTAM-MET-FPL)	With THALES solution ANAIS
Botswana	This way implemented through the introduction of AIS Management System - Pilots can query PIB's at all Aerodrome AIS units at the major airports - Face to face Briefing provided		Combination of graphical and textual information not implemented
Burundi			
Cameroon			
Cape Verde			
Central African Republic	Briefing is provided by using NOTAM criteria Self-briefing or home briefing is possible from the WEB	Integrated briefing is planned for 2013 (NOTAM-MET-FPL)	With THALES solution ANAIS
Chad	Briefing is provided by using NOTAM criteria Self-briefing or home briefing is possible from the WEB	Integrated briefing is planned for 2013 (NOTAM-MET-FPL)	With THALES solution ANAIS
Comoros	Briefing is provided by using NOTAM criteria Self-briefing or home briefing is possible from the WEB	Integrated briefing is planned for 2013 (NOTAM-MET-FPL)	With THALES solution ANAIS
Congo	Briefing is provided by using NOTAM criteria Self-briefing or home briefing is possible from the WEB	Integrated briefing is planned for 2013 (NOTAM-MET-FPL)	With THALES solution ANAIS
Cote d'Ivoire	Briefing is provided by using NOTAM criteria Self-briefing or home briefing is possible from the WEB	Integrated briefing is planned for 2013 (NOTAM-MET-FPL)	With THALES solution ANAIS
Democratic Republic of Congo			
Djibouti			
Egypt			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-12 — Aeronautical information briefing			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Equatorial Guinea	Briefing is provided by using NOTAM criteria Self-briefing or home briefing is possible from the WEB	Integrated briefing is planned for 2013 (NOTAM-MET-FPL)	With THALES solution ANAIS
Eritrea			
Ethiopia			
Gabon	Briefing is provided by using NOTAM criteria Self-briefing or home briefing is possible from the WEB	Integrated briefing is planned for 2013 (NOTAM-MET-FPL)	With THALES solution ANAIS
Gambia	Briefing is provided by using NOTAM criteria Self-briefing.		
Ghana			
Guinea	PIB and self-briefing not yet available		Briefing will be provided in accordance with the NOTAM criteria DOC 8126 specification.
Guinea Bissau	Briefing is provided by using NOTAM criteria Self-briefing or home briefing is possible from the WEB	Integrated briefing is planned for 2013 (NOTAM-MET-FPL)	With THALES solution ANAIS
Kenya	Implemented to NOTAM selection criteria currently defined in Doc 8126 Automated PIB processing available at all Aedrome units for Briefing.	Integrated and self briefing scheduled for implementation in BY 2016.	
Lesotho			
Liberia	PIB and self-briefing not yet available	Integrated briefing is planned for 2013-2014	Briefing will be provided in accordance with the NOTAM criteria DOC 8126 specification.
Libya			
Madagascar	Briefing is provided by using NOTAM criteria Self-briefing or home briefing is possible from the WEB	Integrated briefing is planned for 2013 (NOTAM-MET-FPL)	With THALES solution ANAIS
Malawi			
Mali	Briefing is provided by using NOTAM criteria Self-briefing or home briefing is possible from the WEB	Integrated briefing is planned for 2013 (NOTAM-MET-FPL)	With THALES solution ANAIS
Mauritanie	Briefing is provided by using NOTAM criteria Self-briefing or home briefing is possible from the WEB	Integrated briefing is planned for 2013 (NOTAM-MET-FPL)	With THALES solution ANAIS
Mauritius	Full aeronautical briefing is not yet implemented	December 2014 – Mauritius already operates an automated NOTAM Management System (ATALIS)	
Morocco			
Mozambique			
Namibia			
Niger	Briefing is provided by using NOTAM criteria	Integrated briefing is planned for 2013 (NOTAM-	With THALES solution ANAIS

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-12 — Aeronautical information briefing			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
	Self-briefing or home briefing is possible from the WEB	MET-FPL)	
Nigeria	Briefing is provided by using NOTAM		Ongoing project by COMSOFT Germany
Rwanda			
Sao Tome and Principe			
Senegal	Briefing is provided by using NOTAM criteria Self-briefing or home briefing is possible from the WEB	Integrated briefing is planned for 2013 (NOTAM-MET-FPL)	With THALES solution ANAIS
Seychelles			
Sierra Leone	PIB and self-briefing not yet available	Integrated briefing is planned for 2013-2014	Briefing will be provided in accordance with the NOTAM criteria DOC 8126 specification.
Somalia	We are still using enhanced NOTAM selection criteria for the delivery of NOTAM to our recipients.	2013, by making sure that pre-flight information bulletins, NOTAM, and graphics given to the users meet their requirement.	
South Africa	2011 continuous	To be implanted	Staff training needs on queering information/data on integrated systems
South Sudan			
Sudan	Implemented		The presentation of all required pre-flight information (AIS, FPL and MET) has been improved in an integrated system allowing for custom tailored information. Plan to provide self- briefing in line with ICAO DOC 9885.
Tunisia	An automated system for AIS briefing in Tunisian AD was installed and operated since MAR 2005	Planned The combination of graphical and textual information in a digital briefing environment through the implementation of D-NOTAM will be applied in Tunisia by end of 2016	
Swaziland			
Togo	Briefing is provided by using NOTAM criteria Self-briefing or home briefing is possible from the WEB	Integrated briefing is planned for 2013 (NOTAM-MET-FPL)	With THALES solution ANAIS
Uganda	Only state originated NOTAM are generated	Enhanced NOTAM selection criteria to be	Despite being manual, NOTAM

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-12 — Aeronautical information briefing			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
		applied after AIM automation	selection criteria to improve with automation
United Republic of Tanzania	2011-2013	Ongoing	- Purchasing of electronic display board is ongoing - Training needs on integrating different systems and data/information
Zambia			
Zimbabwe			
b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-16 — Training			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	New program of on job training is implemented in 2012 at EAMAC for AIM agent (AIS unit operations- ARO operation-NOF operation-On job AIM teacher-AIM mapping-AIM officer)	A new ab-initial training program will be available to update subject to AIM evolution	Two initial training are planned : Technician for AIM operators and High Technician for AIM supervisors.
Burkina Faso	New program of on job training is implemented in 2012 at EAMAC for AIM agent (AIS unit operations- ARO operation-NOF operation-On job AIM teacher-AIM mapping-AIM officer)	A new ab-initial training program will be available to update subject to AIM evolution	Two initial training are planned : Technician for AIM operators and High Technician for AIM supervisors.
Botswana	Not yet implemented	Training Plan for 2011/2012 has been developed, which includes AIM activities.AIS staff will be send to ICAO recognized schools for AIM training	ICAO to assist funding training as this a very expensive exercise.
Burundi			
Cameroon	New program of on job training is implemented in 2012 at EAMAC for AIM agent (AIS unit operations- ARO operation-NOF operation-On job AIM teacher-AIM mapping-AIM officer)	A new ab-initial training program will be available to update subject to AIM evolution	Two initial training are planned : Technician for AIM operators and High Technician for AIM supervisors.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-12 — Aeronautical information briefing			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Cape Verde			
Central African Republic	New program of on job training is implemented in 2012 at EAMAC for AIM agent (AIS unit operations- ARO operation-NOF operation-On job AIM teacher-AIM mapping-AIM officer)	A new ab-initial training program will be available to update subject to AIM evolution	Two initial training are planned: Technician for AIM operators and High Technician for AIM supervisors.
Chad	New program of on job training is implemented in 2012 at EAMAC for AIM agent (AIS unit operations- ARO operation-NOF operation-On job AIM teacher-AIM mapping-AIM officer)	A new ab-initial training program will be available to update subject to AIM evolution	Two initial training are planned: Technician for AIM operators and High Technician for AIM supervisors.
Comoros	New program of on job training is implemented in 2012 at EAMAC for AIM agent (AIS unit operations- ARO operation-NOF operation-On job AIM teacher-AIM mapping-AIM officer)	A new ab-initial training program will be available to update subject to AIM evolution	Two initial training are planned: Technician for AIM operators and High Technician for AIM supervisors.
Congo	New program of on job training is implemented in 2012 at EAMAC for AIM agent (AIS unit operations- ARO operation-NOF operation-On job AIM teacher-AIM mapping-AIM officer)	A new ab-initial training program will be available to update subject to AIM evolution	Two initial training are planned: Technician for AIM operators and High Technician for AIM supervisors.
Cote d'Ivoire	New program of on job training is implemented in 2012 at EAMAC for AIM agent (AIS unit operations- ARO operation-NOF operation-On job AIM teacher-AIM mapping-AIM officer)	A new ab-initial training program will be available to update subject to AIM evolution	Two initial training are planned: Technician for AIM operators and High Technician for AIM supervisors.
Democratic Republic of Congo			
Djibouti			
Egypt			
Equatorial Guinea	New program of on job training is implemented in 2012 at EAMAC for AIM agent (AIS unit operations- ARO operation-NOF operation-On job AIM teacher-AIM mapping-AIM officer)	A new ab-initial training program will be available to update subject to AIM evolution	Two initial training are planned : Technician for AIM operators and High Technician for AIM supervisors.
Eritrea			
Ethiopia			
Gabon	New program of on job training is implemented in 2012 at EAMAC for AIM agent (AIS unit operations- ARO operation-NOF operation-On job AIM teacher-AIM mapping-AIM officer)	A new ab-initial training program will be available to update subject to AIM evolution	Two initial training are planned : Technician for AIM operators and High Technician for AIM supervisors.
Gambia			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-12 — Aeronautical information briefing			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Ghana			
Guinea	Training is ongoing for the transition to AIM	AB-INITIO training program will be available to update subject to the transition from AIS-AIM environment	Training are planned on State level and on Regional level to understand the basis concept and software application
Guinea Bissau	New program of on job training is implemented in 2012 at EAMAC for AIM agent (AIS unit operations- ARO operation-NOF operation-On job AIM teacher-AIM mapping-AIM officer)	A new ab-initial training program will be available to update subject to AIM evolution	Two initial training are planned: Technician for AIM operators and High Technician for AIM supervisors.
Kenya	Kenya has conducted a Training need analysis (TNA) and scheduled officers for various AIM related courses AIS Officers certification requirements that include core trainings, knowledge and skills are also being developed for individual certification by 2014 as per KCAA strategic Plan		
Lesotho			
Liberia	Training is ongoing for the transition to AIM	AB-INITIO training program will be available to update subject to the transition from AIS-AIM environment	Training are planned on State level and on Regional level to understand the basis concept and software application
Libya			
Madagascar	New program of on job training is implemented in 2012 at EAMAC for AIM agent (AIS unit operations- ARO operation-NOF operation-On job AIM teacher-AIM mapping-AIM officer)	A new ab-initial training program will be available to update subject to AIM evolution	Two initial training are planned : Technician for AIM operators and High Technician for AIM supervisors.
Malawi			
Mali	New program of on job training is implemented in 2012 at EAMAC for AIM agent (AIS unit operations- ARO operation-NOF operation-On job AIM teacher-AIM mapping-AIM officer)	A new ab-initial training program will be available to update subject to AIM evolution	Two initial training are planned : Technician for AIM operators and High Technician for AIM supervisors.
Mauritania	New program of on job training is implemented in 2012 at EAMAC for AIM agent (AIS unit operations- ARO operation-NOF operation-On job AIM teacher-AIM mapping-AIM officer)	A new ab-initial training program will be available to update subject to AIM evolution	Two initial training are planned : Technician for AIM operators and High Technician for AIM supervisors.
Mauritius	Partly implemented	Awaiting ICAO guidelines on training requirement	
Morocco			
Mozambique			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-12 — Aeronautical information briefing			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Namibia			
Niger	New program of on job training is implemented in 2012 at EAMAC for AIM agent (AIS unit operations- ARO operation- NOF operation-On job AIM teacher-AIM mapping-AIM officer)	A new ab-initial training program will be available to update subject to AIM evolution	Two initial training are planned : Technician for AIM operators and High Technician for AIM supervisors.
Nigeria	Not yet implemented		
Rwanda			
Sao Tome and Principe			
Senegal	New program of on job training is implemented in 2012 at EAMAC for AIM agent (AIS unit operations- ARO operation- NOF operation-On job AIM teacher-AIM mapping-AIM officer)	A new ab-initial training program will be available to update subject to AIM evolution	Two initial training are planned : Technician for AIM operators and High Technician for AIM supervisors.
Seychelles			
Sierra Leone	Training is ongoing for the transition to AIM	AB-INITIO training program will be available to update subject to the transition from AIS-AIM environment	Training are planned on State level and on Regional level to understand the basis concept and software application
Somalia	By developing new training syllabus which meet requirements for training staff	2014, by developing new training syllabus which meet requirements for training staff	Currently it is not clear what is expected under the training header .ICAO training manual has to be developed to reflect the new competencies required by the transition to AIM, before national requirements can be developed
South Africa	Comprehensive training of staff on AIS to AIM, quality Management System (QMS), AIP and NOTAM Management	Implemented continuous process	
South Sudan			
Sudan	2012 held INFPL, Data Quality Resolution and Integrity courses.	Annual Training Plan in place.	However, it is not clear what is expected under the training header. ICAO training manual has to be developed to reflect the new

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-12 — Aeronautical information briefing			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
			competencies required by the transition to AIM, before national requirements can be developed.
Swaziland			
Tunisia	Not yet implemented	Planned	
Togo	New program of on job training is implemented in 2012 at EAMAC for AIM agent (AIS unit operations- ARO operation- NOF operation-On job AIM teacher-AIM mapping-AIM officer)	A new ab-initial training program will be available to update subject to AIM evolution	Two initial training are planned : Technician for AIM operators and High Technician for AIM supervisors.
Uganda	Some of the AIM trainings are being undertaken	More of the AIM courses to be undertaken; 2013 - 2018	Workshops on several competencies for the Transition should be organized by ICAO
United Republic of Tanzania	2013-2015	To be implemented	Proper trainings needed for users, trained by proper units
Zambia			
Zimbabwe			
b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-18 — Agreements with data originators			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	in progress	2013/2014 with CAA supervision	A national AIM coordinator is appointed by CAA to work closer with ASECNA
Burkina Faso	in progress	2013/2014 with CAA supervision	A national AIM coordinator is appointed by CAA to work closer with ASECNA
Botswana	Not yet implemented	Planned meetings with aeronautical/data originators and introduce Service Level Agreements (SLA) tool by July 2012	
Burundi			
Cameroon	in progress	2013/2014 with CAA supervision	A national AIM coordinator is appointed by CAA to work closer with ASECNA
Cape Verde			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-12 — Aeronautical information briefing			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Central African Republic	in progress	2013/2014 with CAA supervision	A national AIM coordinator is appointed by CAA to work closer with ASECNA
Chad	in progress	2013/2014 with CAA supervision	A national AIM coordinator is appointed by CAA to work closer with ASECNA
Comoros	in progress	2013/2014 with CAA supervision	A national AIM coordinator is appointed by CAA to work closer with ASECNA
Congo	in progress	2013/2014 with CAA supervision	A national AIM coordinator is appointed by CAA to work closer with ASECNA
Cote d'Ivoire	Not implemented	2013/2014 with CAA supervision	A national AIM coordinator is appointed by CAA to work closer with ASECNA
Democratic Republic of Congo			
Djibouti			
Egypt			
Equatorial Guinea	in progress	2013/2014 with CAA supervision	A national AIM coordinator is appointed by CAA to work closer with ASECNA
Eritrea			
Ethiopia			
Gabon	in progress	2013/2014 with CAA supervision	A national AIM coordinator is appointed by CAA to work closer with ASECNA
Gambia	Not implemented		A national AIM coordination team will be appointed to work closer with ASECNA
Ghana			
Guinea	Not yet implemented	Establishing SLA with data providers on State level	Service Level agreement under development
Guinea Bissau	in progress	2013/2014 with CAA supervision	A national AIM coordinator is appointed by CAA to work closer with ASECNA
Kenya	Signing of agreements with data originators was scheduled in phase	Evaluation of adherence to agreements and	Standards forms for data exchange to

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-12 — Aeronautical information briefing			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
	1 and 98% implemented	enforcement by regulator planned	improve data exchange from originators planned once the AIS portal is implemented by 2013
Lesotho			
Liberia	Not yet implemented	Establishing SLA with data providers on State level	Service Level agreement under development
Libya			
Madagascar	in progress	2013/2014 with CAA supervision	A national AIM coordinator is appointed by CAA to work closer with ASECNA
Malawi			
Mali	in progress	2013/2014 with CAA supervision	A national AIM coordinator is appointed by CAA to work closer with ASECNA
Mauritania	in progress	2013/2014 with CAA supervision	A national AIM coordinator is appointed by CAA to work closer with ASECNA
Mauritius	Partly implemented	December 2013 – by establishing agreements with data providers	SLA under development
Morocco			
Mozambique			
Namibia			
Niger	in progress	2013/2014 with CAA supervision	A national AIM coordinator is appointed by CAA to work closer with ASECNA
Nigeria	Not yet implemented		
Rwanda			
Sao Tome and Principe			
Senegal	in progress	2013/2014 with CAA supervision	A national AIM coordinator is appointed by CAA to work closer with ASECNA
Seychelles			
Sierra Leone	Not yet implemented	Establishing SLA with data providers on State level	Service Level agreement under development

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-12 — Aeronautical information briefing			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Somalia	Not achieved	2014, by having consultations with the countries, airlines and data agents who are our recipients/customers	
South Africa	Not implemented	To be implemented by 2013	
South Sudan			
Sudan	Partially implemented.	Plan for improvement using ICAO proposal, ongoing.	Signed SLAs under processing of improvement.
Swaziland			
Tunisia	Implemented There are Letters of Agreement between Tunisia AIS and all of the data originators		
Togo	in progress	2013/2014 with CAA supervision	A national AIM coordinator is appointed by CAA to work closer with ASECNA
Uganda	Partially achieved	SLAs with data originators under development; 2013	By 2013
United Republic of Tanzania	2012-2014	Ongoing	- Service level agreement template is ready e.g. TCAA and MET - Remained to meet and set agreements with other stakeholders
Zambia			
Zimbabwe			

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-19 — Interoperability with meteorological products			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	Partially implemented, pre-flight information briefing will be provided in harmonized way with the dynamic data base	Next step (fully integrated briefing) will be implemented after the design and implementation	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-19 — Interoperability with meteorological products			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
	operation from 2013	of the appropriate data exchange technology is finished (WXXM – Weather Exchange Model).	
Burkina Faso	Partially implemented, pre-flight information briefing will be provided in harmonized way with the dynamic data base operation from 2013	Next step (fully integrated briefing) will be implemented after the design and implementation of the appropriate data exchange technology is finished (WXXM – Weather Exchange Model).	
Botswana	Not yet implemented	Planned meetings with aeronautical/data originators and introduce Service Level Agreements (SLA) tool by July 2012	
Burundi			
Cameroon	Partially implemented, pre-flight information briefing will be provided in harmonized way with the dynamic data base operation from 2013	Next step (fully integrated briefing) will be implemented after the design and implementation of the appropriate data exchange technology is finished (WXXM – Weather Exchange Model).	
Cape Verde			
Central African Republic	Partially implemented, pre-flight information briefing will be provided in harmonized way with the dynamic data base operation from 2013	Next step (fully integrated briefing) will be implemented after the design and implementation of the appropriate data exchange technology is finished (WXXM – Weather Exchange Model).	
Chad	Partially implemented, pre-flight information briefing will be provided in harmonized way with the dynamic data base operation from 2013	Next step (fully integrated briefing) will be implemented after the design and implementation of the appropriate data exchange technology is finished (WXXM – Weather Exchange Model).	
Comoros	Partially implemented, pre-flight information briefing will be provided in harmonized way with the dynamic data base operation from 2013	Next step (fully integrated briefing) will be implemented after the design and implementation of the appropriate data exchange technology is finished (WXXM – Weather Exchange Model).	
Congo	Partially implemented, pre-flight information briefing will be provided in harmonized way with the dynamic data base operation from 2013	Next step (fully integrated briefing) will be implemented after the design and implementation of the appropriate data exchange technology is finished (WXXM – Weather Exchange Model).	
Cote d'Ivoire	Partially implemented, pre-flight information briefing will be provided in harmonized way with the dynamic data base operation from 2013	Next step (fully integrated briefing) will be implemented after the design and implementation of the appropriate data exchange technology is finished (WXXM – Weather Exchange Model).	
Democratic Republic of Congo			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-19 — Interoperability with meteorological products			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Djibouti			
Egypt			
Equatorial Guinea	Partially implemented, pre-flight information briefing will be provided in a harmonized way with the dynamic data base operation from 2013	Next step (fully integrated briefing) will be implemented after the design and implementation of the appropriate data exchange technology is finished (WXXM – Weather Exchange Model).	
Eritrea			
Ethiopia			
Gabon	Partially implemented, pre-flight information briefing will be provided in a harmonized way with the dynamic data base operation from 2013	Next step (fully integrated briefing) will be implemented after the design and implementation of the appropriate data exchange technology is finished (WXXM – Weather Exchange Model).	
Gambia	Not Implemented		
Ghana			
Guinea	Partially implemented, PIB dynamic data is provided in the briefing office	Upgrade to AIXM 5.1 we will have a complete and integrated solution for data processing automation OPMET database, OPMET bulletin exchange (ROBEX) 2013-2014	Automation with COMSOFT's or ATALIS Solution
Guinea Bissau	Partially implemented, pre-flight information briefing will be provided in a harmonized way with the dynamic data base operation from 2013	Next step (fully integrated briefing) will be implemented after the design and implementation of the appropriate data exchange technology is finished (WXXM – Weather Exchange Model).	
Kenya		Planned for 2016. Plan to liaise with MET Department to ensure compatibility of systems	
Lesotho			
Liberia	Partially implemented, PIB dynamic data is provided in the briefing office	Upgrade to AIXM 5.1 we will have a complete and integrated solution for data processing automation OPMET database, OPMET bulletin exchange (ROBEX) 2013-2014	Automation with COMSOFT's or ATALIS Solution
Libya			
Madagascar	Partially implemented, pre-flight information briefing will be provided in a harmonized way with the dynamic data base operation from 2013	Next step (fully integrated briefing) will be implemented after the design and implementation of the appropriate data exchange technology is finished (WXXM – Weather Exchange Model).	
Malawi			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-19 — Interoperability with meteorological products			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Mali	Partially implemented, pre-flight information briefing will be provided in harmonized way with the dynamic data base operation from 2013	Next step (fully integrated briefing) will be implemented after the design and implementation of the appropriate data exchange technology is finished (WXXM – Weather Exchange Model).	
Mauritania	Partially implemented, pre-flight information briefing will be provided in harmonized way with the dynamic data base operation from 2013	Next step (fully integrated briefing) will be implemented after the design and implementation of the appropriate data exchange technology is finished (WXXM – Weather Exchange Model).	
Mauritius	Not implemented – still in planning stage		
Morocco			
Mozambique			
Namibia			
Niger	Partially implemented, pre-flight information briefing will be provided in harmonized way with the dynamic data base operation from 2013	Next step (fully integrated briefing) will be implemented after the design and implementation of the appropriate data exchange technology is finished (WXXM – Weather Exchange Model).	
Nigeria	Not yet implemented		
Rwanda			
Sao Tome and Principe			
Senegal	Partially implemented, pre-flight information briefing will be provided in harmonized way with the dynamic data base operation from 2013	Next step (fully integrated briefing) will be implemented after the design and implementation of the appropriate data exchange technology is finished (WXXM – Weather Exchange Model).	
Seychelles			
Sierra Leone	Partially implemented, PIB dynamic data is provided in the briefing office	Upgrade to AIXM 5.1 we will have a complete and integrated solution for data processing automation OPMET database, OPMET bulletin exchange (ROBEX) 2013-2014	Automation with COMSOFT's or ATALIS Solution
Somalia	Not implemented	2013, by making sure that MET data products are included/combined within AIM data model	
South Africa	Implemented.	Current systems already incorporate feed from meteorological stations for flight plan briefing and/or re-routing purposes. WX info also used in ATFM tool. To be expanded towards CAD	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-19 — Interoperability with meteorological products			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
		system in future.	
South Sudan			
Sudan	Partially implemented, pre-flight information briefing is provided in harmonized way (one stop shop) in accordance with current ICAO Annex 3 and ICAO Annex 15 requirements.	Next step (fully integrated briefing) will be implemented after the design and implementation of the appropriate data exchange technology is finished (WXXM – Weather Exchange Model).	
Swaziland			
Tunisia	Not yet implemented	Planned (2015)	
Togo	Partially implemented, pre-flight information briefing will be provided in harmonized way with the dynamic data base operation from 2013	Next step (fully integrated briefing) will be implemented after the design and implementation of the appropriate data exchange technology is finished (WXXM – Weather Exchange Model).	
Uganda	The two systems are not yet interoperable	One stop shop planned for 2014 with acquisition of appropriate data exchange (WXXM) technology	To be implemented after installation of software.
United Republic of Tanzania	2013-2015	To be implemented	• Agreements should be set-up • Training needs for networking
Zambia			
Zimbabwe			

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-20 — Electronic aeronautical charts			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola			
Benin	Only PDF format charts		More detailed specification are required; Annex 4, Chapter 20 Electronic Aeronautical Chart Display is too general.
Burkina Faso	Only PDF format charts		More detailed specification are required; Annex 4, Chapter 20

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-20 — Electronic aeronautical charts			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
			Electronic Aeronautical Chart Display is too general.
Botswana	Not yet implemented	Planned for 2012-2015 by introducing Aeronautical Telecommunication Network (ATN) System.	
Burundi			
Cameroon			
Cape Verde			
Central African Republic	Only PDF format charts		More detailed specification are required; Annex 4, Chapter 20 Electronic Aeronautical Chart Display is too general.
Chad	Only PDF format charts		More detailed specification are required; Annex 4, Chapter 20 Electronic Aeronautical Chart Display is too general.
Comoros	Only PDF format charts		More detailed specification are required; Annex 4, Chapter 20 Electronic Aeronautical Chart Display is too general.
Congo	Only PDF format charts		More detailed specification are required; Annex 4, Chapter 20 Electronic Aeronautical Chart Display is too general.
Cote d'Ivoire	Only PDF format charts		More detailed specification are required; Annex 4, Chapter 20 Electronic Aeronautical Chart Display is too general.
Democratic Republic of Congo			
Djibouti			
Egypt			
Equatorial Guinea	Only PDF format charts		More detailed specification are required; Annex 4, Chapter 20 Electronic Aeronautical Chart Display is too general.
Eritrea			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-20 — Electronic aeronautical charts			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Ethiopia			
Gabon	Only PDF format charts		More detailed specification are required; Annex 4, Chapter 20 Electronic Aeronautical Chart Display is too general.
Gambia	Available in PDF Format		In cooperated in AIP
Ghana			
Guinea	Not yet implemented	Upgrade to AIXM 5.1 we will have a complete and integrated solution for data processing automation of electronic aeronautical charting, data originator integration, eAIP, AIS website	Automation with COMSOFT's or ATALIS Solutions
Guinea Bissau	Only PDF format charts		More detailed specification are required; Annex 4, Chapter 20 Electronic Aeronautical Chart Display is too general.
Kenya	AIP Charts already exist in electronic form in eAIP WAC and Topo Charts also in both PDF and TAB files	Obstacle Charts planned for development after completion of Area 2 eTOD and system training	
Lesotho			
Liberia	Not yet implemented	Upgrade to AIXM 5.1 we will have a complete and integrated solution for data processing automation of electronic aeronautical charting, data originator integration, eAIP, AIS website	Automation with COMSOFT's or ATALIS Solutions
Libya			
Madagascar	Only PDF format charts		More detailed specification are required; Annex 4, Chapter 20 Electronic Aeronautical Chart Display is too general.
Malawi			
Mali	Only PDF format charts		More detailed specification are required; Annex 4, Chapter 20 Electronic Aeronautical Chart Display is too general.
Mauritania	Only PDF format charts		More detailed specification are required; Annex 4, Chapter 20 Electronic Aeronautical Chart Display is too general.
Mauritius	Not implemented	e-AIP/ e-Chart will be operational by 2013	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-20 — Electronic aeronautical charts			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Morocco			
Mozambique			
Namibia			
Niger	Only PDF format charts		More detailed specification are required; Annex 4, Chapter 20 Electronic Aeronautical Chart Display is too general.
Nigeria	Only PDF format charts		
Rwanda			
Sao Tome and Principe			
Senegal	Only PDF format charts		More detailed specification are required; Annex 4, Chapter 20 Electronic Aeronautical Chart Display is too general.
Seychelles			
Sierra Leone	Not yet implemented	Upgrade to AIXM 5.1 we will have a complete and integrated solution for data processing automation of electronic aeronautical charting, data originator integration, eAIP, AIS website	Automation with COMSOFT's or ATALIS Solutions
Somalia	Not implemented	2017, by making sure that new electronic aeronautical charts based on digital data bases and the use of geographical information systems are well defined so as to complement some paper charts and replace the ones which are obsolete.	
South Africa	2011 continuous	To be implemented	Training of cartographers on PLTS-ArcGIS Aviation Solution software
South Sudan			
Sudan	Not implemented	Contract signed with ENAC to train and establish Procedure Design & Cartography Unit, ongoing.	Planed 2011- 2013
Swaziland			
Tunisia	Not yet implemented	Planned (2016)	
Togo	Only PDF format charts		More detailed specification are required; Annex 4, Chapter 20

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-20 — Electronic aeronautical charts			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
			Electronic Aeronautical Chart Display is too general.
Uganda			
United Republic of Tanzania			
Zambia			
Zimbabwe			

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-21 — Digital NOTAM			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Algeria			
Angola		Waiting for ICAO specifications	
Benin	Not implemented	Waiting for ICAO specifications	
Burkina Faso	Not implemented	Waiting for ICAO specifications	
Botswana	Not yet implemented	Planned for 2012-2015 by introducing Aeronautical Telecommunication Network (ATN) System.	
Burundi			
Cameroon	Not implemented	Waiting for ICAO specifications	
Cape Verde			
Central African Republic	Not implemented	Waiting for ICAO specifications	
Chad	Not implemented	Waiting for ICAO specifications	
Comoros	Not implemented	Waiting for ICAO specifications	
Congo	Not implemented	Waiting for ICAO specifications	
Cote d'Ivoire	Not implemented	Waiting for ICAO specifications	
Democratic Republic of Congo			
Djibouti			
Egypt			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-21 — Digital NOTAM			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Equatorial Guinea	Not implemented	Waiting for ICAO specifications	
Eritrea			
Ethiopia			
Gabon	Not implemented	Waiting for ICAO specifications	
Gambia	Not implemented		
Ghana			
Guinea	Not yet implemented	Upgrade from AIXM 8.0 to AIXM 5.1 we will have a complete and integrated solution for data processing automation of Digital NOTAM and accommodate legacy system and improve the quality of the information provided to legacy NOTAM users	Automation with COMSOFT's or ATALIS Solutions
Guinea Bissau	Not implemented	Waiting for ICAO specifications	
Kenya		Monitoring developments of Digital NOTAM included as an activity in KCAA Strategic plan with the goal of understanding requirements for smooth implementation by 2016 once included as a standard in Annex 15.	
Lesotho			
Liberia	Not yet implemented	Upgrade from AIXM 8.0 to AIXM 5.1 we will have a complete and integrated solution for data processing automation of Digital NOTAM and accommodate legacy system and improve the quality of the information provided to legacy NOTAM users	Automation with COMSOFT's or ATALIS Solutions
Libya			
Madagascar	Not implemented	Waiting for ICAO specifications	
Malawi			
Mali	Not implemented	Waiting for ICAO specifications	
Mauritania	Not implemented	Waiting for ICAO specifications	
Mauritius	Not implemented	Plan to provide digital NOTAM by July 2016.	AIXM 5.1 will be the enabler to digital NOTAM.
Morocco			
Mozambique			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-21 — Digital NOTAM			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Namibia			
Niger	Not implemented	Waiting for ICAO specifications	
Nigeria	Not yet implemented		
Rwanda			
Sao Tome and Principe			
Senegal	Not implemented	Waiting for ICAO specifications	
Seychelles			
Sierra Leone	Not yet implemented	Upgrade from AIXM 8.0 to AIXM 5.1 we will have a complete and integrated solution for data processing automation of Digital NOTAM and accommodate legacy system and improve the quality of the information provided to legacy NOTAM users	Automation with COMSOFT's or ATALIS Solutions
Somalia	Yes, by email	2013, by making sure that a NOTAM is in a structured format that will be fully interpreted by a computer system for accurate and reliable up dates of aeronautical information both for automated information equipment and aviation personnel.	
South Africa	Not implemented	Waiting for ICAO specifications	
South Sudan			
Sudan	Not implemented	Sudan NP will determine our timeline.	
Swaziland			
Tunisia	Not yet implemented	Planned (2016)	
Togo	Not implemented	Waiting for ICAO specifications	
Uganda	Acquisition of ArcGIS software done. Foundation training in ArcGIS undertaken	- Purchase of other extensions/modules planned for 2013. - Training for ArcGIS for Aviation planned for 2013. - Integration of the software with Automation system planned.	AIXM 5.1 will be the enabler to digital NOTAM
United Republic of Tanzania	2011 continues	Ongoing	Purchasing ArcGIS – Aviation Solution Software Training needs on integrating different systems and data/information

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

b) What is the status of implementation of the following steps of Phase 3 in your State?			
P-21 — Digital NOTAM			
	Implemented (specify how)	Planned (specify when/how)	Additional comments/clarification required
Zambia			
Zimbabwe			

5. Do you expect any specific difficulty which could impede the transition from AIS to AIM?

		YES	NO
Algeria			
Angola			
Benin	- x High cost for to do the survey for eTOD availability - x Difficulties to establishment of SLA with data originators in the states . - x Justification to aerodromes for additional costs related to the provision of survey data for digital mapping.	X	
Burkina Faso	- x High cost for to do the survey for eTOD availability - x Difficulties to establishment of SLA with data originators in the states . - x Justification to aerodromes for additional costs related to the provision of survey data for digital mapping.	X	
Botswana	Implementation of the e TOD will be a challenge financially since it is an expensive exercise and the massive training in transition for the AIS to AIM	X	
Burundi			
Cameroon	- x High cost for to do the survey for eTOD availability - x Difficulties to establishment of SLA with data originators in the states . - x Justification to aerodromes for additional costs related to the provision of survey data for digital mapping.	X	
Cape Verde			
Central African Republic	- x High cost for to do the survey for eTOD availability - x Difficulties to establishment of SLA with data originators in the states . - x Justification to aerodromes for additional costs related to the provision of survey data for digital mapping.	X	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

		YES	NO
Chad			
Comoros			
Congo	- x High cost for to do the survey for eTOD availability - x Difficulties to establishment of SLA with data originators in the states . - x Justification to aerodromes for additional costs related to the provision of survey data for digital mapping.	X	
Cote d'Ivoire	- x High cost for to do the survey for eTOD availability - x Difficulties to establishment of SLA with data originators in the states . - x Justification to aerodromes for additional costs related to the provision of survey data for digital mapping.	X	
Democratic Republic of Congo			
Djibouti			
Egypt			
Equatorial Guinea	- x High cost for to do the survey for eTOD availability - x Difficulties to establishment of SLA with data originators in the states . - x Justification to aerodromes for additional costs related to the provision of survey data for digital mapping.	X	
Eritrea			
Ethiopia			
Gabon	- x High cost for to do the survey for eTOD availability - x Difficulties to establishment of SLA with data originators in the states . - x Justification to aerodromes for additional costs related to the provision of survey data for digital mapping.	X	
Gambia	Timely availability of material and human resources	X	
Ghana			
Guinea	• High cost for conducting survey eTOD availability • Non-conformity with signed service level agreement (SLA) by data provider on State level and lack of enforcement by the regulator • The upgrade from AIXM 8.0 to AIXM 5.1 may increase transition cost • Awareness of AIM concept in the AFI Region is very low in term of human resource development • AIS Officer and Technician need the requisite training in preparedness to the transition to AIM • AIM implementation may be outshined by the SWIM concept environment		

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

		YES	NO
Guinea Bissau	- x High cost for to do the survey for eTOD availability - x Difficulties to establishment of SLA with data originators in the states . - x Justification to aerodromes for additional costs related to the provision of survey data for digital mapping.	X	
Kenya	• Commercialisation of AIXM upgrades by system vendors especially from AIXM 4.5 to 5.1 may increase the transition cost • Availability of AIM related courses may slow the implementation since the courses are not available as ICAO standard courses • Low awareness of AIM concept in the AFI region hence system operability in the region may result to be wanting • Aim targets to support ATM system and yet many ATM providers treat AIM as an AIS field happening. Need for general industry awareness • AIM implementation may be outshined by the SWIM concept even before many States implement hence may create confusion if implementation is not handled carefully • Non conformity with signed SLA by data originators and lack of enforcement by regulator	X X X X X	
Lesotho			
Liberia	• High cost for conducting survey eTOD availability • Non-conformity with signed service level agreement (SLA) by data provider on State level and lack of enforcement by the regulator • The upgrade from AIXM 8.0 to AIXM 5.1 may increase transition cost • Awareness of AIM concept in the AFI Region is very low in term of human resource development • AIS Officer and Technician need the requisite training in preparedness to the transition to AIM • AIM implementation may be outshined by the SWIM concept environment		
Libya			
Madagascar	- x High cost for to do the survey for eTOD availability - x Difficulties to establishment of SLA with data originators in the states . - x Justification to aerodromes for additional costs related to the provision of survey data for digital mapping.	X	
Malawi			
Mali	- x High cost for to do the survey for eTOD availability - x Difficulties to establishment of SLA with data originators in the states . - x Justification to aerodromes for additional costs related to the provision of survey data for digital mapping.	X	
Mauritania	x High cost for to do the survey for eTOD availability		

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

		YES	NO
	- x Difficulties to establishment of SLA with data originators in the states . - x Justification to aerodromes for additional costs related to the provision of survey data for digital mapping.		
Mauritius	• Potential for the non-participation of key stakeholders providing e-TOD data. • Continuation of downturn in aviation industry causing financial constraints on the State AIS provider and other key stakeholders supplying aeronautical data. • Non-agreement by airports to establishment of SLA with State AIS for provision of data. • Justification to aerodromes for additional costs related to the provision of survey data for digital mapping • Funding, decision making on all levels, manpower capacity, availability of knowledge, technical infrastructure, acceptance by all stakeholders, timescales unrealistic.		X X X X X
Morocco			
Mozambique			
Namibia			
Niger	- x High cost for to do the survey for eTOD availability - x Difficulties to establishment of SLA with data originators in the states . - x Justification to aerodromes for additional costs related to the provision of survey data for digital mapping.	X	
Nigeria	Implementation of the eTOD (Regulations and financing) Training (AIS to AIM) Adequate regulations governing AIM Need for general industry awareness Funding, decision making at all levels, availability Difficulty in establishing SLAs with data originators		
Rwanda			
Sao Tome and Principe			
Senegal	- x High cost for to do the survey for eTOD availability - x Difficulties to establishment of SLA with data originators in the states . - x Justification to aerodromes for additional costs related to the provision of survey data for digital mapping.	X	
Seychelles			
Sierra Leone	• High cost for conducting survey eTOD availability • Non-conformity with signed service level agreement (SLA) by data provider on State level and lack of enforcement by the regulator • The upgrade from AIXM 8.0 to AIXM 5.1 may increase transition cost		

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

		YES	NO
	- Awareness of AIM concept in the AFI Region is very low in term of human resource development - AIS Officer and Technician need the requisite training in preparedness to the transition to AIM - AIM implementation may be outshined by the SWIM concept environment		
Somalia	Aeronautical information for most of the airfields in Somalia not verified	X	
South Africa	- Adequate regulations governing AIM - Different States have different priorities for their limited financial and physical resources and the transition of AIS to AIM may not in all cases be accorded the necessary priority. - E_TOD implementation. (Adequate regulations governing e-TOD and obstacle assessments)	X	
South Sudan			
Sudan	Speedy changes in ICAO Plans, etc... Transfer from AIS to AIM 2009- 2016, now we have to be ready for Block 0 by the end of 2013, even though Sudan planed before 2016.		
Swaziland			
Tunisia		X	
Togo	- x High cost for to do the survey for eTOD availability - x Difficulties to establishment of SLA with data originators in the states . - x Justification to aerodromes for additional costs related to the provision of survey data for digital mapping.	X	
Uganda	Delay in procurement of the Automated AIS system, non-participation of key stakeholders providing eTOD, and non-agreement by raw data providers to establish SLAs with AIS, Challenges with acquisition of financial resources and procurement process may impede the transition	X	
United Republic of Tanzania			
Zambia			
Zimbabwe			

6. What kind of assistance/support do you expect from ICAO to expedite the transition from AIS to AIM?

Algeria	
Angola	
Benin	- x Specific guidance material for implementation of each subject. Development of more detailed guidance materials, manuals, best practices examples and other supporting documents. - x Expeditious revisions to Annex 15, 4 and DOC 8126 when appropriate. Publish a DOC relative AIM personal training.
	x Regional workshops and seminars to ensure consistency in the transition to AIM.
Burkina Faso	- x Specific guidance material for implementation of each subject. Development of more detailed guidance materials, manuals, best practices examples and other supporting documents. - x Expeditious revisions to Annex 15, 4 and DOC 8126 when appropriate. Publish a DOC relative AIM personal training.
	x Regional workshops and seminars to ensure consistency in the transition to AIM.
Botswana	Due to lack of knowledge in the following areas CAAB need to be assisted to understand the following steps;

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

	• Unique identifiers • Aeronautical conceptual model • Aerodrome mapping • Interoperability with meteorological products • Electronic aeronautical charts • Digital NOTAM • Aeronautical data exchange
Burundi	
Cameroon	
Cape Verde	
Central African Republic	- x Specific guidance material for implementation of each subject. Development of more detailed guidance materials, manuals, best practices examples and other supporting documents. - x Expeditious revisions to Annex 15, 4 and DOC 8126 when appropriate. Publish a DOC relative AIM personal training.
	x Regional workshops and seminars to ensure consistency in the transition to AIM.
Chad	- x Specific guidance material for implementation of each subject. Development of more detailed guidance materials, manuals, best practices examples and other supporting documents. - x Expeditious revisions to Annex 15, 4 and DOC 8126 when appropriate. Publish a DOC relative AIM personal training.
	x Regional workshops and seminars to ensure consistency in the transition to AIM.
Comoros	- x Specific guidance material for implementation of each subject. Development of more detailed guidance materials, manuals, best practices examples and other supporting documents. - x Expeditious revisions to Annex 15, 4 and DOC 8126 when appropriate. Publish a DOC relative AIM personal training.
	x Regional workshops and seminars to ensure consistency in the transition to AIM.
Congo	- x Specific guidance material for implementation of each subject. Development of more detailed guidance materials, manuals, best practices examples and other supporting documents. - x Expeditious revisions to Annex 15, 4 and DOC 8126 when appropriate. Publish a DOC relative AIM personal training.
	x Regional workshops and seminars to ensure consistency in the transition to AIM.
Cote d'Ivoire	- x Specific guidance material for implementation of each subject. Development of more detailed guidance materials, manuals, best practices examples and other supporting documents. - x Expeditious revisions to Annex 15, 4 and DOC 8126 when appropriate. Publish a DOC relative AIM personal training.
	x Regional workshops and seminars to ensure consistency in the transition to AIM.
Democratic Republic of Congo	
Djibouti	
Egypt	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

Equatorial Guinea	- x Specific guidance material for implementation of each subject. Development of more detailed guidance materials, manuals, best practices examples and other supporting documents. - x Expeditious revisions to Annex 15, 4 and DOC 8126 when appropriate. Publish a DOC relative AIM personal training. x Regional workshops and seminars to ensure consistency in the transition to AIM.
Eritrea	
Ethiopia	
Gabon	- x Specific guidance material for implementation of each subject. Development of more detailed guidance materials, manuals, best practices examples and other supporting documents. - x Expeditious revisions to Annex 15, 4 and DOC 8126 when appropriate. Publish a DOC relative AIM personal training. x Regional workshops and seminars to ensure consistency in the transition to AIM.
Gambia	Regional workshops and seminars to ensure consistency in the transition to AIM.
Ghana	
Guinea	• ICAO to control the changes of AIXM 5.1 for consistency • Service level agreement should be made a standard • Regional workshops and seminars on the framework and guidance materials to ensure consistency of the concept from AIS to AIM • Review of Annex 15, 4 , DOC 8126 requirement to accommodate AIM and SWIM environment to ensure consistency of the concept • ICAO needs to conduct a seminars and workshop on AIM and SWIM environment interoperability • ICAO needs to review the business model and financial model for AFI-CAD implementation in accordance AFI-CAD DOC 007 of APIRG/17 report.
Guinea Bissau	- x Specific guidance material for implementation of each subject. Development of more detailed guidance materials, manuals, best practices examples and other supporting documents. - x Expeditious revisions to Annex 15, 4 and DOC 8126 when appropriate. Publish a DOC relative AIM personal training. x Regional workshops and seminars to ensure consistency in the transition to AIM.
Kenya	1. ICAO TO CONTROL EVOLUTION OF AIXM 5.1. 2. PROVIDE AIM Training at ICAO region offices 3. SLA to be made a standard 4. ICAO through technical bureau to support AFI-CAD Implementation 5. Promote AIM awareness to the Industry
Lesotho	
Liberia	• ICAO to control the changes of AIXM 5.1 for consistency • Service level agreement should be made a standard • Regional workshops and seminars on the framework and guidance materials to ensure consistency of the concept from AIS to AIM • Review of Annex 15, 4 , DOC 8126 requirement to accommodate AIM and SWIM environment to ensure consistency of the concept • ICAO needs to conduct a seminars and workshop on AIM and SWIM environment interoperability • ICAO needs to review the business model and financial model for AFI-CAD implementation in accordance AFI-CAD DOC 007 of APIRG/17 report.
Libya	
Madagascar	x Specific guidance material for implementation of each subject. Development of more detailed guidance materials, manuals, best practices examples and other supporting documents.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

	x Exeditious revisions to Annex 15, 4 and DOC 8126 when appropriate. Publish a DOC relative AIM personal training. x Regional workshops and seminars to ensure consistency in the transition to AIM.
Malawi	
Mali	x Specific guidance material for implementation of each subject. Development of more detailed guidance materials, manuals, best practices examples and other supporting documents. x Exeditious revisions to Annex 15, 4 and DOC 8126 when appropriate. Publish a DOC relative AIM personal training. x Regional workshops and seminars to ensure consistency in the transition to AIM.
Mauritania	x Specific guidance material for implementation of each subject. Development of more detailed guidance materials, manuals, best practices examples and other supporting documents. x Exeditious revisions to Annex 15, 4 and DOC 8126 when appropriate. Publish a DOC relative AIM personal training. x Regional workshops and seminars to ensure consistency in the transition to AIM.
Mauritius	Specific guidance material for implementation of each subject. Development of more detailed guidance materials, manuals, best practices examples and other supporting documents. Exeditious revisions to Annex 15 and 4 when appropriate. Regional workshops and seminars to ensure consistency in the transition to AIM. Provide guidance on training and workshop for empowering AIS staff for the smooth transition from AIS to
Morocco	
Mozambique	
Namibia	
Niger	x Specific guidance material for implementation of each subject. Development of more detailed guidance materials, manuals, best practices examples and other supporting documents. x Exeditious revisions to Annex 15, 4 and DOC 8126 when appropriate. Publish a DOC relative AIM personal training. x Regional workshops and seminars to ensure consistency in the transition to AIM.
Nigeria	X Specific guidance material for implementation of each subject. Development of more detailed guidance materials, manuals, best practices examples and other supporting documents. X Publish a DOC relative to AIM personnel training. X Regional workshops and seminars to ensure consistency in the transition to AIM. X Promote AIM awareness to the Industry
Rwanda	
Sao Tome and Principe	
Senegal	x Specific guidance material for implementation of each subject. Development of more detailed guidance materials, manuals, best practices examples and other supporting documents. x Exeditious revisions to Annex 15, 4 and DOC 8126 when appropriate. Publish a DOC relative AIM personal training.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

	x	Regional workshops and seminars to ensure consistency in the transition to AIM.
Seychelles		
Sierra Leone	• ICAO to control the changes of AIXM 5.1 for consistency • Service level agreement should be made a standard • Regional workshops and seminars on the framework and guidance materials to ensure consistency of the concept from AIS to AIM • Review of Annex 15, 4 , DOC 8126 requirement to accommodate AIM and SWIM environment to ensure consistency of the concept • ICAO needs to conduct a seminars and workshop on AIM and SWIM environment interoperability • ICAO needs to review the business model and financial model for AFI-CAD implementation in accordance AFI-CAD DOC 007 of APIRG/17 report.	
Somalia	- Specific guidance material for implementation of each subject. Development of more detailed guidance material, manuals, best practices examples and other supporting documents - Expeditious revisions to Annex 15 and 4 when appropriate - Regional workshops and seminars to ensure consistency in the transition to AIM - Training for our staff and training material	
South Africa	• Review of contents and format of AIP and AIRAC specifications (More detailed definitions to eliminate ambiguity) • Review of Annex 4 and Annex 15 (Doc 8126) requirements to accommodate AIM to IM.	
South Sudan		
Sudan		Debriefing for CAA DGs, awareness of Transition from AIS to AIM importance, An AFI campaign.
Swaziland		
Tunisia		A Task Force was implemented in the AFI Region to develop planning material related to the transition from AIS to AIM
Togo	- x Specific guidance material for implementation of each subject. Development of more detailed guidance materials, manuals, best practices examples and other supporting documents. - x Expeditious revisions to Annex 15, 4 and DOC 8126 when appropriate. Publish a DOC relative AIM personal training.	
	x	Regional workshops and seminars to ensure consistency in the transition to AIM.
Uganda		Specific guidance material, standardization of roadmap steps into Annex 15 and 4, and Regional workshops to ensure consistency in the transition from AIS to AIM
United Republic of Tanzania		
Zambia		
Zimbabwe		

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

7. Do you have any suggestion to update/improve the ICAO Roadmap for the Transition from AIS to AIM?

Algeria	
Angola	
Benin	x In the first version of the Roadmap document the description of the steps is quite basic and insufficient. Those definitions should be expanded and/or reference to specific standards, manuals and other documents should be provided within it. x Timelines should be permanently monitored and adapted accordingly.
Burkina Faso	x In the first version of the Roadmap document the description of the steps is quite basic and insufficient. Those definitions should be expanded and/or reference to specific standards, manuals and other documents should be provided within it. x Timelines should be permanently monitored and adapted accordingly.
Botswana	
Burundi	
Cameroon	x In the first version of the Roadmap document the description of the steps is quite basic and insufficient. Those definitions should be expanded and/or reference to specific standards, manuals and other documents should be provided within it. x Timelines should be permanently monitored and adapted accordingly.
Cape Verde	
Central African Republic	x In the first version of the Roadmap document the description of the steps is quite basic and insufficient. Those definitions should be expanded and/or reference to specific standards, manuals and other documents should be provided within it. x Timelines should be permanently monitored and adapted accordingly.
Chad	x In the first version of the Roadmap document the description of the steps is quite basic and insufficient. Those definitions should be expanded and/or reference to specific standards, manuals and other documents should be provided within it. x Timelines should be permanently monitored and adapted accordingly.
Comoros	
Congo	x In the first version of the Roadmap document the description of the steps is quite basic and insufficient. Those definitions should be expanded and/or reference to specific standards, manuals and other documents should be provided within it. x Timelines should be permanently monitored and adapted accordingly.
Cote d'Ivoire	x In the first version of the Roadmap document the description of the steps is quite basic and insufficient. Those definitions should be expanded and/or reference to specific standards, manuals and other documents should be provided within it. x Timelines should be permanently monitored and adapted accordingly.
Democratic Republic of Congo	
Djibouti	
Egypt	
Equatorial Guinea	x In the first version of the Roadmap document the description of the steps is quite basic and insufficient. Those definitions should be expanded and/or reference to specific standards, manuals and other documents should be provided within it. x Timelines should be permanently monitored and adapted accordingly.
Eritrea	
Ethiopia	
Gabon	x In the first version of the Roadmap document the description of the steps is quite basic and insufficient. Those definitions should be expanded and/or reference to specific standards, manuals and other documents should be provided within it.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

	x	Timelines should be permanently monitored and adapted accordingly.
Gambia		
Ghana		
Guinea		• Extend the end of the implementation period from 2016-2020 • Review the status of AIM implementation between phase two (2) and three(3) as new product are introduced, organizational changes will need to be made to implement better management of information in terms of: - staff planning and staff training - impact on cost-recovery mechanisms - formalization of agreement with data providers to ensure a high degree of data quality - introduction of an extensive amount of explicit meta-information - explicit traceability of the changes to information and identification of liabilities
Guinea Bissau	x x	In the first version of the Roadmap document the description of the steps is quite basic and insufficient. Those definitions should be expanded and/or reference to specific standards, manuals and other documents should be provided within it. Timelines should be permanently monitored and adapted accordingly.
Kenya		1. Review the status of AIM implementation by States and re-scheduled activities between phase 2 and 3 based on what is widely implemented and ^planned for in near future 2. Extend the end of implementation period from 2016 to 2018
Lesotho		
Liberia		• Extend the end of the implementation period from 2016-2020 • Review the status of AIM implementation between phase two (2) and three(3) as new product are introduced, organizational changes will need to be made to implement better management of information in terms of: - staff planning and staff training - impact on cost-recovery mechanisms - formalization of agreement with data providers to ensure a high degree of data quality - introduction of an extensive amount of explicit meta-information
Libya		
Madagascar	x x	In the first version of the Roadmap document the description of the steps is quite basic and insufficient. Those definitions should be expanded and/or reference to specific standards, manuals and other documents should be provided within it. Timelines should be permanently monitored and adapted accordingly.
Malawi		
Mali	x x	In the first version of the Roadmap document the description of the steps is quite basic and insufficient. Those definitions should be expanded and/or reference to specific standards, manuals and other documents should be provided within it. Timelines should be permanently monitored and adapted accordingly.
Mauritania	x x	In the first version of the Roadmap document the description of the steps is quite basic and insufficient. Those definitions should be expanded and/or reference to specific standards, manuals and other documents should be provided within it. Timelines should be permanently monitored and adapted accordingly.
Mauritius		In the first version of the Roadmap document the description of the steps is quite basic and insufficient. Those definitions should be expanded and/or reference to specific standards, manuals and other documents should be provided within it. Timelines should be permanently monitored and adapted accordingly.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

Morocco	
Mozambique	
Namibia	
Niger	x In the first version of the Roadmap document the description of the steps is quite basic and insufficient. Those definitions should be expanded and/or reference to specific standards, manuals and other documents should be provided within it. x Timelines should be permanently monitored and adapted accordingly.
Nigeria	
Rwanda	
Sao Tome and Principe	
Senegal	x In the first version of the Roadmap document the description of the steps is quite basic and insufficient. Those definitions should be expanded and/or reference to specific standards, manuals and other documents should be provided within it. x Timelines should be permanently monitored and adapted accordingly.
Seychelles	
Sierra Leone	• Extend the end of the implementation period from 2016-2020 • Review the status of AIM implementation between phase two (2) and three(3) as new product are introduced, organizational changes will need to be made to implement better management of information in terms of: - staff planning and staff training - impact on cost-recovery mechanisms - formalization of agreement with data providers to ensure a high degree of data quality - introduction of an extensive amount of explicit meta-information
Somalia	No
South Africa	
South Sudan	
Sudan	Transfer from AIS to AIM Presentation by the AISAIMSG to be held in Nairobi and Dakar.
Swaziland	
Tunisia	No
Togo	x In the first version of the Roadmap document the description of the steps is quite basic and insufficient. Those definitions should be expanded and/or reference to specific standards, manuals and other documents should be provided within it. x Timelines should be permanently monitored and adapted accordingly.
Uganda	Timelines should be permanently monitored and adapted accordingly
United Republic of Tanzania	
Zambia	
Zimbabwe	

8. Any other suggestion on the subject?

Algeria	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

Angola	
Benin	x ICAO Doc 9881 is only a draft, but the content is paramount for the transition to AIM - e.g. the attributes of terrain and obstacle data need clear definitions and explanations – including examples of obstacles together with attributes.
Burkina Faso	x ICAO Doc 9881 is only a draft, but the content is paramount for the transition to AIM - e.g. the attributes of terrain and obstacle data need clear definitions and explanations – including examples of obstacles together with attributes.
Botswana	The AFI Regional Office in conjunction with ICAO to assist in training for transition of AIS to AIM. Most of the African States are still behind in the implementation of QMS and conducting of workshops in these areas will be appreciated so as to evaluate the level of implementation
Burundi	
Cameroon	x ICAO Doc 9881 is only a draft, but the content is paramount for the transition to AIM - e.g. the attributes of terrain and obstacle data need clear definitions and explanations – including examples of obstacles together with attributes.
Cape Verde	
Central African Republic	x ICAO Doc 9881 is only a draft, but the content is paramount for the transition to AIM - e.g. the attributes of terrain and obstacle data need clear definitions and explanations – including examples of obstacles together with attributes.
Chad	x ICAO Doc 9881 is only a draft, but the content is paramount for the transition to AIM - e.g. the attributes of terrain and obstacle data need clear definitions and explanations – including examples of obstacles together with attributes.
Comoros	x ICAO Doc 9881 is only a draft, but the content is paramount for the transition to AIM - e.g. the attributes of terrain and obstacle data need clear definitions and explanations – including examples of obstacles together with attributes.
Congo	x ICAO Doc 9881 is only a draft, but the content is paramount for the transition to AIM - e.g. the attributes of terrain and obstacle data need clear definitions and explanations – including examples of obstacles together with attributes.
Cote d'Ivoire	x ICAO Doc 9881 is only a draft, but the content is paramount for the transition to AIM - e.g. the attributes of terrain and obstacle data need clear definitions and explanations – including examples of obstacles together with attributes.
Democratic Republic of Congo	
Djibouti	
Egypt	
Equatorial Guinea	x ICAO Doc 9881 is only a draft, but the content is paramount for the transition to AIM - e.g. the attributes of terrain and obstacle data need clear definitions and explanations – including examples of obstacles together with attributes.
Eritrea	
Ethiopia	
Gabon	x ICAO Doc 9881 is only a draft, but the content is paramount for the transition to AIM - e.g. the attributes of terrain and obstacle data need clear definitions and explanations – including examples of obstacles together with attributes.
Gambia	
Ghana	
Guinea	The entire AIS-AIM document that has been developed by the AIMSG should be adopted by APIRG and release to States as a guidance material for implementation.
Guinea Bissau	x ICAO Doc 9881 is only a draft, but the content is paramount for the transition to AIM - e.g. the attributes of terrain and obstacle data need clear definitions and explanations – including examples of obstacles together with attributes.
Kenya	1. Key AIM related documents such as Training manual, QMS and eTOD manual, And aerodrome mapping database manual already developed by AIS-Aim study group should be adopted and released to states for guidance 2. Extend the AIS-AIM SG period which expires in 2013 to ensure developments of all standards required to guide AIM. The SG work should coincide with the implementation period of 2016 to ensure review of SARPS.
Lesotho	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

Liberia	The entire AIS-AIM document that has been developed by the AIMSG should be adopted by APIRG and release to States as a guidance material for implementation.
Libya	
Madagascar	x ICAO Doc 9881 is only a draft, but the content is paramount for the transition to AIM - e.g. the attributes of terrain and obstacle data need clear definitions and explanations – including examples of obstacles together with attributes.
Malawi	
Mali	x ICAO Doc 9881 is only a draft, but the content is paramount for the transition to AIM - e.g. the attributes of terrain and obstacle data need clear definitions and explanations – including examples of obstacles together with attributes.
Mauritania	x ICAO Doc 9881 is only a draft, but the content is paramount for the transition to AIM - e.g. the attributes of terrain and obstacle data need clear definitions and explanations – including examples of obstacles together with attributes.
Mauritius	ICAO Doc 9881 is only a draft, but the content is paramount for the transition to AIM - e.g. the attributes of terrain and obstacle data need clear definitions and explanations – including examples of obstacles together with attributes.
Morocco	
Mozambique	
Namibia	
Niger	x ICAO Doc 9881 is only a draft, but the content is paramount for the transition to AIM - e.g. the attributes of terrain and obstacle data need clear definitions and explanations – including examples of obstacles together with attributes.
Nigeria	
Rwanda	
Sao Tome and Principe	
Senegal	x ICAO Doc 9881 is only a draft, but the content is paramount for the transition to AIM - e.g. the attributes of terrain and obstacle data need clear definitions and explanations – including examples of obstacles together with attributes.
Seychelles	
Sierra Leone	The entire AIS-AIM document that has been developed by the AIMSG should be adopted by APIRG and release to States as a guidance material for implementation.
Somalia	None
South Africa	• ICAO to incorporate AICM and AIXM specifications within new ICAO doc or Doc 8126. • Incorporate use GIS systems like google earth within AIM briefing specifications. • ICAO to invest in development of tools/add-ons like google earth to support AIM operations. • ICAO to develop standardize forms for Data Quality assurance/tracking. (If different states implement different processes/procedures, the outcome of the integrity and quality of the data will vary.
South Sudan	
Sudan	
Swaziland	
Tunisia	No
Togo	x ICAO Doc 9881 is only a draft, but the content is paramount for the transition to AIM - e.g. the attributes of terrain and obstacle data need clear definitions and explanations – including examples of obstacles together with attributes.
Uganda	More clarification is required regarding UUIDs, Aeronautical Information Briefing
United Republic of Tanzania	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C**

**Follow-up to APIRG/17 Conclusion 17/86 (AIM)
Summary of replies to State Letter Ref.: T2/7-0725 dated 7 August 2012**

Zambia	
Zimbabwe	

– END –

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C1**

**Sample Template
Air Navigation Report Form (ANRF)
ASBU Methodology**

Regional and National Planning for all ASBU Modules

REGIONAL/NATIONAL PERFORMANCE OBJECTIVE Service Improvement through Digital Aeronautical Information Management (ASBU B0-30) Performance Improvement Area 2: Globally Interoperable Systems and Data – Through Globally Interoperable System Wide Information Management					
Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	N	Y	Y	Y
Implementation Progress					
ASBU B0-30 Elements including baseline Phase 1 of the AIS/AIM Transition Roadmap (Consolidation)			Implementation Status		
1. AIRAC adherence monitoring (P-03)			FC		
2. Monitoring of States ' differences to Annex 4 and 15 (P-04)			FC		
3.WGS-84 Implementation (P-05)			PC		
4. Quality (P-17)			PC		
Implementation Roadblocks					
Elements including baseline Phase 1 of the AIS/AIM Transition Roadmap (Consolidation)	Ground system Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1. AIRAC Adherence (P-03)					
2. Monitoring of States differences to Annex 4 and 15(P-04)					
3. WGS-84 Implementation (P-05)					
4. Quality (P-17)					
Remarks, if any					

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C1**

**Sample Template
Air Navigation Report Form (ANRF)
ASBU Methodology**

Regional and National Planning for all ASBU Modules

**AIR NAVIGATION REPORT FORM - ASBU METHODOLOGY
EXPLANATORY NOTES**

1. **Air Navigation Report Form (ANRF):** This form may be used when Planning and Implementation Regional Groups (PIRGs) and States report on the implementation status of Aviation System Block Upgrades (ASBU) modules. Other formats may be appropriate but should contain as a minimum the elements described below.
2. **Performance objective:** To align with ASBU methodology, the performance objective for the regions as well as for the States will be the ASBU module title itself along with corresponding Performance Improvement area (PIA).
3. **Key Performance Areas:** Key to the achievement of a globally interoperable ATM system is a clear statement of the expectations of the ATM community. The expectations, hereafter known as Key Performance Areas (KPAs), are interrelated and cannot be considered in isolation since all are necessary for the achievement of the objectives established for the system as a whole. It should be noted that while safety is the highest priority, the eleven KPAs are shown in alphabetical order as they would appear in English. They are access/equity; capacity; cost effectiveness; efficiency; environment; flexibility; global interoperability; participation of ATM community; predictability; safety; and security. However, out of these eleven KPAs, five have been selected for reporting, which are Access & Equity, Capacity, Efficiency, Environment and Safety. KPAs applicable to ASBU module are to be identified by marking Y (Yes) or N (No).
4. **Implementation Progress:** This section, while describing different elements of ASBU Module, indicates progress in its implementation by States.
5. **Elements including baseline related to ASBU module:** The regional/national air navigation work programmes, under this section, will identify elements that are needed to achieve the said performance objective/ASBU module. For the list of elements related to of different ASBUs, refer to the description of respective ASBU Module. Furthermore, should there be elements that are not reflected in the ASBU module (example: In ASBU B0-80/Airport CDM, Aerodrome certification and data link applications D-VOLMET, D-ATIS, D-FIS are not included; Similarly in ASBU B0-30/AIM, note that WGS-84 and eTOD are not included) but at the same time they are part of baseline requirements, ANRF should specify those elements.
6. **Implementation Status:** Planned implementation date (year) and the current status are to be reported in this section. It is recognized that not all ASBU modules/or elements are required in all airspaces. If that be the case, mention as “Not Applicable” in this section.
7. **Implementation Roadblocks:** Challenging issues for the implementation of Elements /baseline of the Module are to be reported in this section. The four implementation roadblocks are as follows:

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C1**

**Sample Template
Air Navigation Report Form (ANRF)
ASBU Methodology**

Regional and National Planning for all ASBU Modules

- Ground System Implementation:
- Avionics Implementation:
- Procedures Availability:
- Operational Approvals:

8. **Remarks:** Comments, if any, related to any of the sections are to be reported here.

LIST OF SUGGESTED PERFORMANCE METRICS

Key Performance Area	Related Performance Metrics
1. Access & Equity	1. KPA/Access: Percentage of instrument runway ends having an APV
	2. KPA/Access: Duration of Special Use Airspace (SUA) limits Civil Operations
	3. KPA/Equity Percentage of aircraft operators by class who consider that equity is achieved
	4. KPA/Access: Percentage of requested flight level versus cleared flight level
2. Capacity	1. Number of movements per day per aerodrome
	2. Average ATFM delay per flight at an airport
	3. Number of aircraft entering a specified volume of airspace per hour
	4. Average en-route ATFM delay generated by airspace volume
3. Cost effectiveness	1. IFR movements per ATCO hour on duty
	2. IFR flights (en-route) per ATCO hour duty
4. Efficiency	1. Kilograms of fuel saved per operation
	2. Average ATFM delay per flight in the airport
	3. Percentage of PBN routes
5. Environment	1. Kilograms of CO2 emissions reduced per operation
6. Flexibility	To be decided
7. Global Interoperability	1. Number of ATC automated systems that are interconnected
8. Participation of the ATM Community	1. Level of participation in meetings
	2. Level of responses to planning activities
9. Predictability	1. Arrival/departure delay (in minutes) at airport)
10. Safety	1. Percentage of instrument runway ends having a precision approach procedure
	2. Number of runway incursions per aerodrome per year
	3. Percentage of certified aerodromes used for international operations
	4. Number of aircraft fitted with ADS-B IN

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C1**

**Sample Template
Air Navigation Report Form (ANRF)
ASBU Methodology**

Regional and National Planning for all ASBU Modules

	5. Number of aircraft fitted with ACAS / logic Version 7.1
	6. Percentage of aerodromes with PBN STAR implemented
	7. Percentage of aerodromes with CDOs implemented
	8. Number of ADS-Cs available over oceanic and remote Areas
	9. Number of continental CPDLC systems established
	10. Percentage of aerodromes with PBN SIDs implemented and
	11. Percentage of aerodromes with CCOs implemented;
	12. Number of States implemented WGS-84
11. Security	Not applicable

— END —.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C2**

Sample Template

**Air Navigation Report Form (ANRF)
ASBU Methodology**

Regional and National Planning for all ASBU Modules

REGIONAL/NATIONAL PERFORMANCE OBJECTIVE <i>Service Improvement through Digital Aeronautical Information Management (ASBU B0-30)</i> Performance Improvement Area 2: Globally Interoperable Systems and Data – Through Globally Interoperable System Wide Information Management					
Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	N	Y	Y	Y
Implementation Progress					
ASBU B0-30 Elements including baseline PHASE 2 of the AIS/AIM Transition Roadmap (Going Digital)			Implementation Status		
1. Data Quality monitoring (P-01)					
2. Data integrity monitoring (P-02)					
3. Integrated Aeronautical Information Database (P-06)					
4. Unique identifiers (P-07)					
5. Aeronautical Information Conceptual Model (P-08)					
6. Electronic AIP (P- 11)					
7. Terrain (P-13)					
8. Obstacles (P- 14)					
9. Aerodrome mapping (P-15)					
Implementation Roadblocks					
Elements including baseline PHASE 2 of the AIS/AIM Transition Roadmap (Going Digital)	Ground system Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1.Data Quality monitoring (P-01)					
2. Data integrity monitoring (P-02)					
3. Integrated Aeronautical					

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C2**

Sample Template

**Air Navigation Report Form (ANRF)
ASBU Methodology**

Regional and National Planning for all ASBU Modules

Information Database (P-06)				
4. Unique identifiers (P-07)				
5. Aeronautical Information Conceptual Model (P-08)				
6. Electronic AIP (P- 11)				
7. Terrain (P-13)				
8. Obstacles (P- 14)				
9. Aerodrome mapping (P-15)				
Remarks, if any				

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C2**

Sample Template

**Air Navigation Report Form (ANRF)
ASBU Methodology**

Regional and National Planning for all ASBU Modules

**AIR NAVIGATION REPORT FORM - ASBU METHODOLOGY
EXPLANATORY NOTES**

1. **Air Navigation Report Form (ANRF):** This form may be used when Planning and Implementation Regional Groups (PIRGs) and States report on the implementation status of Aviation System Block Upgrades (ASBU) modules. Other formats may be appropriate but should contain as a minimum the elements described below.
2. **Performance objective:** To align with ASBU methodology, the performance objective for the regions as well as for the States will be the ASBU module title itself along with corresponding Performance Improvement area (PIA).
3. **Key Performance Areas:** Key to the achievement of a globally interoperable ATM system is a clear statement of the expectations of the ATM community. The expectations, hereafter known as Key Performance Areas (KPA)s, are interrelated and cannot be considered in isolation since all are necessary for the achievement of the objectives established for the system as a whole. It should be noted that while safety is the highest priority, the eleven KPAs are shown in alphabetical order as they would appear in English. They are access/equity; capacity; cost effectiveness; efficiency; environment; flexibility; global interoperability; participation of ATM community; predictability; safety; and security. However, out of these eleven KPAs, five have been selected for reporting, which are Access & Equity, Capacity, Efficiency, Environment and Safety. KPAs applicable to ASBU module are to be identified by marking Y (Yes) or N (No).
4. **Implementation Progress:** This section, while describing different elements of ASBU Module, indicates progress in its implementation by States.
5. **Elements including baseline related to ASBU module:** The regional/national air navigation work programmes, under this section, will identify elements that are needed to achieve the said performance objective/ASBU module. For the list of elements related to of different ASBUs, refer to the description of respective ASBU Module. Furthermore, should there be elements that are not reflected in the ASBU module (example: In ASBU B0-80/Airport CDM, Aerodrome certification and data link applications D-VOLMET, D-ATIS, D-FIS are not included; Similarly in ASBU B0-30/AIM, note that WGS-84 and eTOD are not included) but at the same time they are part of baseline requirements, ANRF should specify those elements.
6. **Implementation Status:** Planned implementation date (year) and the current status are to be reported in this section It is recognized that not all ASBU modules/or elements are required in all airspaces. If that be the case, mention as “Not Applicable” in this section.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C2**

Sample Template

**Air Navigation Report Form (ANRF)
ASBU Methodology**

Regional and National Planning for all ASBU Modules

7. **Implementation Roadblocks:** Challenging issues for the implementation of Elements /baseline of the Module are to be reported in this section. The four implementation roadblocks are as follows:

- Ground System Implementation:
- Avionics Implementation:
- Procedures Availability:
- Operational Approvals:

8. **Remarks:** Comments, if any, related to any of the sections are to be reported here.

LIST OF SUGGESTED PERFORMANCE METRICS

Key Performance Area	Related Performance Metrics
1. Access & Equity	1. KPA/Access: Percentage of instrument runway ends having an APV
	2. KPA/Access: Duration of Special Use Airspace (SUA) limits Civil Operations
	3. KPA/Equity Percentage of aircraft operators by class who consider that equity is achieved
	4. KPA/Access: Percentage of requested flight level versus cleared flight level
2. Capacity	1. Number of movements per day per aerodrome
	2. Average ATFM delay per flight at an airport
	3. Number of aircraft entering a specified volume of airspace per hour
	4. Average en-route ATFM delay generated by airspace volume
3. Cost effectiveness	1. IFR movements per ATCO hour on duty
	2. IFR flights (en-route) per ATCO hour duty
4. Efficiency	1. Kilograms of fuel saved per operation
	2. Average ATFM delay per flight in the airport
	3. Percentage of PBN routes
5. Environment	1. Kilograms of CO2 emissions reduced per operation
6. Flexibility	To be decided
7. Global Interoperability	1. Number of ATC automated systems that are interconnected
8. Participation of the ATM Community	1. Level of participation in meetings
	2. Level of responses to planning activities

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C2**

Sample Template

**Air Navigation Report Form (ANRF)
ASBU Methodology**

Regional and National Planning for all ASBU Modules

9. Predictability	1. Arrival/departure delay (in minutes) at airport)
10. Safety	1.Percentage of instrument runway ends having a precision approach procedure
	2.Number of runway incursions per aerodrome per year
	3.Percentage of certified aerodromes used for international operations
	4. Number of aircraft fitted with ADS-B IN
	5. Number of aircraft fitted with ACAS / logic Version 7.1
	6.Percentage of aerodromes with PBN STAR implemented
	7. Percentage of aerodromes with CDOs implemented
	8. Number of ADS-Cs available over oceanic and remote Areas
	9. Number of continental CPDLC systems established
	10. Percentage of aerodromes with PBN SIDs implemented and
	11. Percentage of aerodromes with CCOs implemented;
	12. Number of States implemented WGS-84
11. Security	Not applicable

— END —.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C2**

Sample Template

**Air Navigation Report Form (ANRF)
ASBU Methodology**

Regional and National Planning for all ASBU Modules

REGIONAL/NATIONAL PERFORMANCE OBJECTIVE <i>Service Improvement through Digital Aeronautical Information Management (ASBU B0-30)</i> Performance Improvement Area 2: Globally Interoperable Systems and Data – Through Globally Interoperable System Wide Information Management					
Main Key Performance Areas (KPA)					
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	N	Y	Y	Y
Implementation Progress					
ASBU B0-30 Elements including baseline PHASE 2 of the AIS/AIM Transition Roadmap (Going Digital)			Implementation Status		
1. Data Quality monitoring (P-01)					
2. Data integrity monitoring (P-02)					
3. Integrated Aeronautical Information Database (P-06)					
4. Unique identifiers (P-07)					
5. Aeronautical Information Conceptual Model (P-08)					
6. Electronic AIP (P- 11)					
7. Terrain (P-13)					
8. Obstacles (P- 14)					
9. Aerodrome mapping (P-15)					
Implementation Roadblocks					
Elements including baseline PHASE 2 of the AIS/AIM Transition Roadmap (Going Digital)	Ground system Implementation	Avionics Implementation	Procedures Availability	Operational Approvals	
1.Data Quality monitoring (P-01)					
2. Data integrity monitoring (P-02)					
3. Integrated Aeronautical					

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C2**

Sample Template

**Air Navigation Report Form (ANRF)
ASBU Methodology**

Regional and National Planning for all ASBU Modules

Information Database (P-06)				
4. Unique identifiers (P-07)				
5. Aeronautical Information Conceptual Model (P-08)				
6. Electronic AIP (P- 11)				
7. Terrain (P-13)				
8. Obstacles (P- 14)				
9. Aerodrome mapping (P-15)				
Remarks, if any				

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C2**

Sample Template

**Air Navigation Report Form (ANRF)
ASBU Methodology**

Regional and National Planning for all ASBU Modules

**AIR NAVIGATION REPORT FORM - ASBU METHODOLOGY
EXPLANATORY NOTES**

1. **Air Navigation Report Form (ANRF):** This form may be used when Planning and Implementation Regional Groups (PIRGs) and States report on the implementation status of Aviation System Block Upgrades (ASBU) modules. Other formats may be appropriate but should contain as a minimum the elements described below.
2. **Performance objective:** To align with ASBU methodology, the performance objective for the regions as well as for the States will be the ASBU module title itself along with corresponding Performance Improvement area (PIA).
3. **Key Performance Areas:** Key to the achievement of a globally interoperable ATM system is a clear statement of the expectations of the ATM community. The expectations, hereafter known as Key Performance Areas (KPA's), are interrelated and cannot be considered in isolation since all are necessary for the achievement of the objectives established for the system as a whole. It should be noted that while safety is the highest priority, the eleven KPAs are shown in alphabetical order as they would appear in English. They are access/equity; capacity; cost effectiveness; efficiency; environment; flexibility; global interoperability; participation of ATM community; predictability; safety; and security. However, out of these eleven KPAs, five have been selected for reporting, which are Access & Equity, Capacity, Efficiency, Environment and Safety. KPAs applicable to ASBU module are to be identified by marking Y (Yes) or N (No).
4. **Implementation Progress:** This section, while describing different elements of ASBU Module, indicates progress in its implementation by States.
5. **Elements including baseline related to ASBU module:** The regional/national air navigation work programmes, under this section, will identify elements that are needed to achieve the said performance objective/ASBU module. For the list of elements related to of different ASBUs, refer to the description of respective ASBU Module. Furthermore, should there be elements that are not reflected in the ASBU module (example: In ASBU B0-80/Airport CDM, Aerodrome certification and data link applications D-VOLMET, D-ATIS, D-FIS are not included; Similarly in ASBU B0-30/AIM, note that WGS-84 and eTOD are not included) but at the same time they are part of baseline requirements, ANRF should specify those elements.
6. **Implementation Status:** Planned implementation date (year) and the current status are to be reported in this section It is recognized that not all ASBU modules/or elements are required in all airspaces. If that be the case, mention as "Not Applicable" in this section.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C2**

Sample Template

**Air Navigation Report Form (ANRF)
ASBU Methodology**

Regional and National Planning for all ASBU Modules

7. **Implementation Roadblocks:** Challenging issues for the implementation of Elements /baseline of the Module are to be reported in this section. The four implementation roadblocks are as follows:

- Ground System Implementation:
- Avionics Implementation:
- Procedures Availability:
- Operational Approvals:

8. **Remarks:** Comments, if any, related to any of the sections are to be reported here.

LIST OF SUGGESTED PERFORMANCE METRICS

Key Performance Area	Related Performance Metrics
1. Access & Equity	1. KPA/Access: Percentage of instrument runway ends having an APV
	2. KPA/Access: Duration of Special Use Airspace (SUA) limits Civil Operations
	3. KPA/Equity Percentage of aircraft operators by class who consider that equity is achieved
	4. KPA/Access: Percentage of requested flight level versus cleared flight level
2. Capacity	1. Number of movements per day per aerodrome
	2. Average ATFM delay per flight at an airport
	3. Number of aircraft entering a specified volume of airspace per hour
	4. Average en-route ATFM delay generated by airspace volume
3. Cost effectiveness	1. IFR movements per ATCO hour on duty
	2. IFR flights (en-route) per ATCO hour duty
4. Efficiency	1. Kilograms of fuel saved per operation
	2. Average ATFM delay per flight in the airport
	3. Percentage of PBN routes
5. Environment	1. Kilograms of CO2 emissions reduced per operation
6. Flexibility	To be decided
7. Global Interoperability	1. Number of ATC automated systems that are interconnected
8. Participation of the ATM Community	1. Level of participation in meetings
	2. Level of responses to planning activities

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5C2**

Sample Template

**Air Navigation Report Form (ANRF)
ASBU Methodology**

Regional and National Planning for all ASBU Modules

9. Predictability	1. Arrival/departure delay (in minutes) at airport)
10. Safety	1.Percentage of instrument runway ends having a precision approach procedure
	2.Number of runway incursions per aerodrome per year
	3.Percentage of certified aerodromes used for international operations
	4. Number of aircraft fitted with ADS-B IN
	5. Number of aircraft fitted with ACAS / logic Version 7.1
	6.Percentage of aerodromes with PBN STAR implemented
	7. Percentage of aerodromes with CDOs implemented
	8. Number of ADS-Cs available over oceanic and remote Areas
	9. Number of continental CPDLC systems established
	10. Percentage of aerodromes with PBN SIDs implemented and
	11. Percentage of aerodromes with CCOs implemented;
	12. Number of States implemented WGS-84
11. Security	Not applicable

— END —.

ASECNA CENTRALISED DATA BASE (1)

- **Main challenges**

- Implementation of a **centralized** aeronautical **database** able to ensure the *reliability, the integrity and the availability of timely data*;
- **Compatibility** and **easy exchange of data** with other databases and **contribution to AFI-CAD implementation** ;
- **Coherent automation** of the main functions for the production of the different elements of the integrated aeronautical information package ; and
- Make effective **interoperability with meteorological** products with AIM and the flight plan management system.

ASECNA CENTRALIZED DATA BASE (2)

ASECNA DATA BASE SYSTEM

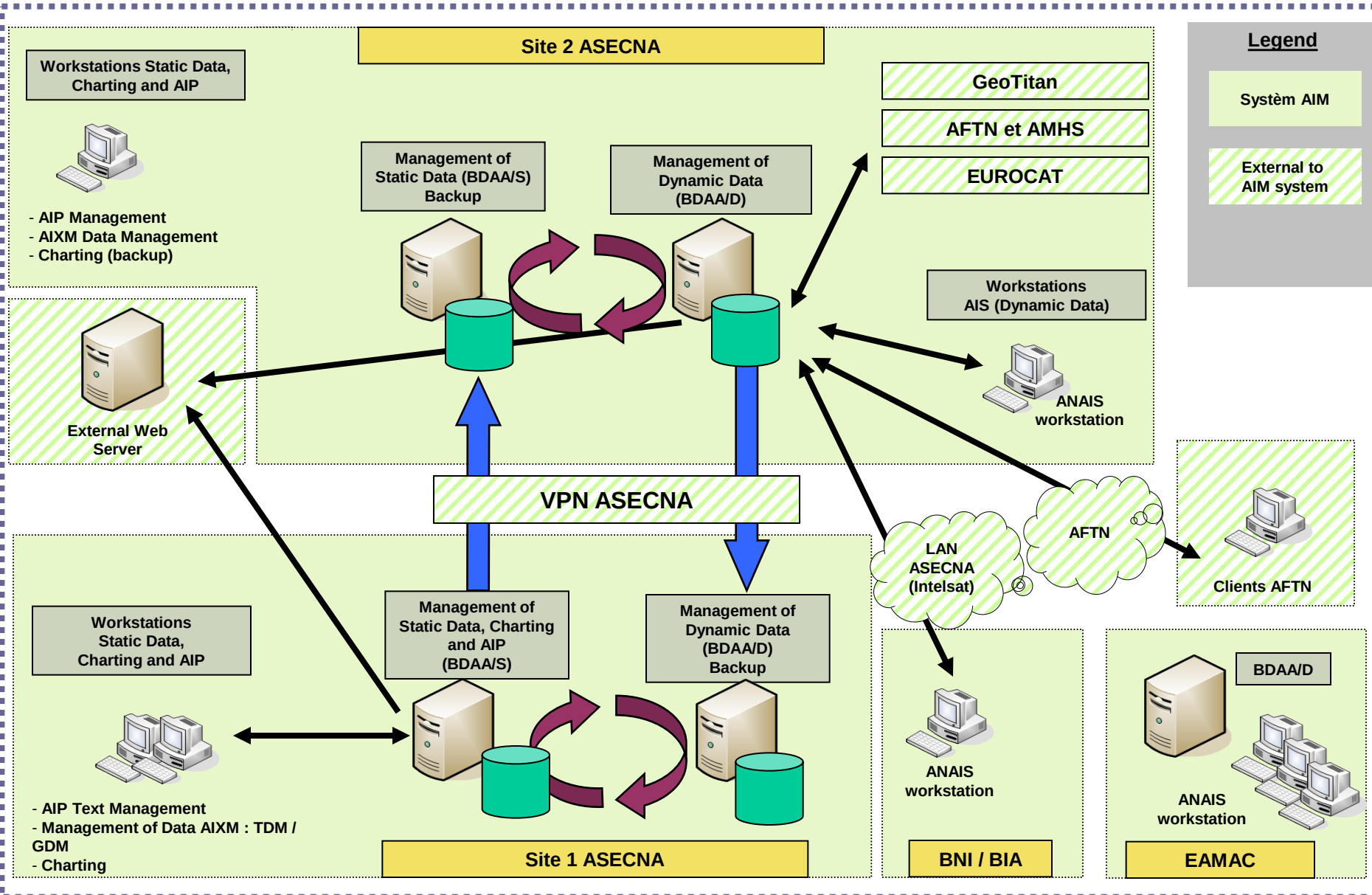
- Description:
 - Full AIM solution includes : AIXM+ / eAIP / Charting / AIS
- Specificities:
 - **Distributed Architecture on multiple sites**
 - 2 Servers for static data base (acting and back up) ;
 - 2 servers for dynamic data base (acting and back up);
 - Real time replication mechanisms;
 - AIS Terminals (linked with dynamic database) are installed in 17 countries for AIS aerodrome units and NOTAM Offices (3 NOF);
 - 1 training server at EAMAC in Niamey (ASECNA training center);
 - **Interoperability of AIXM data-base with IAC design application « GEOTITAN » for IAC charts production;**
 - **Edition of national AIP for the 17 members states;**
 - AIP Display on web server;
 - Dynamic data base is compliant with New FPL 2012 format.
- 2013 : static data migration has began with progressive operation;
- 2014 : static data will be in full operation.

AUTOMATION BASED ON DATA BASE

AUTOMATION OF AIM ACTIVITIES

- AIP activities: AIP Amendment and eAIP production;
- Charting activities: chart elaboration and production with an GIS application;
- NOF activities: NOTAM validation and publication, NOTAM check list edition;
- AIS/ARO activities: NOTAM proposal edition, PIB edition, FPL and ATS messages validation and transmission.

AIM ASECNA Architecture



COMPLIANCE WITH ROADMAP STEPS

- ASECNA Centralized Data Base gives satisfaction to the four steps of AIS AIM road map:
- - **P07** : Unique identifier;
- - **P08** : Aeronautical Information Conceptual Model;
- - **P06** : Integrated Aeronautical Information Data base;
- - **P11**: Electronic AIP.

ASECNA DATABASE FOR COOPERATION AND EXCHANGE



- **Regional cooperation for AFICAD implementation**

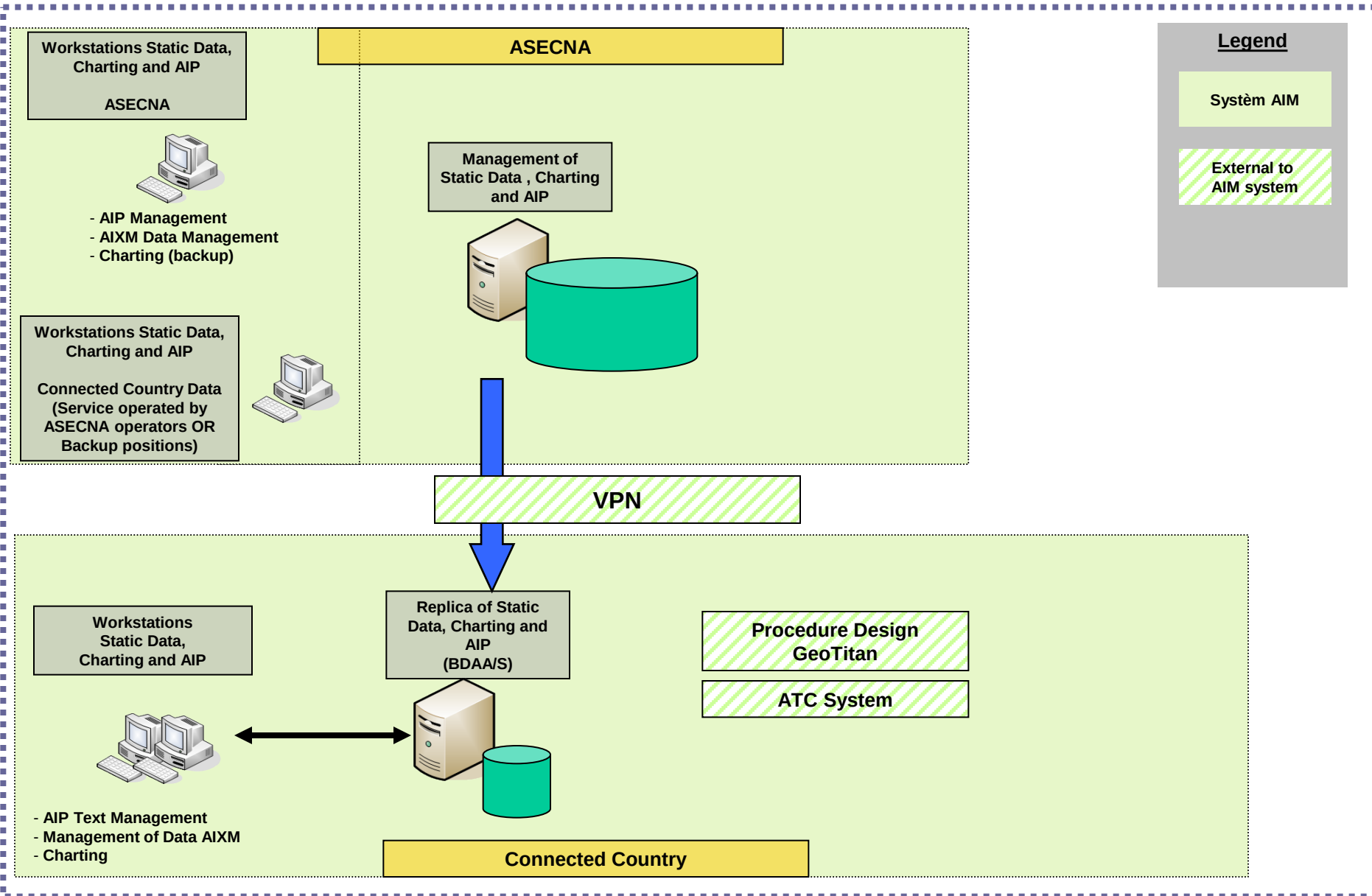
ASECNA Database should be in the framework of AFI-CAD implementation, used as a regional data base for other African states which would desire. Modalities of operation will be defined by common agreement with all stakeholders under ICAO technical assistance.

- **Exchange with other databases:**

ASECNA database compliant with AIXM/AICM should exchange with other data base.

Exchange should be establish with ATNS data base in the framework of inter-regional cooperation (AFI-CAD), and with EUROCONTROL/EAD Group in the framework of international cooperation.

AIM ASECNA with a connected country



ASECNA CENTRALISED DATA BASE (1)

- **Main challenges**

- Implementation of a **centralized** aeronautical **database** able to ensure the *reliability, the integrity and the availability of timely data*;
- **Compatibility** and **easy exchange of data** with other databases and **contribution to AFI-CAD implementation** ;
- **Coherent automation** of the main functions for the production of the different elements of the integrated aeronautical information package ; and
- Make effective **interoperability with meteorological** products with AIM and the flight plan management system.

ASECNA CENTRALIZED DATA BASE (2)

ASECNA DATA BASE SYSTEM

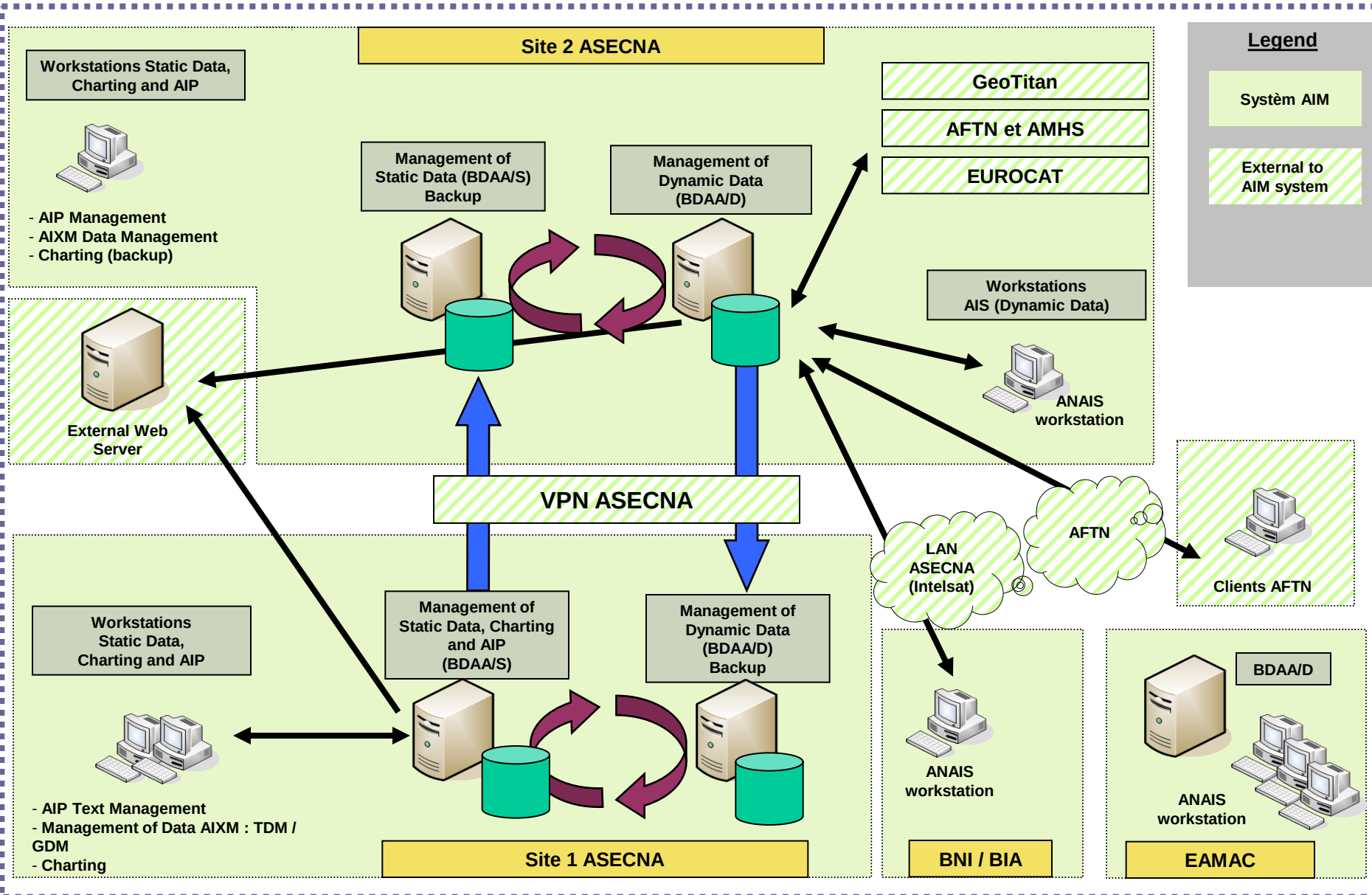
- Description:
 - Full AIM solution includes : AIXM+ / eAIP / Charting / AIS
- Specificities:
 - **Distributed Architecture on multiple sites**
 - 2 Servers for static data base (acting and back up) ;
 - 2 servers for dynamic data base (acting and back up);
 - Real time replication mechanisms;
 - AIS Terminals (linked with dynamic database) are installed in 17 countries for AIS aerodrome units and NOTAM Offices (3 NOF);
 - 1 training server at EAMAC in Niamey (ASECNA training center);
 - **Interoperability of AIXM data-base with IAC design application « GEOTITAN » for IAC charts production;**
 - **Edition of national AIP for the 17 members states;**
 - AIP Display on web server;
 - Dynamic data base is compliant with New FPL 2012 format.
- 2013 : static data migration has began with progressive operation;
- 2014 : static data will be in full operation.

AUTOMATION BASED ON DATA BASE

AUTOMATION OF AIM ACTIVITIES

- AIP activities: AIP Amendment and eAIP production;
- Charting activities: chart elaboration and production with an GIS application;
- NOF activities: NOTAM validation and publication, NOTAM check list edition;
- AIS/ARO activities: NOTAM proposal edition, PIB edition, FPL and ATS messages validation and transmission.

AIM ASECNA Architecture



COMPLIANCE WITH ROADMAP STEPS

- ASECNA Centralized Data Base gives satisfaction to the four steps of AIS AIM road map:
- - **P07** : Unique identifier;
- - **P08** : Aeronautical Information Conceptual Model;
- - **P06** : Integrated Aeronautical Information Data base;
- - **P11**: Electronic AIP.

ASECNA DATABASE FOR COOPERATION AND EXCHANGE



- **Regional cooperation for AFICAD implementation**

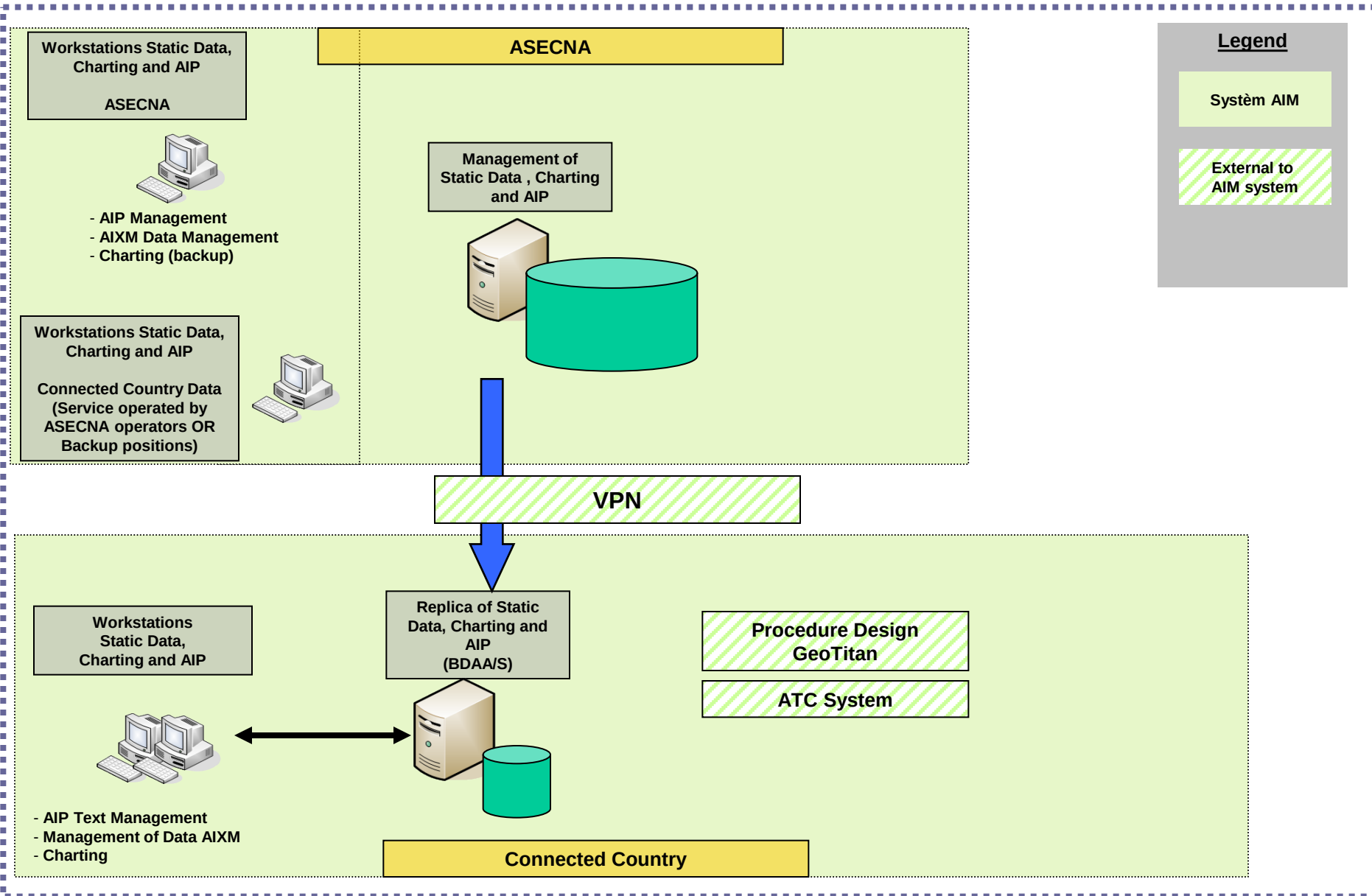
ASECNA Database should be in the framework of AFI-CAD implementation, used as a regional data base for other African states which would desire. Modalities of operation will be defined by common agreement with all stakeholders under ICAO technical assistance.

- **Exchange with other databases:**

ASECNA database compliant with AIXM/AICM should exchange with other data base.

Exchange should be establish with ATNS data base in the framework of inter-regional cooperation (AFI-CAD), and with EUROCONTROL/EAD Group in the framework of international cooperation.

AIM ASECNA with a connected country



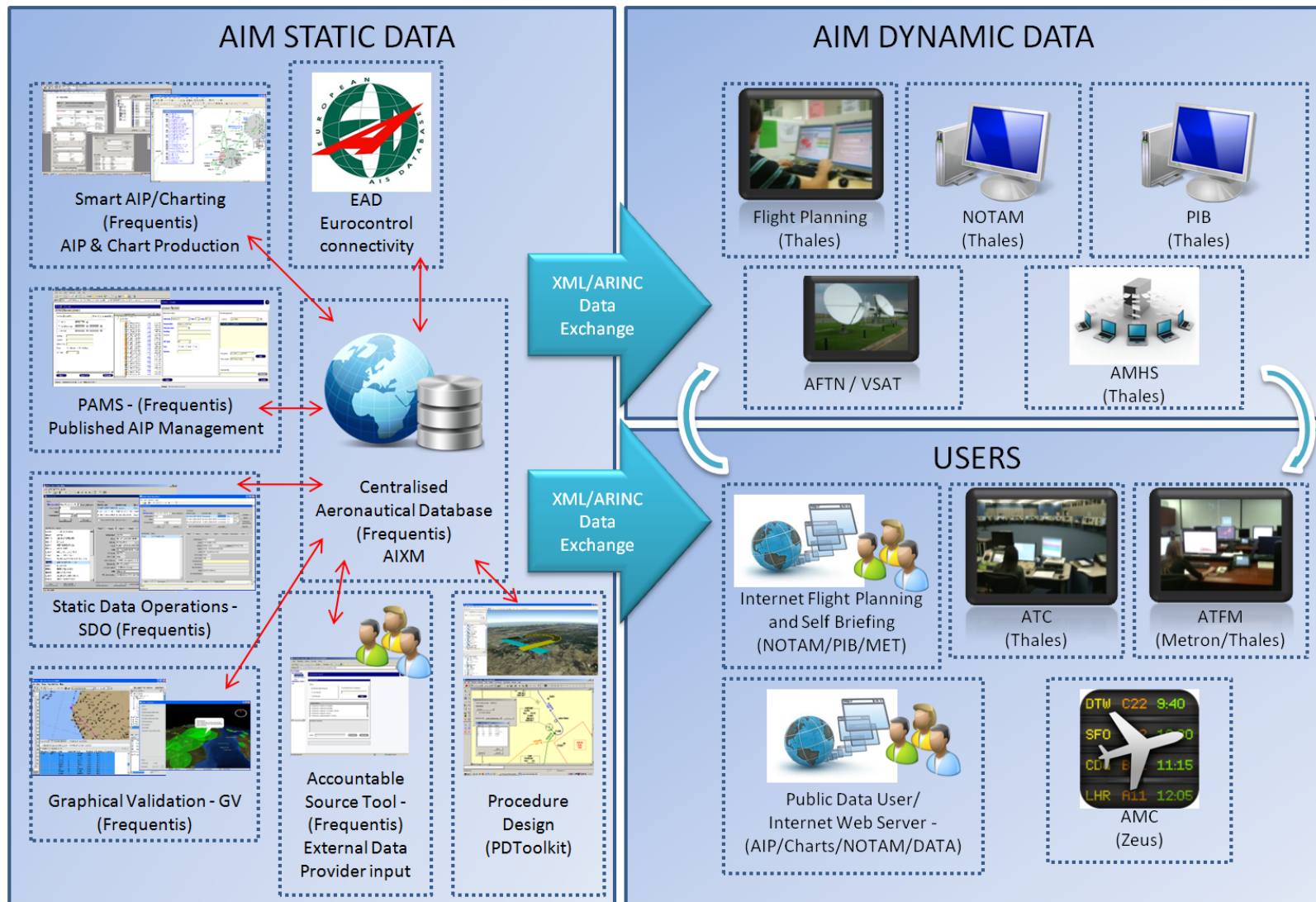
APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5E

- **AIS/AIM System in South Africa (ATNS)**
 - Description:
 - Dynamic Component comprises of
 - I. Flight Planning and Management
 - II. NOTAM Management (Creation, PIB, etc)
 - III. Internet Briefing and Flight Planning
 - IV. AMHS
 - Static Component comprises of
 - I. SmartDM (SDO, GV, PAMS, IFS, LRI, etc)
 - II. SmartAIP (AIP production tool)
 - III. SmartCharting (Chart Production Tool)
 - IV. Workflow Management (AST for External sources to provide data via web-interfaces)
 - Specificities:
 - Integration with ATC and ATFM (Flow Management)
 - Advanced AIS and Internet Briefing component
 - Integration to Frequentis NOTAM and Flight Plan Management components
 - Integration to any other AIXM databases
 - Synchronisation to EAD (Access to Worldwide data)
 - Dynamic Component - operational since 2001 (FPL, NOTAM & Briefing Component)
 - Static Component - SAT accepted Dec 2012 (Currently populating database with full Dataset)

South Africa -AIM system overview



AIM System

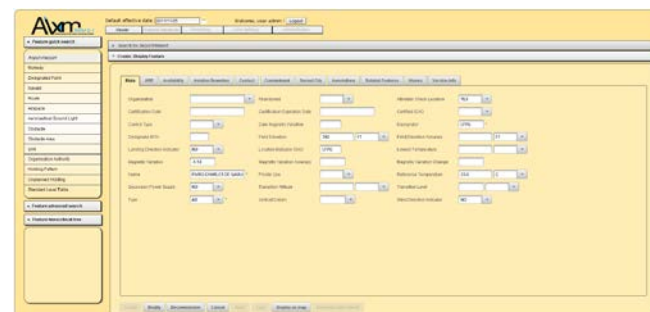


Advantages

Advantages

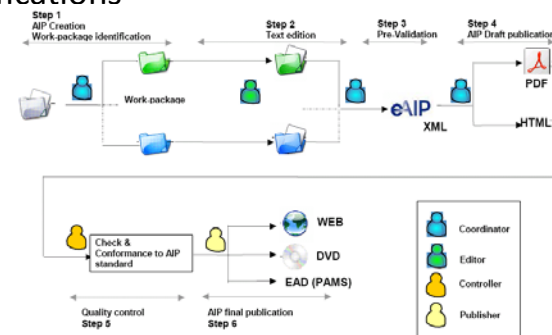
AIXM 5.1 Database

- Built on top of latest technical components (JEE6, WFS, NASA World Wind, MDA ...)
- Operation oriented input forms for main features in order to mask AIXM5 model complexity to end users



Electronic AIP

- Integrated workflow
- Automatic generation & publication of PDF, HTML, web site
- Fully compliant with latest Eurocontrol and ICAO specifications (XML technologies)
- Full integration with AIXM database
- Strong support during AIP migration



Modular Deployment

- Internet Flight preparation interface
 - Self briefing airport position
 - Home-briefing internet connexion
- Flight plan submission
 - Template
 - ICAO format import
 - New FPL from existing FPL or template
- Flight plan status (IFPS/CFMU) follow-up
 - Users history management in the flight handbook
 - Alert via SMS & email
- Integrated PIB (NOTAM + Meteo)
 - « FPL from PIB » function
 - Narrow route PIB
 - Integrated-PIB = NOTAM + Meteo data
 - Electronic-PIB = HTML and PDF files

Flight Plan Message (Step 1 of 2)

Flight Plan			
3 Message Type (FPL)	7 Aircraft Identification — *	8 Flight Rules — I. IFR *	Type of Flight G. General Aviation *
9 Number — 1 *	Type of Aircraft —	Wake Turbulence Category / L - Light *	10 Equipment — S / C * select
13 Departure Aerodrome — * Graphical Search	Time —	Date 2008/10/13 *	
15 Speed — N - Knots *	Level F - Flight Level *		
Route * Search			
16 Destination Aerodrome — * Graphical Search	Total EET — *	Alternate Aerodrome — * Graphical Search	2nd Alternate Aerodrome — * Graphical Search



Challenges of ATNS on AIM Capability towards SWIM



- Introduction

ATNS is taking a stance on the African Continent and transforming Aeronautical Information Services (AIS) to Aeronautical Information Management (AIM) to Information Management (IM) applying the System Wide Information Management (SWIM) principles by deploying and using leading technologies to the benefit of the ATM Community. Establishing the ATNS Centralized Aeronautical Database (CAD) will proactively contribute towards Global AIM by providing the right quality assumed digital aeronautical information to the right place at the right time and in correct format to support all phases of flight.

Challenges of ATNS on AIM Capability towards SWIM (2)



- GENERAL
 - System
 - ATNS has started the process of acquiring the ATNS CAD that addresses the South African ATM Community requirements;
 - The solution contemplated by ATNS provides for the Single National/Regional aeronautical database, with Global interconnectivity, supporting the following applications:
 - AIXM 4.5 and 5.1 compatible database;
 - Electronic IAIP;
 - Published IAIP management tool;
 - Charting Tool;
 - Procedure Design interconnectivity;
 - Static Data Operations (Input and Output) including Remote data input operations;
 - Geospatial Information Visualization;
 - Internet Services allowing external users to view Static data.

Challenges of ATNS on AIM Capability towards SWIM (3)



The system has the capability to expand to accommodate future requirements such as:

- x-NOTAM management; and
- integrated METEO Operations.

CONCLUSION

The system identified by ATNS is identical to the European Aeronautical Database(EAD) currently used by EUROCONTROL and the European ATM Community, which will enable the ATNS CAD to synchronize with the European Aeronautical Database, thereby aligning South Africa to comply and contribute towards Global AIM. This database will align with all the Global initiatives in aligning the continent with projects to the like of AIXM, EAD and others.

-1-
APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5F

**AFI Working Group for the Implementation of Recommendation 3/8(C) of the Twelfth Air Navigation Commission on Regional or Sub-Regional AIS Databases
as an enabler for the Transition from AIS to AIM
(AFI Working Group on ANC 12 Rec. 3/8C)**

Terms of Reference

A) TERMS OF REFERENCE

1.1 With a view to engage in intra-regional and interregional cooperation for an expeditious transition from aeronautical information service (AIS) to aeronautical information management (AIM) in a harmonized manner and to using digital data exchange, coordinate and support AIS/AIM implementation activities on a regional basis, the **AFI Working Group on ANC 12 Rec.3/8c** shall be established as follows:

Mission

1.2 To identify, develop and validate mechanisms for the AFI states to exploit in their expeditious transition from aeronautical information service (AIS) to aeronautical information management (AIM), in accordance with **ANC 12 Rec.3/8c, and the AFI transition from AIS to AIM roadmap.**

1.3 Submit a consistent and harmonized proposal to the AIM/IM Divisional Meeting scheduled on February 2015 in Montreal, Canada for consideration regarding the way forward for the AFI region

Reporting Line

1.4 The **AFI Working Group on ANC 12 Rec.3/8c** will report to the APIRG and the AFI DGCA Meetings before the AIM/IM Divisional Meeting scheduled in February 2015.

Outcomes:

1.5 The **AFI Working Group on ANC 12 Rec.3/8c** shall:

- a) establish a common understanding of the intentions of the 12th **Air Navigation Commission Rec.3/8c** and Annex 15 with regard to an expeditious transition from aeronautical information service (AIS) to aeronautical information management (AIM);
- b) promote awareness of the responsibility and accountability of States for the implementation AIS/AIM Transition processes;
- c) specify the responsibilities for the bodies involved (regulator, air navigation service provider, data providers, data users etc.);
- d) Develop specifications to ensure the eight guiding principles in the development of the associated AFI Region guidance material for the implementation of **ANC 12 Rec.3/8c are adhered to.** The guidance material should assist in the definition of:
 - ☐ Qualities of data collection techniques;
 - ☐ Methods for the validation and verification of data;

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5F**

**AFI Working Group for the Implementation of Recommendation 3/8(C) of the Twelfth air
Navigation Commission on Regional or Sub-Regional AIS Databases
as an enabler for the Transition from AIS to AIM
(AFI Working Group on ANC 12 Rec. 3/8C)**

Terms of Reference

- ☐ Mechanisms for the storage and exchange of data;
 - ☐ Data protection and other quality processes;
 - ☐ Quality management / assurance (verification and validation) criteria;
 - ☐ Cross-border harmonization;
 - ☐ Methodologies for cost recovery, if appropriate;
 - ☐ Guidance relating to the assessment of data for periodically (timeliness).
- e) Develop harmonized approaches to copyright, liability, intellectual property, and methodologies for cost recovery, if appropriate; etc. through cooperative processes;
- f) Define the requirements for linking to the Regional Databases;
- g) Assist States to promulgate regulation to support the act of data provision; facilitation and coordination of implementing an expeditious transition from aeronautical information service (AIS) to aeronautical information management (AIM) within AFI Region;
- h) monitor the progress towards implementation of AIS/AIM Transition within the AFI Region;
- i) Emphasize upon stakeholders the importance for global harmonization;
- j) submit material created under the project to ICAO
- k) Support the AIM domain in gaining the necessary support and resources from the responsible State Agency management.

B) COMPOSITION

1.6 The AFI **Working Group on ANC 12 Rec.3/8c** will be composed of Experts nominated by the AFI Region States, ANSP and participants from any relevant domains including, but not limited to AIS/AIM personnel, CNS/ATM personnel, Flight Procedures personnel, regulators, industry and international organizations in AFI and non-AFI States.

1.7 Other representatives from industry and user organizations having a vested interest in the aeronautical services and AIS/AIM transitions in particular, could participate in the work of this Working Group.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5F**

**AFI Working Group for the Implementation of Recommendation 3/8(C) of the Twelfth air
Navigation Commission on Regional or Sub-Regional AIS Databases
as an enabler for the Transition from AIS to AIM
(AFI Working Group on ANC 12 Rec. 3/8C)**

Terms of Reference

C) WORKING ARRANGEMENTS.

1.8 The work of the AFI **Working Group on ANC 12 Rec.3/8c** shall be carried out mainly through exchange of correspondence (email, facsimile, Tel., etc) between its Members.

1.9 The Working Group shall meet as required and at least once in every year prior to an APRIG or a DGCA Meeting.

1.10 The convening of the Working Group meetings should be initiated by the ICAO secretariat based on the need to address AIS - AIM deficiencies in the AFI Region.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5G**

**A summary of AIS-AIM related deficiencies anticipated after 14 November 2013
based on implementation of Roadmap steps**

	Phase 1 Consolidation (Amendment 36 Nov.2010)				Phase 2 Going Digital (Amendment 37 November 2013)									Phase 3 Information Management (Amendment 38 November 2016)							
	AIRAC Adherence Monitoring	Monitoring Annex 4 and Annex 15 differences	WGS-84 Implementation	Quality	Data Quality Monitoring	Data Integrity Monitoring	Integrated Aeronautical Information Database	Unique Identifiers	Aeronautical Information Conceptual Model	Electronic AIP	Terrain	Obstacles	Aerodrome Mapping	Aeronautical Data Exchange	Communication Networks	Aeronautical Information Briefing	Training	Agreements with Data Originators	Interoperability with meteorological Products	Electronic Aeronautical Charts	Digital NOTAM
	P-03	P-04	P-05	P-17	P-01	P-02	P-06	P-07	P-08	P-11	P-13	P-14	P-15	P-09	P-10	P-12	P-16	P-18	P-19	P-20	P-21
Angola	B	B	B	N	B	B	B	B	B	B	B	B	N	N	N	N	N	N	N	N	N
Benin	C	C	C	B	O	O	O	O	O	C	B	B	B	O	O	O	O	O	O	O	N
Burkina Faso	C	C	C	B	O	O	O	O	O	C	B	B	B	O	O	O	O	O	O	O	N
Botswana	C	C	C	B	B	B	O	B	B	B	B	B	B	O	O	O	O	O	O	O	N
Burundi	N	N	B	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Cameroon	C	C	C	B	O	O	O	O	O	C	B	B	B	O	O	O	O	O	O	O	N
Cape Verde	B	B	C	B	B	B	B	B	B	B	B	B	B	N	N	N	O	O	O	O	N
Central African Republic	C	C	C	B	O	O	O	O	O	C	B	B	B	O	O	O	O	O	O	O	N
Chad	C	C	C	B	O	O	O	O	O	C	B	B	B	O	O	O	O	O	O	O	N
Comoros	C	C	C	B	O	O	O	O	O	C	B	B	B	O	O	O	O	O	O	O	N
Congo	C	C	C	B	O	O	O	O	O	C	B	B	B	O	O	O	O	O	O	O	N
Cote d'Ivoire	C	C	C	B	O	O	O	O	O	C	B	B	B	O	O	O	O	O	O	O	N
Democratic Republic of	N	N	B	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Djibouti	B	B	C	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Egypt	C	C	C	B	O	O	O	O	O	O	B	B	B	O	O	O	O	O	O	O	N
Equatorial Guinea	C	C	C	B	O	O	O	O	O	C	B	B	B	O	O	O	O	O	O	O	N
Eritrea	N	N	B	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Ethiopia	C	B	C	N	B	B	B	B	B	B	B	B	B	N	N	N	N	N	N	N	N
Gabon	c	c	C	B	O	O	O	O	O	C	B	B	B	O	O	O	O	O	O	O	N
Gambia	c	c	C	B	B	B	B	B	B	O	B	B	B	N	N	N	N	N	N	N	N
Ghana	B	B	B	B	B	B	B	B	B	B	B	B	B	N	N	N	N	N	N	N	N
Guinea	C	C	C	B	B	B	B	B	B	B	B	B	B	O	O	O	O	O	O	O	N

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5G**

**A summary of AIS-AIM related deficiencies anticipated after 14 November 2013
based on implementation of Roadmap steps**

	Phase 1 Consolidation (Amendment 36 Nov.2010)				Phase 2 Going Digital (Amendment 37 November 2013)									Phase 3 Information Management (Amendment 38 November 2016)							
	AIRAC Adherence Monitoring	Monitoring Annex 4 and Annex 15 differences	WGS-84 Implementation	Quality	Data Quality Monitoring	Data Integrity Monitoring	Integrated Aeronautical Information Database	Unique Identifiers	Aeronautical Information Conceptual Model	Electronic AIP	Terrain	Obstacles	Aerodrome Mapping	Aeronautical Data Exchange	Communication Networks	Aeronautical Information Briefing	Training	Agreements with Data Originators	Interoperability with meteorological Products	Electronic Aeronautical Charts	Digital NOTAM
	P-03	P-04	P-05	P-17	P-01	P-02	P-06	P-07	P-08	P-11	P-13	P-14	P-15	P-09	P-10	P-12	P-16	P-18	P-19	P-20	P-21
Guinea Bissau	C	C	C	B	O	O	O	O	O	C	B	B	B	O	O	O	O	O	O	O	N
Kenya	C	C	C	C	O	O	O	O	O	C	O	O	O	O	O	O	O	O	O	O	N
Lesotho	N	N	N	B	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Liberia	C	C	C	B	B	B	B	B	B	B	B	B	B	O	O	O	O	O	O	O	N
Madagascar	C	C	C	B	O	O	O	O	O	C	B	B	B	O	O	O	O	O	O	O	N
Malawi	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mali	C	C	C	B	O	O	O	O	O	C	B	B	B	O	O	O	O	O	O	O	N
Mauritanie	C	C	C	B	O	O	O	O	O	C	B	B	B	O	O	O	O	O	O	O	N
Mauritius	C	C	C	B	B	B	B	B	B	B	B	B	B	O	O	O	O	O	O	O	N
Mozambique	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Namibia	C	B	B	B	B	B	B	B	B	B	B	B	B	N	N	N	N	N	N	N	N
Niger	C	C	C	B	O	O	O	O	O	C	B	B	B	O	O	O	O	O	O	O	N
Nigeria	C	B	C	B	B	B	B	B	B	B	B	B	B	N	O	O	O	O	O	O	N
Rwanda	N	N	B	N	N	N	N	N	N	N	N	N	N	N	O	O	O	O	O	O	N
Sao Tome and Principe	B	N	B	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Senegal	C	C	C	B	O	O	O	O	O	C	B	B	B	O	O	O	O	O	O	O	N
Seychelles	C	B	C	B	B	B	B	B	B	B	B	B	B	N	N	N	N	N	N	N	O
Sierra Leone	C	C	C	B	B	B	B	B	B	B	B	B	B	O	O	O	O	O	O	O	N
Somalia	C	N	B	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
South Africa	C	C	C	C	C	C	C	C	C	C	O	O	O	C	O	C	O	O	O	O	N
Sudan	C	C	C	B	B	B	B	B	B	B	B	B	B	O	O	O	O	O	O	O	N

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5G**

**A summary of AIS-AIM related deficiencies anticipated after 14 November 2013
based on implementation of Roadmap steps**

	Phase 1 Consolidation (Amendment 36 Nov.2010)				Phase 2 Going Digital (Amendment 37 November 2013)									Phase 3 Information Management (Amendment 38 November 2016)							
	AIRAC Adherence Monitoring	Monitoring Annex 4 and Annex 15 differences	WGS-84 Implementation	Quality	Data Quality Monitoring	Data Integrity Monitoring	Integrated Aeronautical Information Database	Unique Identifiers	Aeronautical Information Conceptual Model	Electronic AIP	Terrain	Obstacles	Aerodrome Mapping	Aeronautical Data Exchange	Communication Networks	Aeronautical Information Briefing	Training	Agreements with Data Originators	Interoperability with meteorological Products	Electronic Aeronautical Charts	Digital NOTAM
	P-03	P-04	P-05	P-17	P-01	P-02	P-06	P-07	P-08	P-11	P-13	P-14	P-15	P-09	P-10	P-12	P-16	P-18	P-19	P-20	P-21
South Sudan	B	N	B	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Swaziland	N	N	B	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Togo	C	C	C	B	O	O	O	O	O	C	B	B	B	O	O	O	O	O	O	O	N
Tunisia	C	C	C	C	C	C	C	C	C	C	B	B	B	O	O	O	O	O	O	O	N
Uganda	C	C	C	B	B	B	B	B	B	B	B	B	B	O	O	O	O	O	O	O	N
United Republic of Tanzania	C	C	C	C	O	O	O	O	O	B	B	B	B	O	O	O	O	O	O	O	N
Zambia	C	B	C	B	B	B	B	B	B	B	B	B	B	N	O	O	O	O	O	O	N
Zimbabwe	C	B	B	B	B	B	B	B	B	B	B	B	B	N	O	O	O	O	O	O	N

C= Completed

O= On Schedule

B= Behind Schedule

N=No Plan to implement

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5H**

States AIS AIM Transition Table

State AIS AIM Transition Table

Phase 1

P~03 —AIRAC adherence monitoring

P~04 —Monitoring of States' differences to Annex 4 and Annex 15

P~05 —WGS~84 implementation

P~17 —Quality

Phase 2

P~01 —Data quality monitoring

P~02 —Data integrity monitoring

P~06 —Integrated aeronautical information database

P~07 —Unique identifiers

P~08 —Aeronautical information conceptual model

P~11—Electronic AIP

P~13 —Terrain

P~14 —Obstacles

P~15—Aerodrome mapping

Phase 3

P~09 —Aeronautical data exchange

P~10—Communication networks

P~12 —Aeronautical information briefing

P~16 —Training

P~18 —Agreements with data originators

P~19 —Interoperability with meteorological products

P~20 —Electronic aeronautical charts

P~21 —Digital NOTAM

**STATUS REPORT AGAINST THE 21 STEPS OF THE ICAO ROADMAP FOR THE
TRANSITION FROM AIS TO AIM**

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5H**

States AIS AIM Transition Table

Amended:

	Phase 1 Consolidation				Phase 2 Going Digital									Phase 3 Information Management							
	P~03	P~04	P~05	P~17	P~01	P~02	P~06	P~07	P~08	P~11	P~13	P~14	P~15	P~09	P~10	P~12	P~16	P~18	P~19	P~20	P~21
Angola																					
Benin	X	X	X	X	X	X	X	X	X	X	P	P	P	P	X	X	X	P	P	P	N
Burkina Faso	X	X	X	X	X	X	X	X	X	X	P	P	P	P	X	X	X	P	P	P	N
Botswana	X	X	X	X	N	P	X				N	P	P	P	N	X	N	N	N	P	N
Burundi																					
Cameroon	X	X	X	X	X	X		X	X	X	P	P	P	P	X	X	X	P	P	P	N
Cape Verde							X														
Central African Republic	X	X	X	X	X	X		X	X	X	P	P	P	P	X	X	X	P	P	P	N
Chad	X	X	X	X	X	X	X	X	X	X	P	P	P	P	X	X	X	P	P	P	N
Comoros	X	X	X	X	X	X	X	X	X	X	P	P	P	P	X	X	X	P	P	P	N
Congo	X	X	X	X	X	X	X	X	X	X	P	P	P	P	X	X	X	P	P	P	N
Cote d'Ivoire	X	X	X	X	X	X	X	X	X	X	P	P	P	P	X	X	X	P	P	P	N
Democratic Republic of Djibouti																					
Egypt	X	X	X	X	X	X	X	X	X	X											
Equatorial Guinea	X	X	X	X	X	X	X	X	X	X	P	P	P	P	X	X	X	P	P	P	N
Eritrea	X																				
Ethiopia	X		X	X																	
Gabon	X	X	X	X	X	X	X	X	X	X	P	P	P	P	X	X	X	P	P	P	N
Gambia	X	X	X	P		P	X	N		X	N	P	N		X	X		N	N	P	N
Ghana	X	X	X	P		P	P			P											
Guinea	X	X	X	P	P	P	X	X	X	P	P	P	N	P	X	N	P	P	P	P	N
Guinea Bissau	X	X	X	X	X	X	X	X	X	X	P	P	P	P	X	X	X	P	P	P	N
Kenya	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	P	P	N
Lesotho																					
Liberia	X	X	X	P	P	P	X	X	X	P	P	P	N	P	X	N	P	P	P	P	N

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.5H**

States AIS AIM Transition Table

Madagascar	X	X	X	X	X	X	X	X	X	X	P	P	P	P	X	X	X	P	P	P	N
Malawi																					
Mali	X	X	X	X	X	X	X	X		X	P	P	P	P	X	X	X	P	P	P	N
Mauritanie	X	X	X	X	X	X	X	X	X	X	P	P	P	P	X	X	X	P	P	P	N
Mauritius	X	X	X		P	X	N	N	N	X	X	X	N	P	X	P	P	P	N	P	N
Mozambique			X																		
Namibia	X																				
Niger	X		X	X	X	X	X	X	X	X	P	P	P	P	X	X	X	P	P	P	N
Nigeria	X	N	X	X		X		N	N	X	N	N	P	N	X	X	N	N	P	N	N
Rwanda																					
Sao Tome and Principe																					
Senegal	X	X	X	X	X	X	X	X	X	X	P	P	P	P	X	X	X	P	P	P	N
Seychelles	X	X	X	X	X	X	X	X	X	X	P	P	P	P	X	X	X	P	P	P	P
Sierra Leone	X	X	X	P	P	P	X	X	X	P	P	P	N	P	X	N	P	P	P	P	N
Somalia	X	N	X	X	N	N	N	N		N	N	N	N	N	N	N	N	N	N	N	N
South Africa	X	X	X	X	X	X	X	X	X	X	X	X	P	X	X	X	X	P	P	P	N
Sudan	X	X	X	X	N	N	X	N	N	N	P	P	N	P	X	X	X	X	P	P	N
South Sudan	X																				
Swaziland			X																		
Togo	X	X	X	X	X	X	X	X	X	X	P	P	P	P	X	X	X	P	P	P	N
Tunisia	X	X	X	X	X	X	X	N	N	X	P	P	P	P	X	X	X	X	P	P	N
Uganda	X	X	X	X	N	N	N	P	N	P	P	P	P	P	X	P	X	X	P		N
United Republic of Tanzania	X	X	X	X	P	X		X	X	X			P	P	X	P	X	X	P		N
Zambia			X																		
Zimbabwe	X	P	X	P	P	P	P	P	P	X	P	P	P	P	P	P	P	P	P	P	P

X= Implemented

N= Non Implemented

P= Plan Implementation

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6A**

Status of Implementation of MET Related APIRG Conclusions and Decisions

Cons/ Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Deliverables/ Intended Outcome	Status of implementation.	Characteristics: Implemented/Obsolete/Matur e/Covered in SARPS or RANP/Redundant
4) APIRG Con. 14/38	Seminars on cost recovery of aeronautical meteorological services	that WMO in co-ordination with ICAO organize seminars on cost recovery of aeronautical meteorological services	Improved MET cost recovery mechanism	Continuous: State letters forwarded to States	- Continuous: 4 workshops organized by WMO in coordination with ICAO - To be combined with 14/37
6) MET/SG Con. 6/10 APIRG Con. 14/40	Quality management	That States in the AFI region give priority to implementation of a quality management system (ISO 9000 series of standards) in order to improve meteorological service for international air navigation.	QMS for MET established and implemented	QMS for MET has been established in 13 AFI States and 8 certified among the 13	- Continuous: - To be combined with APIRG/16 Conclusion 16/59
12) APIRG Con. 16/49	Training seminar on the use of icing, turbulence and convective clouds forecasts in grib2 code form	That the WAFC London provider State be invited, in coordination with ICAO and WMO to provide training seminars on the use of icing, turbulence and convective clouds forecasts in GRIB code form to states	AFI States forecasters trained in using icing, turbulence and convective clouds forecasts in GRIB code form	- Differed for 2013 due to delay in developing icing, turbulence and convective clouds forecasts in GRIB code form, and - Became improbable due to placement of training course on ICAO website in December 2013	- To be replaced by a later of APIRG Conclusion on web based training on icing, turbulence and convective clouds forecasts in GRIB code form - Not to be removed

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6A**

Status of Implementation of MET Related APIRG Conclusions and Decisions

Cons/ Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Deliverables/ Intended Outcome	Status of implementation.	Characteristics: Implemented/Obsolete/Matur e/Covered in SARPS or RANP/Redundant
15) APIRG Con. 16/59	Support to States implement quality management systems (QMS)	that: WMO in coordination with ICAO continue to assist states in implementing QMS in the form of: a) seminars on QMS for the chief executives of meteorological authorities (CEOs) as a priority and request them (CEOs) to report on status of implementation on QMS in their services on a regular basis; b) support for more detailed training for personnel who would act as a core group in the region (training of trainers); c) attachments of staff from the region to states that have already adopted QMS through VCP or otherwise; and d) financial resources for engaging consultancy services during the initial stages of implementation.	QMS for MET implemented in all AFI States	QMS for MET has been established in 13 AFI States and 8 certified among the 13	• Continuous: • To be combined with APIRG/14 Conclusion 14/40 •
27) APIRG/17 Concl. 17/82	Measures to improve the issuance and dissemination of SIGMET	That: a) The ICAO Regional Offices of Dakar and Nairobi evaluate the provision of SIGMET information in all AFI MWOs through the RODB and State missions; b) ICAO Regional Offices encourage States to establish arrangements between	• Issuance and dissemination of SIGMET improved • Improved availability of SIGMET at aerodromes	a) Evaluation of SIGMET provision through AFI SIGMET Tests b) One MWO (Robertsfield) is yet to fully comply with	a) Implemented every year since 2008 b) Not yet implemented c) Completed d) Not yet implemented

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6A**

Status of Implementation of MET Related APIRG Conclusions and Decisions

Cons/ Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Deliverables/ Intended Outcome	Status of implementation.	Characteristics: Implemented/Obsolete/Matur e/Covered in SARPS or RANP/Redundant
		adjacent MWOs for the provision of SIGMET information in MWOs where telecommunications or organizational issues are still inadequate; c) WMO in coordination with ICAO, be invited to provide additional training in the issuance of VA and TC SIGMETs to some MWOs not able to issue the required SIGMETs; d) The ICAO Regional Offices of Dakar and Nairobi update the AFI SIGMET guide for additional details of VA and TC test procedures; and e) The MWOs provider States endeavor to address the identified deficiencies in the issuance and dissemination of SIGMET.	and for en-route users	the requirements of the SIGMET preparation and dissemination c) Additional SIGMET training conducted in 2012 d) AFI SIGMET Guide to be updated and placed at AFI website e) State letter sent to concerned MWO Provider States to endeavor to address the identified deficiencies	e) Not yet implemented
31) APIRG/17 Concl. 17/102	Training of meteorological offices personnel for the implementation of quality management system (QMS)	That, the following programmes be accorded high priority in ACIP; a) Selected aeronautical MET personnel be trained as trainers in Quality Management System (QMS); and b) Meteorological Watch Offices (MWOs) personnel be provided with additional	Meteorological offices personnel trained for the implementation of quality management system (QMS) and issuance of SIGMETs under ACIP.	Submitted to ACIP. Not implemented for lack of funds,	Not implemented

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6A**

Status of Implementation of MET Related APIRG Conclusions and Decisions

Cons/ Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Deliverables/ Intended Outcome	Status of implementation.	Characteristics: Implemented/Obsolete/Matur e/Covered in SARPS or RANP/Redundant
	and issuance of SIGMETs under ACIP.	training in the preparation and issuance of SIGMETs. <i>Note: Report on Tactical Action Group (TAG) Activities</i>			
32) Conclusion 18/39	Receiving WAFS Products and Related OPMET Information Through SADIS	That, the following five States in the AFI region: Burundi, Eritrea, Liberia, Sao Tome and Principe and Sierra Leone which have not yet implemented SADIS, endeavor to address this deficiency in accordance with Conclusion 10/31 of the APIRG/10 meeting as a matter of urgency.	Deficiency in accordance with Conclusion 10/31 of the APIRG/10 meeting removed by Burundi, Eritrea, Liberia, Sao Tome and Principe and Sierra Leone	State Letter forwarded to the concerned States but no feedback received	• Not implemented •
34) Conclusion 18/41 C	Implementation of AMBEX Handbook Procedures	That, Dakar and Pretoria RODB Provider States: a) implement an automatic OPMET data monitoring scheme using procedures in Chapter 12 and Appendix F of the AMBEX Handbook on quarterly basis (March 31, June 30, August, 31 and December 31 of each year); b) perform regular 24 hour simultaneous monitoring starting at 0000 UTC on the first Wednesday of every month; and c) distribute the monitoring statistics to the Chairman of the OPMET Management	a) Related AMBEX procedures implemented; b) Improved OPMET monitoring c) Improved availability of OPMET at AFI aerodromes	Not entirely implemented by RODBs, item b) and c) still remain	Implementation of item b) and c) awaited

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6A**

Status of Implementation of MET Related APIRG Conclusions and Decisions

Cons/ Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Deliverables/ Intended Outcome	Status of implementation.	Characteristics: Implemented/Obsolete/Matur e/Covered in SARPS or RANP/Redundant
		and the Secretariat with effect from July 2012.			
35) Decision 18/42 C	Development of Back Up Procedures for The AFI RODBs	That, a Core Team of experts consisting of Members from Kenya, Madagascar, Senegal, South Africa and ASECNA be established to develop back up procedures for the AFI RODBs.	a) Related AMBEX procedures implemented; b) Improved availability of OPMET at AFI aerodromes	A Core team of Experts still working on the issue. Procedures developed but not yet implemented	Developed but not yet implemented
37) Decision 18/44 C	Amendment to the AMBEX Handbook	That, a) <u>Appendices A and B</u> to the AMBEX Handbook be updated by the MET/SG Secretariat to reflect AFTN addresses for the IROGs Bangkok, Jeddah and Rio de Janeiro; and b) the amended AMBEX Handbook given in <u>Appendix 3.6A</u> to this report, be: ✓ endorsed as the AMBEX Handbook Seventh Edition, Amendment 2; and ✓ published by the MET/SG Secretariat by July 2012.	a) Improved OPMET monitoring b) Improved availability of OPMET at AFI aerodromes	New Amendments planned to be completed in October 2013;	AMBEX Handbook Seventh Edition, Amendment 2 placed on the website New amendments introduced by new developments in OPMET exchange

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6A**

Status of Implementation of MET Related APIRG Conclusions and Decisions

Cons/ Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Deliverables/ Intended Outcome	Status of implementation.	Characteristics: Implemented/Obsolete/Matur e/Covered in SARPS or RANP/Redundant
38) Conclusion 18/45 C	SIGMET Monitoring and OPMET Routing Tables	That, a) the two AFI RODB Provider States be invited to monitor the reception of SIGMET information during the regular (twice yearly) EUR Region SIGMET tests and report; b) the two AFI IROGs and ROC Toulouse exchange their routing tables and verify the coherency of these tables; and c) the AFI IROGs be invited to review their current routing tables, the status of OPMET reception, and update the routing tables as necessary.	a) Improved OPMET monitoring including SIGMET b) Improved availability of OPMET at AFI aerodromes	- Only item a) is implemented - To be completed in 2014;	Items b) and c) to be implemented by December 2014
40) Decision 18/47 C	Amendment to the AFI Regional SIGMET Guide	That, the amendment to the SIGMET Guide given in <u>Appendix 3.6C</u> to this report, is approved as the AFI Regional SIGMET Guide Ninth Edition, Amendment 2.	SIGMET Guide amended to include appropriate changes	To be finalized by October 2013 •	To be finalized by October 2013 •
43) Conclusion 18/50 C	Improvement of OPMET Availability from AFI States Aerodromes	That, efforts be made by the concerned States to improve the availability at Dakar RODB, of the required OPMET information from Accra, Conakry, Freetown, Kano, Kinshasa, Lagos and Luanda.	- Improved availability of OPMET from the concerned aerodromes •	Improved OPMET availability from Accra, Kano, Kinshasa and Lagos. But Conakry, Freetown, Luanda and now Monrovia	- To be reformulated for Conakry, Freetown, Luanda and Monrovia •

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6A**

Status of Implementation of MET Related APIRG Conclusions and Decisions

Cons/ Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Deliverables/ Intended Outcome	Status of implementation.	Characteristics: Implemented/Obsolete/Matur e/Covered in SARPS or RANP/Redundant
				still a challenge	
45) Conclusion 18/52 C	Issuance and Dissemination of SIGMET	That: a) ICAO Regional offices should make concerted efforts to assist States address shortcomings and difficulties identified; b) the MWO Provider States listed in Appendix 3.6F take the required measures to remove operational shortcomings in SIGMET provision; and c) Roberts field and Kinshasa FIRs MWOs consider bilateral arrangements with adjacent MWOs (i.e. Dakar and Brazzaville MWOs respectively) for the provision of SIGMET information on behalf of the States concerned.	• Issuance and dissemination of SIGMET improved • Improved availability of SIGMET at aerodromes and for en-route users	• Kinshasa MWO has started issuing SIGMET from 13 September 2012 but Robertsfield MWO is not yet established	• To be combined with Conclusions 17/81, 17/82, 18/45, 18/48 and 18/57
46) Conclusion 18/53	Awareness Seminars on the AFI Air Traffic Management Volcanic Ash Contingency Plan	That ICAO Dakar and Nairobi Regional Offices through the ATM/MET Task Force, conduct regional awareness seminars on the AFI ATM Volcanic Ash Contingency Plan in view of: a) Making all aviation stockholders in the AFI region aware of ATM VACP; b) Supporting its implementation; and	Regional awareness seminars on the AFI ATM Volcanic Ash Contingency Plan, conducted	Seminars postponed for 1 st quarter 2014	• Postponed for 2014

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6A**

Status of Implementation of MET Related APIRG Conclusions and Decisions

Cons/ Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Deliverables/ Intended Outcome	Status of implementation.	Characteristics: Implemented/Obsolete/Matur e/Covered in SARPS or RANP/Redundant
		c) Proposing further improvements to the plan. <i>Note: It is suggested that seminars be convened in 2013 and conducted in both English and French.</i>			
47) Conclusion 18/54	Alternative Funding Sources for the Establishment and Implementation of QMS for the Provision of Aeronautical Meteorological Service and Aeronautical Information Management (AIM)	That ICAO and WMO investigate as a matter of urgency other possible sources of funding besides cost recovery to assist States willing to enter into a twinning or bilateral arrangements in order to fast-track the implementation of QMS for the provision of aeronautical meteorological (MET) service and aeronautical information management (AIM) .	QMS for MET and AIM implemented	Not implemented, alternative funding source not yet identified	May be combined with Conclusions 16/59, 17/102 and SP RAN 6/16
48) Conclusion 18/55	States Participation in the Cooperative Programme for Operational Meteorology	That States requiring aeronautical meteorology training material from SSFA in collaboration with COMET to contact the ICAO Regional Offices as appropriate.	States' MET forecasters trained using SSFA COMET tools	State Letter distributed but no feedback received	Continuing providing information until December 2013

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6A**

Status of Implementation of MET Related APIRG Conclusions and Decisions

Cons/ Decs No. Strategic Objectives*	Title of Cons/Decs	Text of Cons/Decs	Deliverables/ Intended Outcome	Status of implementation.	Characteristics: Implemented/Obsolete/Matur e/Covered in SARPS or RANP/Redundant
	(COMET) Through Safe Skies For Africa (SSFA) Programme				
SPECIAL AFI REGION AIR NAVIGATION MEETING IN 2008 (SP AFI RAN/08)					
51) SP RAN(2008) Rec. 6/16	Technical and financial support for the implementation of quality management systems in the AFI region	that ICAO identify potential sources of technical and financial support for States for the implementation of quality management systems(QMS) in meteorology	Technical and financial support obtained for States for the implementation of QMS for MET	Not entirely implemented, some trainings provided under local budget	• Further actions recommended by Concl. 17/102 of APIRG/17 •

INTERNATIONAL CIVIL AVIATION ORGANIZATION



AFRICA AND INDIAN OCEAN (AFI) REGIONAL SIGMET GUIDE

NINTHEDITION — SEPTEMBER 2007

Amendment 3- June 2012

Prepared by the ICAO ESAF & WACAF Offices
And published under the authority of the Secretary General

The designations employed and the presentation of the 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.

RECORD OF AMENDMENTS AND CORRIGENDA

[illegible][illegible]

TABLE OF CONTENTS

1.	INTRODUCTION	5
2.	RESPONSIBILITIES AND COORDINATION.....	6
2.1	General.....	6
2.2	Meteorological Watch Office - responsibilities and procedures related to SIGMET	6
2.3	Responsibilities of ATS units	8
2.4	Responsibilities of pilots.....	9
2.5	Coordination between MWOs and the TCACs and VAACs.....	9
3.	PROCEDURES FOR PREPARATION OF SIGMET INFORMATION.....	10
3.1	General.....	10
3.2	Types of SIGMET	10
3.3	Structure of the SIGMET message	10
3.4	Format of SIGMET.....	11
3.4.1	<i>WMO Header</i>	<i>11</i>
3.4.2	<i>First line of SIGMET</i>	<i>12</i>
3.4.3	<i>Format of the meteorological part of SIGMET messages for weather phenomena other than TC and VA</i>	<i>13</i>
3.4.4	<i>Structure of the meteorological part of VA SIGMET</i>	<i>16</i>
3.4.5	<i>Structure of the meteorological part of TC SIGMET</i>	<i>18</i>
3.4.6	<i>Cancellation of SIGMET</i>	<i>21</i>
3.5	Dissemination	22
APPENDIX A:	Meteorological Watch Offices.....	22
APPENDIX B:	Tropical Cyclone Advisory Centres	26
APPENDIX C:	Volcanic Ash Advisory Centres	29
APPENDIX D:	List of the Abbreviations and Code Words Used in SIGMET	30
APPENDIX E:	Meteorological Phenomena to be Reported by SIGMET	32
APPENDIX F:	Standard for Reporting Geographical Coordinates in SIGMET.....	33
APPENDIX G:	Examples.....	34
APPENDIX H:	WMO Headings for SIGMET Bulletins Used by AFI Meteorological Watch Offices (MWO)	37
APPENDIX H1:	OPERATIONAL UNITS.....	41
APPENDIX I:	WMO Headings for Tropical Cyclone and Volcanic Ash Advisory Bulletins (FK And FV) Used by AFI TCAC And VAAC	45
APPENDIX J	AFI SIGMET Test Procedures.....	43

1. INTRODUCTION

1.1 The main purpose of this document is to provide guidance for standardization and harmonization of the procedures and formats related to the aeronautical meteorological warnings for hazardous en-route meteorological phenomena, known as SIGMET information. The guidance is complementary to the Annex 3 standards and recommended practices regarding SIGMET and to the SIGMET related provisions of the AFI Basic ANP and FASID, ICAO **Doc 7474**.

1.2 ICAO provisions concerning the issuance and dissemination of SIGMET information are contained in:

- **Annex 3 - Meteorological Service for International Air Navigation**, Part I, Chapter 3, 3.4 – 3.7, Chapter 7, 7.1, and Part II, Appendix 6;
- **AFI Basic ANP**, Part I and VI, and **AFIFASID** Table MET 1B, MET 3A and MET 3B;
- **Annex 11 - Air Traffic Services**, Chapter 4, 4.2.1 and Chapter 7, 7.1;
- **PANS – Air Traffic Management, Doc 4444**, Chapter 9, 9.1.3.2;
- Regional Supplementary Procedures, **Doc 7030**, AFI para, 6.13.2.

Additional guidance on the SIGMET procedures is contained in the *Manual of Aeronautical Meteorological Practice (Doc 8896)* and the *Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services (Doc 9377)*.

1.3 The SIGMET Guide is intended mainly to assist the MWOs in the ICAO African and Indian Ocean (AFI) Region in preparing and disseminating SIGMET information. It provides detailed information on the format of SIGMET messages as specified in Annex 3. The explanations of the format are accompanied by examples based on region-specific meteorological phenomena. The guide also provides information regarding the necessary coordination between the MWOs, the ATS units and the pilots, and their respective responsibilities.

1.4 This document was prepared by the ICAO WACAF and ESAF Regional Offices. It is reviewed and updated regularly in order to be kept in line with the relevant ICAO SARPs and regional procedures. This current version incorporates the changes to SIGMET-related provisions included in Amendment 76 to Annex 3 which is applicable from November 2013.

2. RESPONSIBILITIES AND COORDINATION

2.1 General

2.1.1 SIGMET is warning information; hence, it is of highest priority among other types of meteorological information provided to the aviation users. The primary purpose of SIGMET is for in-flight service, which requires timely transmission of the SIGMET messages to pilots by the ATS units and/or through VOLMET and D-VOLMET.

2.1.2 Airlines are the main users of the SIGMET information. They contribute to the effectiveness of the SIGMET service through issuance of special air-reports reported by pilots to the ATS units. Special air-reports are among the most valuable sources of information for the Meteorological Watch Offices (MWO) in the preparation of SIGMET. The ATS units receiving special air-reports should forward them to the associated MWOs without delay.

2.1.3 In view of the foregoing, it should be well understood that the effectiveness of the SIGMET service depends strongly on the level of collaboration between the MWOs, ATS units and pilots. That is why, close coordination between these parties, as well as mutual understanding of their needs and responsibilities are essential for the successful implementation of the SIGMET service.

2.1.4 For the special cases of SIGMET for volcanic ash and tropical cyclones, the MWOs are provided with advisories from the volcanic ash advisory centres (VAAC), and tropical cyclone advisory centres (TCAC) designated in the Regional ANP.

2.1.5 Another use of SIGMET is for the flight planning. This requires global dissemination of SIGMET through the international OPMET data banks and the satellite broadcasts: WIFS (WAFS Internet Files Service) and SADIS. SIGMET should also be distributed to the World Area Forecast Centres (WAFS) London and Washington for use in the preparation of the significant weather (SIGWX) forecasts.

2.1.6 In the next paragraphs, the main responsibilities and coordination links, related to the provision of SIGMET information, are described.

2.2 Meteorological Watch Office - responsibilities and procedures related to SIGMET

2.2.1 SIGMET information should be issued by the meteorological watch offices (MWO) in order to provide timely warning for occurrence or expected occurrence of specified en-route weather phenomena, affecting the safety of the flight operations in the MWO's area of responsibility (AOR). SIGMET provides information concerning the location, extent, intensity and expected evolution of the specified phenomena.

2.2.2 Information about the provision of SIGMET service, including details on the designated MWO(s), should be included in the State's Aeronautical Information Publication (AIP) as specified in Annex 15, *Aeronautical Information Service*, Appendix 1, GEN 3.5.8.

2.2.3 All designated MWOs in the AFI Region are listed in Appendix A to this Guide extracted from the AFI FASID Table MET 1B. The MWOs situated outside of the AFI Region are in italic.

2.2.4 If, for some reason, a State is not able to meet its obligations for establishing MWO(s) and for provision of SIGMET for the FIR(s) or control area(s) the State is providing air traffic services,

arrangements should be made between the meteorological authorities of the States concerned, that another MWO takes over these responsibilities for certain period of time. Such delegation of responsibilities should be notified by a NOTAM and a letter to the concerned ICAO Regional Office.

2.2.5 Since the MWO is normally not a separate administrative unit, but part of the functions of an aerodrome meteorological office or other meteorological office, the meteorological authority concerned should ensure that the MWO obligations and responsibilities are clearly defined and assigned to the unit designated to serve as MWO. Corresponding operational procedures should be established and the meteorological staff should be trained accordingly.

2.2.6 In preparing SIGMET information MWOs should follow strictly the format determined in Annex 3 (detailed format description is provided in Appendix 6, Table A6-1 of Annex 3). SIGMET should be issued only for those weather phenomena listed in Annex 3 and only when specified criteria for their intensity and spatial extent are met.

Note: MWOs should not issue SIGMET for weather phenomena of lower intensity or such of transient nature or smaller scale, which does not affect significantly the flight safety and their transmission to users, may lead to unnecessary precautionary measures.

2.2.7 The MWOs should be adequately equipped in order to be able to identify, analyze and forecast (to the extent required) those phenomena for which SIGMET is required. The MWO should make use of all available sources of information, such as special air-reports, information from meteorological satellites and weather radars.

2.2.8 On receipt of a special air-report from the associated ACC or FIC, the MWO should:

- a) issue SIGMET information based on the special-air report; or
- b) send the special air-report for on-ward transmission in case that the issuance of SIGMET information is not warranted (e.g., the phenomenon concerned is of transient nature).

2.2.9 Appropriate telecommunication means should be available at the MWO in order to ensure timely dissemination of SIGMET according to a dissemination scheme, which should include transmission to:

- Local ATS users;
- Aeronautical MET offices within its AOR, where SIGMET is required for briefing and/or flight documentation;
- Other MWOs concerned (it should be ensured that SIGMET is sent to all MWOs whose AORs are, at least partly, within the 1800 km (1000 NM) range from the observed phenomenon);
- Centres designated for transmission of VOLMET or D-VOLMET where SIGMET is required for those transmissions;
- Responsible AMBEX centre and Regional OPMET Data Bank (it should be arranged that through the AMBEX scheme SIGMETs are sent to the designated

OPMET data banks in the other ICAO regions, to the WAFCs and to the SADIS and WIFS providers);

- Responsible TCAC or VAAC according to FASID Tables MET 3A and MET 3B.

2.2.10 In issuing SIGMET for tropical cyclones or volcanic ash, the MWOs should include as appropriate the advisory information received from the responsible TCAC or VAAC. In addition to the information received from the TCAC and VAAC the MWOs may use the available complementary information from other reliable sources. In such a case the responsibility for this additional information would lie completely on the MWO concerned.

2.3 Responsibilities of ATS units

2.3.1 Close coordination should be established between the MWO and the corresponding ATS unit (ACC or FIC) and arrangements should be in place to ensure:

- receipt without delay and display at the relevant ATS units of SIGMET issued by the associated MWO;
- receipt and display at the ATS unit of SIGMETs issued by MWOs responsible for the adjacent FIRs/ACCs if these SIGMETs are required according to para 2.3.4 below, (within 1800 km (1000 NM) range from the observed phenomenon); and
- transmission without delay by the ATS unit of special air-reports received through voice communication to the associated MWO.

2.3.2 SIGMET information should be transmitted to aircraft with the least possible delay on the initiative of the responsible ATS unit, by the preferred method of direct transmission followed by acknowledgement or by a general call when the number of aircraft would render the preferred method impracticable.

2.3.3 SIGMET information transmitted to aircraft-in-flight should cover a portion of the route up to two hours flying time ahead of the aircraft. SIGMET should be transmitted only during the time corresponding to their period of validity (para. 3.4.2.3 refers).

2.3.4 Air traffic controllers should ascertain whether any of the currently valid SIGMETs may affect any of the aircraft they are controlling, either within or outside the FIR/CTA boundary, up to a distance of 1000 NM (1800 KM), which corresponds to about two hours flying time ahead of the current position of the aircraft. If this is the case, the controllers should at their own initiative transmit the SIGMET promptly to the aircraft-in-flight likely to be affected. If necessary, the controller should pass to the aircraft available SIGMETs issued for the adjacent FIR/CTA, which the aircraft will be entering, if relevant to the expected flight route.

2.3.5 The ATS units concerned should also transmit to aircraft-in-flight the special air reports received, for which SIGMET has not been issued. Once a SIGMET for the weather phenomenon reported in the special air report is made available this obligation of the ATS unit expires.

2.4 Responsibilities of pilots

2.4.1 Timely issuance of SIGMET information is largely dependent on the prompt receipt by MWOs of special air-reports. That is why, it is essential that pilots prepare and transmit such reports to the ATS units whenever any of the specified en-route conditions are encountered or observed.

2.4.2 It should be emphasized that, even when automatic dependent surveillance (ADS) is being used for routine air-reports, pilots should continue to make special air-reports.

2.5 Coordination between MWOs and the TCACs and VAACs

2.5.1 Amongst the phenomena for which SIGMET information is required, the volcanic ash clouds and tropical cyclones are of particular importance for the planning of long-haul flights.

2.5.2 Since the identification, analysis and forecasting of volcanic ash and tropical cyclones requires considerable technical and human resource, normally not available at each MWO, the Volcanic Ash Advisory Centres (VAAC) and Tropical Cyclone Advisory Centres (TCAC) have been designated to provide VA and TC advisories to the users and assist the MWOs in the preparation of the forecast part of the SIGMETs for those phenomena. Close coordination should be established between the MWO and its responsible TCAC and/or VAAC.

2.5.3 Information regarding the VAACs and TCACs serving the AFI Region with their corresponding areas of responsibility and lists of MWOs and ACCs to which advisories are to be sent is provided in FASID Tables MET 3A and MET 3B of the AFIFASID. These tables are reproduced in Appendix B and Appendix C to this Guide.

2.5.4 TC and VA advisories are required for global exchange through the satellite distribution systems, SADIS and WIFS. They are used by the operators during the pre-flight planning. Nevertheless, it should be emphasized that SIGMET information is still of higher operational status and is required especially for in-flight re-planning. SIGMETs should be transmitted to aircraft-in-flight through voice communication or VOLMET or D-VOLMET thus providing vital information for making in-flight decisions regarding large-scale route deviations due to volcanic ash clouds or tropical cyclones.

3. PROCEDURES FOR PREPARATION OF SIGMET INFORMATION

3.1 General

3.1.1 SIGMET information is prepared in abbreviated plain language using approved ICAO abbreviations, a limited number of non-abbreviated words, geographical names and numerical values of self-explanatory nature. All abbreviations and words to be used in SIGMET are given in Appendix D.

3.1.2 The increasing use of automated systems for handling the MET information by the aviation users makes it essential that all types of OPMET information, including SIGMET, are prepared and transmitted in the prescribed standardized formats. Therefore, the structure and format of the SIGMET message, as specified in Annex 3, Part II, Appendix 6, which provides detailed information regarding the content and order of elements in the SIGMET message, should be followed strictly by the MWOs.

3.1.3 SIGMET is intended for transmission to aircraft in flight either by ATC, VOLMET or D-VOLMET. Therefore, SIGMET messages should be kept concise and clear without additional descriptive text other than that prescribed in Annex 3.

3.1.4 After the issuance of a SIGMET the MWO should maintain watch over the evolution of the phenomenon for which the SIGMET has been issued and issue updated SIGMET when necessary. The TC and VA SIGMET should be updated at least every 6 hours.

3.1.5 SIGMET should be promptly cancelled when the phenomenon is no longer occurring or no longer expected to occur in the MWO's area of responsibility. The SIGMET is understood to cancel itself automatically at the end of its validity period. If the phenomenon persists a new SIGMET message for a further period of validity should be issued.

3.2 Types of SIGMET

3.2.1 Although Annex 3 provides one general SIGMET format, which encompasses all weather phenomena, it is convenient when describing the structure and format of the messages to distinguish between three types of SIGMET, as follows:

- SIGMET for en-route weather phenomena other than VA and TC (this includes: TS, CB, TURB, ICE, MTW, DS and SS); this SIGMET will be referred as WS SIGMET;
- SIGMET for volcanic ash, which will hereafter be denoted as VA SIGMET or WV SIGMET; and
- SIGMET for tropical cyclones, which will hereafter be denoted as TC SIGMET or WC SIGMET.

3.2.2 The three types of SIGMET can be identified by the data type designator included in the WMO abbreviated heading of the SIGMET message, as explained below.

3.3 Structure of the SIGMET message

3.3.1 A SIGMET message consists of:

- **WMO heading** – all SIGMETs are preceded by an appropriate WMO heading;
- **First line**, containing location indicators of the respective ATS unit and MWO, sequential number and period of validity;
- **SIGMET main body**, containing information concerning the observed or forecast weather phenomenon for which the SIGMET is issued together with its expected evolution within the period of validity;

3.3.2 The first two parts of the SIGMET message are common for all types of SIGMET. The format and content of the third part is different; that is why, in the following paragraphs the meteorological part of the SIGMET message is described separately for the three types of SIGMET.

3.4 Format of SIGMET

Note: In the following text, square brackets - [] - are used to indicate an optional or conditional element, and angled brackets - <> - for symbolic representation of a variable element, which in a real SIGMET accepts concrete numerical value.

3.4.1 WMO Header

T₁T₂A₁A₂ii CCCC YYGGgg [CCx]

3.4.1.1 The group **T₁T₂A₁A₂ii** is the bulletin identification for the SIGMET message. It is constructed in the following way:

T₁T₂	Data type designator	WS – for SIGMET for meteorological phenomena other than volcanic ash cloud or tropical cyclone WC – for SIGMET for tropical cyclone WV – for SIGMET for volcanic ash
A₁A₂	Country or territory designators	Assigned according to Table C1, Part II of Manual on the Global Telecommunication System, Vol I – Global Aspects (WMO - No. 386)
ii	Bulletin number	Assigned on national level according to p 2.3.2.2, Part II of Manual on the Global Telecommunication System, Vol I – Global Aspects (WMO - No. 386)

3.4.1.2 **CCCC** is the ICAO location indicator of the communication centre disseminating the message (could be the same as the MWO location indicator).

3.4.1.3 **YYGGgg** is the date/time group; where YY is the date and GGgg is the time of transmission of the SIGMET in hours and minutes UTC (normally this time is assigned by the disseminating (AFTN) centre).

3.4.1.4 The group **CCx** should be used only when issuing a correction to a SIGMET which had already been transmitted. The third letter “x” takes the value A for the first correction, B for the second correction, etc.

Examples:

WSSG31 GOOY121200
WVCV31 GVAC 010230
WCGG31FCBB 100600 CCA

3.4.2 *First line of SIGMET*

CCCC SIGMET [nn]n VALID YYGGgg/YYGGgg CCCC-

3.4.2.1 The meaning of the groups in the first line of the SIGMET is as follows:

CCCC	ICAO location indicator of the ATS unit serving the FIR or CTA to which the SIGMET refers
SIGMET	Message identifier
[nn]n	Daily sequence number (see p.3.4.2.2)
VALID	Period of validity indicator
YYGGgg/YYGGgg	Validity period of the SIGMET given by date/time group of the beginning and date/time group of the end of the period (see p.3.4.2.3)
CCCC	ICAO location indicator of the issuing MWO
-	hyphen to separate the preamble from the text

3.4.2.2 The numbering of SIGMETs starts every day at 0001 UTC. The sequence number should consist of up to three symbols and may be a combination of letters and numbers, such as:

- 1, 2, ...
- 01, 02, ...
- A01, A02, ...

Examples:

**GOOO SIGMET 2 VALID 121100/121700 GOOY-
DGACSIGMET A04 VALID 202230/210430 DGAA-**

Note 1: No other combinations should be used, like “CHARLIE 05” or “NR7”.

Note 2: Correct numbering of SIGMET is very important since the number is used for reference in communication between ATC and pilots and in VOLMET and D-VOLMET.

3.4.2.3 The following considerations should be taken into account when determining the validity period:

- The period of validity of a WS SIGMET should not be more than 4 hours;
- The period of validity of a WC or WV SIGMET should not be more than 6 hours;
- In case of a SIGMET for an observed phenomenon, the filing time (date/time group in the WMO header) should be the same or very close to the time in the date/time group indicating the start of the SIGMET validity period;
- When the SIGMET is issued for a forecast phenomenon:
 - o the beginning of validity period should be the time of the expected commencement (occurrence) of the phenomenon in the MWO area of responsibility;
 - o the time of issuance of the SIGMET should not be more than 4 hours before the start of validity period (i.e., expected time of occurrence of the phenomenon); for TC and VA SIGMET the lead time should be up to 12 hours.

3.4.2.4 The period of validity is that period during which the SIGMET information is valid for transmission to aircraft in flight.

Examples:

1. SIGMET for an observed phenomenon:

**WSNI31 DNKN 241120
DNKK SIGMET 3 VALID 241120/241500 DNKN-**

2. SIGMET for a forecast phenomenon (expected time of occurrence 1530)

**WSCG31 FCBB 311130
FCBBSIGMET 1 VALID 1500/1900 FCCC-**

3.4.3 *Format of the meteorological part of SIGMET messages for weather phenomena other than TC and VA*

3.4.3.1 The meteorological part of a SIGMET for weather phenomena consists of seven elements as shown in the table below.

Start of the second line of the message

1	2	3	4	5
Name of the FIR/UIR or CTA	Description of the phenomenon	Observed or forecast	Location	Level
<CCCC><name> FIR [CTA]	<Phenomenon>	OBS [AT <GGgg>Z] FCST OBS [AT <GGgg>Z] AND FCST	Geographical location of the phenomenon given by coordinates, or geographical objects, or location indicators	FL<nnn> or FL<nnn/nnn> or [TOP [ABV or BLW]] FL<nnn>

6	7
Movement or expected movement	Changes in intensity
MOV <direction, speed>KMH[KT] or STNR	INTSF or WKN or NC

3.4.3.1.1 Name of the FIR/UIR or CTA (Column 1)

**CCCC <name> FIR[/UIR]
or
CCCC <name> CTA**

3.4.3.1.1.1 The ICAO location indicator and the name of the FIR/CTA is given followed by the appropriate abbreviation: FIR, FIR/UIR or CTA.

Examples:

DRRRNIAMEYFIR

3.4.3.1.2 Phenomenon(Column 2)

3.4.3.1.2.1 The phenomenon description consists of a qualifier and a phenomenon abbreviation. SIGMET should be issued only for the following phenomena:

at cruising levels (irrespective of altitude):

- thunderstorms (TS) – if they are OBSC, EMBD, FRQ or SQL with or without hail;
- turbulence (TURB) – only SEV
- icing (ICE) – only SEV with or without FZRA
- mountain waves (MTW) – only SEV
- dust storm (DS) – only HVY
- sand storm (SS) – only HVY
- radioactive cloud – RDOACT CLD

The appropriate abbreviations and combinations, and their meaning are given in Appendix E.

3.4.3.1.3 Indication whether the phenomenon is observed or forecast(Column 3)

**OBS [AT <GGgg>Z]
or FCST**

3.4.3.1.3.1 The indication whether the phenomenon is observed or forecast is given by using the abbreviations OBS or FCST. OBS is followed by an optional time group in the form AT GGggZ, where GGgg is the time of the observation in hours and minutes UTC. If the exact time of the observation is not known the time is not included. When FCST is used, it is assumed that the time of occurrence or commencement of the phenomenon coincides with the beginning of the period of validity included in the first line of the SIGMET.

Examples:

**OBS AT 0140Z
FCST**

3.4.3.1.4 Location of the phenomenon(Column 4)

3.4.3.1.4.1 The location of the phenomenon is given with reference to geographical coordinates (latitude and longitude) or with reference to geographical features well known internationally. The MWOs should try to be as specific as possible in reporting the location of the phenomenon and, at the same time, to avoid overwhelming geographical information, which may be difficult to process or perceive.

3.4.3.1.4.2 The following are the most common ways to describe the location of the phenomenon:

- Indication of a part of the FIR with reference to latitude:
N OF or S OF <Nnn[nn]> or <Snn[nn]>
- Indication of a part of the FIR with reference to longitude:
E OF or W OF <Ennn[nn]> or <Wnnn[nn]>
- Indication of a part of the FIR with reference to latitude and longitude:
any combination of the above two cases;
- with reference to a location with ICAO location abbreviation CCCC (normally, this should be the case of SIGMET based on special air-report in which the reported phenomenon is given with reference to an airport or another object with ICAO location indicator CCCC);
- with reference to geographical features well known internationally.

3.4.3.1.4.3 More details on reporting the location of the phenomenon are given in Appendix 6 to Annex 3 and in Appendix F to this Guide.

3.4.3.1.5 Flight level and vertical extent(Column 5)

FL<nnn>
or FL<nnn/nnn>
or TOP FL<nnn>
or [TOP] ABVFL<nnn>
or [TOP] BLWFL<nnn>

3.4.3.1.5.1 The location or extent of the phenomenon in the vertical is given by one or more of the above abbreviations, as follows:

- reporting single level – **FL<nnn>**
- reporting a layer – **FL<nnn/nnn>**, where the lower level is reported first; this is used particularly in reporting turbulence and icing;
- reporting a level or layer with reference to one FL using ABV or BLW
- reporting the level of the tops of the TS clouds using the abbreviation TOP.

Examples:

EMBD TS ... TOP ABV FL340
SEV TURB ... FL180/210
SEV ICE ... BLW FL150
SEV MTW ... FL090

3.4.3.1.6 Movement(Column 6)

MOV <direction><speed>KMH[KT]
or
STNR

3.4.3.1.6.1 Direction of movement is given with reference to one of the eight points of compass. Speed is given in KMH or KT. The abbreviation STNR is used if no significant movement is expected.

Examples:

MOV NW 30KMH
MOV E 25KT

3.4.3.1.7 Expected changes in intensity (Column 7)

3.4.3.1.7.1 The expected evolution of the phenomenon's intensity is indicated by one of the following abbreviations:

INTSF – intensifying

WKN – weakening

NC – no change

3.4.4 *Structure of the meteorological part of VA SIGMET*

3.4.4.1 The general structure of the meteorological part of the SIGMET message is given in the table below:

Start of the second line of the message

1	2			3
FIR/UIR or CTA	Phenomenon	Volcano		Volcanic ash cloud observed or forecast
		Name	Location	
<CCCC><name> FIR [/UIR][CTA]	VA	[ERUPTION] [MT <name>]	[LOC <lat,lon>]	VA CLD OBS AT <GGgg>Z VA CLD FCST

4			5
Extent of the cloud			Expected movement
Vertical	Horizontal	Position	
FL <nnn/nnn>	[APRX <nnn> KM[NM] BY <nnn> KM[NM]]	[<lat,lon> - <lat,lon> - ...]	MOV <direction><speed>

6	
Volcanic ash cloud forecast at the end of the period of validity	
FCST time	Position
FCST <GGgg>Z	VA CLD APRX <lat,lon> - <lat,lon> - ...

3.4.4.2 Name and location of the volcano and/or indicator for VA cloud (Column 2)

VA [ERUPTION] [MT <name>] [LOC <lat,lon>] VA CLD
or
VA CLD

3.4.4.2.1 The description of the volcano injecting volcanic ash consists of the following elements:

- starts with the abbreviation **VA** – volcanic ash;
- the word **ERUPTION** is used when the SIGMET is issued for a known volcanic eruption;
- geographical/location information:
 - i. if the name of the volcano is known, it is given by the abbreviation **MT** – mountain, followed by the name;
e.g., **MT RABAU**
 - ii. location of the volcano is given by the abbreviation **LOC** – location, followed by the latitude and longitude in degrees and minutes;
e.g., **LOC N3520 E09040**
- this section of the message ends with the abbreviation **VA CLD** – volcanic ash cloud.

3.4.4.2.2 If the FIR is affected by a VA cloud with no information about the volcanic eruption which generated the cloud, only the abbreviation **VA CLD** should be included in the SIGMET.

3.4.4.3 Time of observation or indication of forecast(Column 3)

VA CLD OBS AT <GGgg>Z

or

VA CLD FCST

3.4.4.3.1 The time of observation is taken from the source of the observation – satellite image, special air- report, report from a ground volcano logical station, etc. If the VA cloud is not yet observed over the FIR but the volcanic ash advisory received from the responsible VAAC indicates that the cloud is going to affect the FIR within the next 12 hrs, SIGMET should be issued, according to paragraph 2.4 above, and the abbreviation VA CLD FCST should be used.

Examples:

VA CLD OBS AT 0100Z

VA CLD FCST

3.4.4.4 Level and extent of the volcanic ash cloud(Column 4)

FL<nnn/nnn> [APRX <nnn>KM BY <nnn>KM] [<P1(lat,lon) - P2(lat,lon) - ... >]

or

FL<nnn/nnn> [APRX <nnn>NM BY <nnn>NM] [<P1(lat,lon) - P2(lat,lon) - ... >]

FL<nnn/nnn>	The layer of the atmosphere where the VA cloud is situated, given by two flight levels from the lower to the upper boundary of the cloud
[APRX <nnn>KM BY <nnn>KM] or [APRX <nnn>NM BY <nnn>NM]	Approximate horizontal extent of the VA cloud in KM or NM
[<P1(lat,lon) – P2(lat,lon) - ... >]	Approximate description of the VA cloud by a number of points given with their geographical coordinates ¹ ; the points should be separated by hyphen

¹ The format of geographical coordinates reporting in SIGMET is given in Appendix E.

3.4.4.4.1 If the VA cloud spreads over more than one FIR, separate SIGMETs should be issued by all MWOs whose FIRs are affected. In such a case, the description of the volcanic ash cloud by each MWO should encompass the part of the cloud, which lies over the MWO's area of responsibility. The MWOs should try and keep the description of the volcanic ash clouds consistent by checking the SIGMET messages received from the neighbouring MWOs.

Examples:

FL100/180 APRX 10KM BY 50KM N0100 E09530 – N1215 E11045
FL 150/210 S0530 E09300 – N0100 E09530 – N1215 E11045

3.4.4.5 Movement or expected movement of the VA cloud(Column 5)

MOV <direction><speed>KMH[KT]
or
STNR

3.4.4.5.1 The direction of movement is given by the abbreviation **MOV** – moving, followed by one of the eight points of compass: N, NE, E, SE, S, SW, W, NW. The speed of movement is given in KMH or KT.

Examples:

MOV E 35KMH
MOV SW 20KT
STNR

3.4.4.6 Forecast position of the VA cloud at the end of the validity period of the SIGMET message(Column 6)

FCST <GGgg>Z VA CLD APRX <P1(lat,lon) - P2(lat,lon) - ... >

3.4.4.6.1 The **GGggZ** group should indicate the end of validity period given in the first line of the SIGMET message. The description of the expected position of the volcanic ash cloud is given by a number of points forming a simplified geometrical approximation of the cloud.

3.4.4.6.2 In describing the VA cloud up to four different layers can be used, indicated by flight levels in the form FL<nnn/nnn>. The use of more than one level is necessary when the wind direction distribution with height determines that the cloud is spread horizontally into different directions at different height layers.

3.4.5 *Structure of the meteorological part of TC SIGMET*

3.4.5.1 The general structure of the meteorological part of the TC SIGMET is given in the table below:

Start of the second line of the message

1	2	3		4
FIR/UIR or CTA	TC name	Observed or forecast		Extent
		Time	Location of TC centre	
<CCCC><name> FIR [/UIR][CTA]	TC <name>	OBS AT <GGgg>Z [FCST]	<lat,lon>	CB TOP [ABV or BLW] FL<nnn> WI <nnn>KM[NM] OF CENTRE

5	6	7
Expected movement	Intensity change	Forecast of the centre position at the end of the validity period
MOV <direction><speed>KMH[KT] or STNR	INTSF or WKN or NC	FCST <GGgg>Z TC CENTRE <lat,lon>

3.4.5.2 Name of the tropical cyclone(Column 2)

TC <name>

3.4.5.2.1 The description of the tropical cyclone consists of the abbreviation TC followed by the international name of the tropical cyclone given by the corresponding WMO RSMC.

Examples:

TC GLORIA
TC 04B

3.4.5.3 Time of observation or indication of forecast(Column 3.1)

OBS AT <GGgg>Z
or
FCST

3.4.5.3.1 The time in UTC is given in hours and minutes, followed by the indicator Z. Normally, time is taken from own observations or from a TC advisory received from the responsible TCAC. If the TC is not yet observed in the FIR but the tropical cyclone advisory received from the responsible TCAC, or any other TC forecast used by the MWO, indicates that the TC is going to affect the FIR within the next 12 hrs, SIGMET should be issued, according to paragraph 2.4 above, and the abbreviation FCST should be used.

Examples:

OBS AT 2330

3.4.5.4 Location of the TC centre(Column 3.2)**<location>**

The location of the TC centre is given by its lat, lon coordinates in degrees and minutes.

Examples:

N1535 E14230**3.4.5.5 Vertical and horizontal extent of the CB cloud formation around TC centre (Column 4)****CB TOP [ABV or BLW] <FLnnn> WI <nnnKM or nnnNM> OF CENTRE**

Examples:

CB TOP ABV FL450 WI 200NM OF CENTRE**CB TOP FL500 WI 250KM OF CENTRE****3.4.5.6 Movement or expected movement (Column 5)****MOV <direction><speed>KMH[KT]**

or

STNR

3.4.5.6.1 Direction of movement is given with reference to one of the eight points of compass. Speed is given in KMH or KT. The abbreviation STNR is used if no significant movement is expected.

Examples:

MOV NW 30KMH**MOV E 25KT****3.4.5.7 Intensity change(Column 6)**

3.4.5.7.1 The expected change of the intensity of the tropical cyclone is indicated by one of the following abbreviations:

INTSF – intensifying**WKN** – weakening**NC** – no change**3.4.5.8 Forecast location of the TC centre at the end of the validity period of the SIGMET message(Column 7)****FCST <GGgg>Z TC CENTRE <location>**

3.4.5.8.1 Normally, the time given by GGggZ should be the same as the end of validity period indicated in the first line of the SIGMET message. Since the period of validity is up to 6 hours (normally, 6 hours), this is a 6-hour forecast of the position of the TC centre.

3.4.5.8.2 The location of the TC centre is given by its lat, lon coordinates following the general rules of reporting lat, lon information provided in Appendix F to this Guide.

Examples:

FCST 1200Z TC CENTRE N1430 E12800

3.4.6 *Cancellation of SIGMET*

3.4.6.1 If during the validity period of a SIGMET the phenomenon for which the SIGMET had been issued is no longer occurring or no longer expected, the SIGMET should be cancelled by the issuing MWO. The cancellation is done by issuing same type of SIGMET with the following structure:

- WMO heading with the same data type designator;
- First line that contains as period of validity the remaining time of the original period of validity;
- Second line, which contains the name of the FIR or CTA, the combination CNL SIGMET, followed by the sequential number of the original SIGMET and its validity period.

Examples:

1. WS SIGMET:

**WSZR31 FZAA 101200
FZAA SIGMET 5 VALID 101200/101600 FZAA-
FZAA FIR KINSHASA...**

Cancellation of WS SIGMET:

**WSZR31 FZAA 101430
FZAA SIGMET 6 VALID 101430/101600 FZAA-
FZAA FIR KINSHASACNL SIGMET 5 101200/101600=**

2. VA SIGMET

**WVCG31 FCBB 131518
FCCC SIGMET 03 VALID 131515/132115 FCBB-
FCCC FIR BRAZZAVILLE...**

Cancellation of a VASIGMET:

**WVCG31 FCBB 132000
FCCC SIGMET 04 VALID 132000/132115 FCBB-
FCCCFIR BRAZZAVILLE CNL SIGMET 03 13151500/132115=**

or, in case that the volcanic ash cloud moves to an adjacent FIR:

**WSZR31 FZAA 132000
FZAA SIGMET 04 VALID 132000/132115 FZAA -**

**FZAA FIR KINSHASACNL SIGMET 03 13151500/132115 VA MOV TO YUDO
FIR=****3.5 Dissemination**

3.5.1 SIGMET information is part of the operational meteorological (OPMET) information. According to Annex 3 the telecommunication facilities used for the exchange of the operational meteorological information should be the aeronautical fixed service (AFS).

3.5.2 The AFS consists of a terrestrial segment, AFTN or ATN (AMHS), and a satellite segment which comprises the SADIS and WIFS satellite broadcasts provided by the UK and the USA respectively.

3.5.3 Currently, AFTN links should be used by the MWOs to send the SIGMET, as follows:

- to the adjacent MWOs and ACCs* using direct AFTN addressing;
- When required for VOLMET or D-VOLMET, SIGMET should be sent to the relevant centre providing the VOLMET service;
- SIGMET should be sent to all regional OPMET Data Banks (RODB);
- It should be arranged that SIGMET is relayed to the SADIS and WIFS providers for satellite dissemination, as well as to the WAFCs London and Washington, either through the AMBEX scheme, or directly by the issuing MWO;
- SIGMET for volcanic ash should be disseminated to the responsible VAAC.

3.5.4 Through SADIS and WIFS, SIGMET is disseminated to all authorised users. In this way, SIGMET is available on a global basis, meeting the aeronautical requirements.

** Note: For this dissemination it is required that SIGMET is available at the ACCs for transmission to aircraft in flight for the route ahead up to a distance corresponding to two hours flying time.*

APPENDIX A: Meteorological Watch Offices**EXPLANATION OF THE TABLE***Column*

1. Location of the meteorological watch office (MWO)
2. ICAO location indicator, assigned to the MWO
3. Name of the FIR, UIR and/or search and rescue region (SRR) served by the MWO
4. ICAO location indicator assigned to the ATS unit serving the FIR, UIR and/or SRR
5. X if the MWO in column 2 issues VA SIGMET
6. X if the MWO in column 2 issues TC SIGMET
7. Remarks

Note: MWOs in italics are situated outside the AFI Region.

MWO Location	ICAO loc. ind.	Area served		SIGMET		Remarks
		Name	ICAO loc. ind.	V A	TC	
1	2	3	4	5	6	7
ANGOLA						
LUANDA/4 de Fevereiro	FNLU	Luanda FIR/SRR	FNAN	X		
BOTSWANA						
GABORONE/Sir SeretseKhamaIntl	FBSK	Gaborone FIR/SRR	FBGR	X	X	
BURUNDI						
BUJUMBURA/Bujumbura	HBBA	Bujumbura FIR	HBBA	X		
CAPE VERDE						
SAL I./AMILCAR CABRAL	GVAC	Sal Oceanic FIR/SRR	GVSC	X		
CHAD						
N'DJAMENA/N'Djamena	FTTJ	N'Djamena FIR/SRR	FTTT	X		
CONGO						
BRAZZAVILLE/Maya-Maya	FCBB	Brazzaville FIR/SRR	FCCC	X		
DEMOCRATIC REP. OF THE CONGO						
KINSHASA/N'Djili	FZAA	Zaire FIR, Kinshasa SRR	FZAA	X		
ETHIOPIA						
ADDIS ABABA/Bole Intl	HAAB	Addis Ababa FIR/SRR	HAAA	X		
ERITREA						
ASMARA	HHAS	Asmara FIR	HHAA	X		
GHANA						
ACCRA/Kotoka Intl	DGAA	Accra FIR/SRR	DGAC	X		

MWO Location	ICAO loc. ind.	Area served		SIGMET		Remarks
		Name	ICAO loc. ind.	V A	TC	
1	2	3	4	5	6	7
KENYA						
NAIROBI/Jomo Kenyatta Intl	HKJK	Nairobi FIR/SRR	HKNA	X	X	
LIBERIA2						
MONROVIA/Roberts Intl	GLRB	Roberts FIR/SRR	GLRB	X		
MADAGASCAR						
ANTANANARIVO/Ivato	FMMI	Antananarivo FIR/SRR	FMMM	X	X	
MALAWI						
LILONGWE/Lilongwe Intl	FWLI	Lilongwe FIR/SRR	FWLL	X	X	
MAURITIUS						
MAURITIUS/Sir Seewoosagur Ramgoolam Intl	FIMP	Mauritius FIR/SRR	FIMM	X	X	
MOZAMBIQUE						
MAPUTO/Maputo Intl	FQMA	Beira FIR/SRR	FQBE	X	X	
NAMIBIA						
WINDHOEK/Hosea Kutako	FYWH	Windhoek FIR/SRR	FYWH	X		
NIGER						
NIAMEY/Diori Hamani Intl	DRRN	Niamey FIR/SRR	DRRR	X		
NIGERIA						
KANO/Mallam Aminu Kano Intl	DNKN	Kano FIR/SRR	DNKK	X		
RWANDA						
KIGALI/Gregoire Kayibanda	HRYR	Kigali FIR/SRR	HRYR	X		
SENEGAL						
DAKAR/Leopold Sedar Senghor	GOOY	Dakar FIR/SRR Dakar oceanic FIR	GOOO	X		

MWO Location	ICAO loc. ind.	Area served		SIGMET		Remarks
		Name	ICAO loc. ind.	VA	TC	
1	2	3	4	5	6	7
SEYCHELLES						
MAHE/Seychelles Intl	FSIA	Seychelles FIR/SRR	FSSS	X	X	
SOMALIA						
MOGADISHU/Mogadishu	HCMM	Mogadishu FIR/SRR	HCSM	X		
SOUTH AFRICA						
CAPE TOWN/Cape Town	FACT	Cape town FIR	FACA	X		
JOHANNESBURG/Johannesburg	FAOR	Johannesburg FIR/ARCC	FAJA	X	X	
JOHANNESBURG/Johannesburg	FAJO	Johannesburg Oceanic	FAJO	X	X	
UGANDA						
ENTEBBE/Entebbe Intl.	HUEN	Entebbe FIR	HUEC	X		
UNITED REPUBLIC OF TANZANIA						
DAR-ES-SALAAM/Dar-es-Salaam	HTDA	Dar-es-Salaam FIR	HTDC	X	X	
ZAMBIA						
LUSAKA/Kenneth Kaunda Intl	FLKK	Lusaka FIR/SRR	FLFI	X		
ZIMBABWE						
HARARE/Harare	FVHA	Harare FIR/SRR	FVHA	X	X	

APPENDIX B: Tropical Cyclone Advisory Centres**FASID AFI TABLE MET 3A***EXPLANATION OF THE TABLE**Column*

1. Location of the tropical cyclone advisory centre (TCAC).
2. ICAO location indicator of TCAC (for use in the WMO heading of advisory bulletin).
3. Area of responsibility for the preparation of advisory information on tropical cyclones by the TCAC in Column 1.
4. Period of operation of the TCAC.
5. MWOs to which the advisory information on tropical cyclones should be sent.
6. ICAO location indicator of the MWOs in Column 5.

Note: MWOs in italics are situated outside the AFI Region.

TABLE MET 3A

TROPICAL CYCLONE ADVISORY CENTRES

TROPICAL CYCLONE ADVISORY CENTRE	ICAO LOC. INDIC ATOR	AREA OF RESPONSIBILITY	PERIOD OF OPERATION	MWOs TO WHICH ADVISORY INFORMATION IS TO BE SENT	
				Name	ICAO LOC. INDICATOR
1	2	3	4	5	6
RÉUNION (France)	FMEE	Southwest Indian Ocean Sud-ouest de l'océan Indien Sudoeste del océano Índico N: 0° S S: 40°S W: 30°E E: 90°E	1 November–30 April 1er novembre–30 avril 1 de noviembre–30 de abril	<i>Antananarivo</i>	<i>FMMA</i>
				<i>Bombay/Mumbai</i>	<i>VABB</i>
				<i>Dar-es-Salaam</i>	<i>HTDC</i>
				<i>Gaborone</i>	<i>FBSK</i>
				<i>Harare</i>	<i>FVHA</i>
				<i>Johannesburg</i>	<i>FAOR</i>
				<i>Johannesburg Oceanic</i>	<i>FAJO</i>
				<i>Lilongwe</i>	<i>FWKI</i>
				<i>Mahé/Seychelles</i>	<i>FSIA</i>
				<i>Male</i>	<i>VRMM</i>
				<i>Maputo</i>	<i>FQMA</i>
				<i>Mauritius</i>	<i>FIMM</i>
				<i>Nairobi</i>	<i>HKJK</i>
				<i>Perth</i>	<i>YYPPH</i>

APPENDIX C: Volcanic Ash Advisory Centres**FASID AFI TABLE MET 3B***EXPLANATION OF THE TABLE**Column*

1. Name of the volcanic ash advisory centre (VAAC).
2. ICAO location indicator of VAAC (for use in the WMO heading of advisory bulletin).
3. Area of responsibility for the preparation of advisory information on volcanic ash by the VAAC in Column 1.
4. ICAO Contracting State where the MWOs and ACCs/FICs are located
5. ICAO region where the MWOs and ACCs are located
6. MWOs to which the advisory information on volcanic ash should be sent.
7. ICAO location indicator of the MWOs in Column 6.
8. ACCs to which the advisory information on volcanic ash should be sent.
9. ICAO location indicator of the ACCs in Column 8.

Note: MWOs and ACCs in italics are situated outside the AFI Region

FASID TABLE MET 3B — VOLCANIC ASH ADVISORY CENTRES

VAAC		Area of Responsibility/ Zone de Responsabilité	State/État	ICAO Region/ Région OACI	MWO to which the information is to be sent/ CVM auxquels les renseignements devraient être communiqués		ACC/FIC to which information is to be sent/ ACC/FIC auxquels les renseignements devraient être communiqués	
Name/Nom	ICAO Loc Ind/ Ind Empl OACI				Name/ Nom	ICAO Loc Ind/ Ind Empl OACI	Name/ Nom	ICAO Loc Ind/ Ind Empl OACI
1	2	3	4	5	6	7	8	9
Toulouse (France)	LFPW	AFI Region Santa Maria Oceanic FIR, AFI Region north of S6000 , EUR Region (except for London, Scottish and Shannon FIRs) west of E09000 and south of N7100 , MID Region, and ASIA Region, west of E09000 north of N2000 (plus Mumbai, Chennai)	Angola	AFI Region	Luanda	FNLU	Luanda	FNAN
			Botswana		Gaborone	FBSK	Gaborone	FBGR
			Burundi		Bujumbura	HBBA	Bujumbura	HBBA
			Cape Verde/Cape Vert		Sall	GVAC	Sall	GVSC
			Chad/Tcad		N'Djamena	FTTJ	N'Djamena	FTTT
			Congo		Brazzaville	FCBB	Brazzaville	FCCC

		(west of E08200) and Male FIRs)	Democratic Republic of Congo/ RDC		Kinshasa	FZAA	Kinshasa	FZAA
		FIR Santa Maria Oceanic, Région AFI Nord de S6000 , région EUR (sauf les FIR London, Scottish et Shannon), Ouest de E09000 et Sud de N7100 régions MID et ASIA, ouest de E09000 nord de N2000 (plus les FIRs Mumbai, Chennai (ouest de E08200) et Male)	Ethiopia/ Ethiopie		Addis Ababa	HAAB	Addis Ababa	HAAA
			Eritrea/Eritrée		Asmara	HHAS	Asmara	HHAS
			Ghana		Accra	DGAA	Accra	DGAC
			Kenya		Nairobi	HKJK	Nairobi	HKNA
			Liberia		Robertsfield	GLRB	Robertsfield	GLRB
								
			Madagascar		Antananarivo	FMMI	Antananarivo	FMMM
			Malawi		Lilongwe	FWKI	Lilongwe	FWLL
			Mauritius/Ile Maurice		Mauritius	FIMP	Mauritius	FIMM
			Mozambique		Maputo	FQMA	Maputo	FQBE
			Namibia/Namibie		Windhoek	FYWH	Windhoek	FYWH

			Niger		Niamey	DRRN	Niamey	DRRR
			Nigeria		Kano	DNKN	Kano	DNKK
			Rwanda		Kigali	HRYR	Kigali	HRYR
			Senegal		Dakar	GOOY	Dakar	GOOO
			Seychelles		Mahe	FSIA	Mahe	FSSS
			Somalia		Mogadishu	HCMM	Mogadishu	HCSM
			South Africa		Johannesburg	FAJS	Johannesburg	FAJS
					Pretoria	FAPR	Pretoria	FAJS
			Uganda		Entebbe	HUEN	Entebbe	HUEC
			United Republic Of Tanzania/Tanzanie		Dar-es-Salaam	HTDA	Dar-es- Salaam	HTDC
			Zambia/Zambie		Lusaka	FLKK	Lusaka	FLFI
			Zimbabwe		Harare	FVHA	Harare	FVHA

APPENDIX D: List of the Abbreviations and Code Words Used in SIGMET (ICAO Doc 8400)

ABV	Above
AND*	And
APRX	Approximate or approximately
AT	At <i>(followed by time)</i>
BLW	Below
BY*	By
CB	Cumulonimbus
CENTRE*	Centre <i>(used to indicate tropical cyclone centre)</i>
CLD	Cloud
CNL	Cancel <i>or</i> cancelled
CTA	Control area
DS	Dust storm
E	East <i>or</i> eastern longitude
ERUPTION*	Eruption <i>(used to indicate volcanic eruption)</i>
EMBD	Embedded in layer <i>(to indicate CB embedded in layer of other clouds)</i>
FCST	Forecast
FIR	Flight information region
FL	Flight level
FRQ	Frequent
FZRA	Freezing rain
GR	Hail
HVY	Heavy <i>(used to indicate intensity of weather phenomena)</i>
ICE	Icing
INTSF	Intensify <i>or</i> intensifying
ISOL	Isolated
KM	Kilometers
KMH	Kilometers per hour
KT	Knots
LINE*	Line
MOV	Move <i>or</i> moving <i>or</i> movement
MT	Mountain
MTW	Mountain waves
N	North <i>or</i> northern latitude
NC	No change
NE	North-east
NM	Nautical miles
NW	North-west
OBS	Observed
OBSC	Obscured
OCNL	Occasional
OF*	Of ... <i>(place)</i>
RA	Rain
RDOACT	Radioactive
S	South <i>or</i> southern latitude
SE	South-east

SEV	Severe (<i>used e.g. to qualify icing and turbulence reports</i>)
SIGMET	SIGMET (<i>used to indicate SIGMET information</i>)
SQL	Squall line
SS	Sandstorm
STNR	Stationary
SW	South-west
TC	Tropical cyclone
TO	To ... (<i>place</i>)
TOP	Cloud top
TS	Thunderstorm
TURB	Turbulence
UIR	Upper flight information region
VA	Volcanic ash
VALID*	Valid
W	West or western longitude
WI	Within
WID	Width
Z	Coordinated Universal Time (<i>used in meteorological messages</i>)

* not in the ICAO Doc 8400, ICAO Abbreviations and Codes

APPENDIX E: Meteorological Phenomena to be reported by SIGMET

Phenomenon	Description	Meaning
TS	OBSC ² TS	Obscured thunderstorm(s)
	EMBD ³ TS	Embedded thunderstorm(s)
	FRQ ⁴ TS	Frequent thunderstorm(s)
	SQL ⁵ TS	Squall line thunderstorm(s)
	OBSC TSGR	Obscured thunderstorm(s) with hail
	EMBD TSGR	Embedded thunderstorm(s) with hail
	FRQ TSGR	Frequent thunderstorm(s) with hail
	SQL TSGR	Squall line thunderstorm(s) with hail
TC	TC (+ TC name)	Tropical cyclone (+ TC name)
TURB	SEV TURB ⁶	Severe turbulence
ICE	SEV ICE	Severe icing
	SEV ICE FZRA	Severe icing due to freezing rain
MTW	SEV MTW ⁷	Severe mountain wave
DS	HVY DS	Heavy duststorm
SS	HVY SS	Heavy sandstorm
VA	VA (+ volcano name, if known)	Volcanic ash (+ volcano name)

Notes:

1. Only one of the weather phenomena listed should be selected and included in each SIGMET
2. Obscured (**OBSC**) indicates that the thunderstorm (including, if necessary, CB-cloud which is not accompanied by a thunderstorm) is obscured by haze or smoke or cannot be readily seen due to darkness
3. Embedded (**EMBD**) – indicates that the thunderstorm (including, if necessary, CB-cloud which is not accompanied by a thunderstorm) is embedded within cloud layers and cannot be readily recognized
4. Frequent (**FRQ**) indicates an area of thunderstorms within which there is little or no separation between adjacent thunderstorms with a maximum spatial coverage greater than 75% of the area affected, or forecasts to be affected, by the phenomenon (at a fixed time or during the period of validity)
5. Squall line (**SQL**) indicates thunderstorms along a line with little or no space between individual clouds
6. Severe (**SEV**) turbulence (**TURB**) refers only to:
 - low-level turbulence associated with strong surface winds;
 - rotor streaming;
 - turbulence whether in cloud or not in cloud (CAT) near to jet streams.
 Turbulence is considered severe whenever the peak value of the cube root of EDR exceeds 0.7.
7. A mountain wave (**MTW**) is considered severe – whenever an accompanying downdraft of 3.0 m/s (600 ft/min) or more and/or severe turbulence is observed or forecast.

APPENDIX F: Procedures for Reporting Geographical Coordinates in SIGMET

When reporting geographical coordinates of points in SIGMET the following should apply:

1. Each point is represented by a latitude/longitude coordinates in whole degrees or degrees and minutes in the form:

N(S)nn[nn] W(E)nnn[nn]

Note: There is a space between the latitude and longitude value.

Examples:	N0518 W00401	<i>Abidjan</i>
	S0419 E01519	<i>Kinshasa</i>
	N1443 W01728	<i>Dakar</i>

2. In describing lines or polygons, the lat, lon values of the respective points are separated by the combination space-hyphen-space, as in the following examples:

N1334 W00739 – N1327 W01635 – N0932 W1340– N0518 W00401 (*Bamako, Banjul, Conakry, Abidjan*)

S05 E093 – N01 E095 – N12 E110 – S08 E103

Note: It is not necessary to repeat the first point when describing a polygon.

3. When describing a volcanic ash cloud approximate form and position, a limited number of points, which form a simplified geometric figure (a line, or a triangle, or quadrangle, etc.), should be used in order to allow for a straightforward interpretation by the user.

4. Reporting a phenomenon occupying two different geographical areas within the FIR. This is frequently the case with two (or more) separate TS formations occurring in different parts of the FIR at the same time. The question is whether a separate SIGMET should be issued for each formation, or, one SIGMET could include location description for two (or more) geographical areas. The current SIGMET format does not allow for reporting of more than one phenomenon or two different TS areas. Therefore, in cases like this, two separate SIGMETs should be issued. The main concern with issuing separate SIGMETs is that, in general, a new SIGMET for the same FIR would replace the previous one; this may lead to rejecting valid information in case as described above. It should be noted in this regard, that the current SIGMET format allows for using different sequence numbers and thus, for keeping more than one SIGMET at a time valid for the FIR concerned; for instance, a series A1, A2,... could be used for phenomenon A with its evolutions as A1, A2, .. and B1, B2, ... , for phenomenon B with its evolutions as B1, B2, ...

APPENDIX G: Examples

Note: Most examples are based on real SIGMETs. The real SIGMETs have been corrected in order to make them compliant with the Annex 3 format.

1. WS SIGMET**SIGMET for thunderstorms**

WSCG31 FCBB 122305
FCCC SIGMET 9 VALID 122330/130230 FCBB-
FCCCBRAZZAVILLE FIR EMBD TS OBS N0241 E01250 – N0443 E01552 – N0200 E01630 – N0300
E01500 TOP FL400 STNR NC=

WSNT03 KKCI 032340
KZNY SIGMET C17 VALID 032345/040345 KKCI-
KZNY NEW YORK OCEANIC FIR FRQ TS OBS WI AREA N2400 W05500 - N2300 W04930 -
N1845 W05645 - N2100 W05800 - N2400 W05500 TOP FL450 MOV E 15KT INTSF=

WSSG31 GOOY 091131
GOOO SIGMET 3 VALID 091140/091540 GOOY-
GOOODAKAR FIR SQL OBS 1130Z LINEN17W10 –N13 W07 – N07 W05MOV W 10KMH WKN=

WSUK31 EGGY 121120
EGTT SIGMET 01 VALID 121125/121525 EGRR-
EGTT LONDON FIR EMBD TSGR OBS AT 1115Z SE OF LINE N5130 E00200 - N5000 W00400
TOPS FL220 MOV NE 30KT NC=

1.2 SIGMET for severe turbulence

WSAU21 AMMC 280546
YBBB SIGMET BS02 VALID 280600/281200 YMMC-
YBBB BRISBANE FIR SEV TURB FCST WI S3900 E15100 - S4300 E15100 - S4300 E16000 - S4100
E16300 - S3700 E16300 - S3900 E16000 FL260/370 MOV E 20 KT NC=

WSZR31FZAA 280003
FZAA SIGMET 01 VALID 280002/280402 FZAA-
FZAA KINHASA FIR SEV TURB OBS W OF MT KILIMANJARO BLW FL100 STNR NC=

1.3 SIGMET for severe icing

WSFR31 LFPW 280400
LFMM SIGMET 2 VALID 280500/280900 LFMM-
LFMM FIR MARSEILLE SEV ICE OBS AT 0400Z LIONGULF FL040/100 STNR NC=

WSIY31 LIIB 032152
LIMM SIGMET 07 VALID 032200/040200 LIMM-
LIMM MILANO FIR SEV ICE FCST OVER ALPS AND N PART APPENNINIAN AREA FL030/120
MOV E NC=

1.4 SIGMET for heavy duststorm

WSNR31 DRRN 160530
DRRR SIGMET 4 VALID 160600/161000 DRRN-
DRRR NIAMEY FIR HVY DS OBS N OF N1800 S OF N2300 W OF E01500 E OF E00600 MOV W
10KMH NC=

1.5 SIGMET for severe mountain wave

WSUK31 EGGY 150550
EGTT SIGMET 03 VALID 150600/151000 EGRR-
EGTT LONDON FIR SEV MTW FCST N OF N5100 FL090/140 STNR WKN=

2. VA SIGMET

2.1 VA SIGMET - full

WVPH01 RPLL 211110
RPHI SIGMET 2 VALID 211100/211700 RPLL-
RPHI MANILA FIR VA ERUPTION MT PINATUBO LOC S1500 E07348
VA CLD OBS AT 1100Z FL310/450 APRX 220KM BY 35KM S1500 E07348 – S1530 E07642 MOV
SE 65KMH FCST 1700Z VA CLD APRX S1506 E07500 – S1518 E08112 – S1712 E08330 – S1824
E07836=

Note: The coordinates used in describing the VA cloud are fictitious.

2.2 “Short” first SIGMET (no FCST)

YUDD SIGMET 2 VALID 211100/211700 YUSO-
YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL LOC S1500 E07348
VA CLD OBS AT 1100Z FL310/450 APRX 220KM BY 35KM S1500 E07348 – S1530 E07642 MOV
SE 65KMH FCST 1700Z VA CLD APRX S1506 E07500 – S1518 E08112 – S1712 E08330 – S1824
E07836=

or

YUDD SIGMET 2 VALID 211100/211700 YUSO-
YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL LOC S1500 E07348
VA CLD OBS AT 1100Z FL100/180 APRX 220KM BY 35KM S1500 E07348 – S1530 E07642=

WVFEJ01 NFFN 090900
NFFF SIGMET 03 VALID 090915/091515 NFFN-
NFFF NADI FIR VA ERUPTION MT LOPEVI LOC S1630 E16820 VA CLD OBS AT 0330Z FL090
APRX 10NM BY 10NM MOV SE 25KT FCST 1515Z VA CLD APPRX S1630 E16820 - S1900 E17600
- S1930 E17030=

2.3 SIGMET for VA CLD in the FIR but the volcano information is unknown

YUDD SIGMET 2 VALID 211100/211700 YUSO-
YUDD SHANLON FIR/UIR VA CLD OBS AT 1100Z FL310/450 APRX 220KM BY 35KM S1500
E07348 – S1530 E07642 MOV SE 65KMH FCST 1700Z VA CLD APRX S1506 E07500 – S1518
E08112 – S1712 E08330 – S1824 E07836=

2.4 SIGMET for VA CLD forecast to affect the FIR

We assume that the responsible VAAC has issued an advisory at 0200Z with forecast positions of the VA CLD for 0800Z, 1400Z and 2000Z. From this forecast it is seen that the VA CLD will enter the YUDD FIR around 0800Z. The responsible MWO, YUSO receiving this advisory prepares a SIGMET for the expected penetration of the VA cloud in its FIR and this SIGMET is send at 0230Z.

WVXY01 YUSO 210230
YUDD SIGMET 2 VALID 210800/211400 YUSO-
YUDD SHANLON FIR/UIR VA CLD FCST FL310/450 APRX 220KM BY 35KM S1500 E07348 –
S1530 E07642 MOV SE 65KMH FCST 1400Z VA CLD APRX S1506 E07500 – S1518 E08112 – S1712
E08330 – S1824 E07836=

Notes: 1. The forecast positions at 0800Z and 1400Z are taken from the VA advisory.

3. TC SIGMET**3.1. TC Graham – SIGMET issued by MWO Perth - Australia**

WCOC31 APRF 280453
YBBB SIGMET PH01 VALID 280500/281100 YPRF-
YBBB BRISBANE FIR TC GRAHAM OBS AT 0400Z S1806 E12145 CB TOP FL450 WI 120NM OF
CENTRE MOV SE 7KT INTSF FCST 1100Z TC CENTRE S1808 E12150=

3.2. SIGMET messages issued in July 2003 during the passage of TC Koni

WCSS20 VHHH 200240
VHHK SIGMET 2 VALID 200900/201500 VHHH-
VHHK HONG KONG CTA TC KONI OBS AT 0000Z N1618 E11506CB TOP FL500 WI 90NM OF
CENTRE MOV NW 8KT NCFCST 1500Z TC CENTRE N1749 E11347=

Note: This SIGMET is issued before the TC Koni started affecting the Hong Kong CTA, as seen from the issuing time and the start of validity time

WCSS20 VHHH 201150
VHHK SIGMET 7 VALID 201200/201800 VHHH-
VHHK HONG KONG CTA TC KONI OBS AT 0900Z N1712 E11400 CB TOP FL500 WI 90NM OF
CENTRE MOV NW 10KT NCFCST 1800Z TC CENTRE N1810 E11300=

WCSS20 VHHH 201450
VHHK SIGMET 10 VALID 201800/210000 VHHH-
VHHK HONG KONG CTA TC KONI OBS AT 1500Z N1730 E11330CB TOP FL500 WI 60NM OF
CENTRE MOV NW 10KT NCFCST 2100Z TC CENTRE N1818 E11240=

APPENDIX H: WMO Headings for SIGMET Bulletins Used by AFI Meteorological Watch Offices (MWO)

EXPLANATION OF THE TABLE

Col 1:	State and name of the MWO
Col 2:	ICAO location indicator of the MWO
Col 3:	T ₁ T ₂ A ₁ A ₂ ii group of the WMO heading for the WS SIGMET bulletin
Col 4:	T ₁ T ₂ A ₁ A ₂ ii group of the WMO heading for the WC SIGMET bulletin (tropical cyclone)
Col 5:	T ₁ T ₂ A ₁ A ₂ ii group of the WMO heading for the WV SIGMET bulletin (volcanic ash)
Col 6:	ICAO location indicator of the FIR/CTA served by the MWO
Col 7:	Remarks

**WMO HEADINGS FOR SIGMET BULLETINS
USED BY AFI METEOROLOGICAL WATCH OFFICES**

MWO Location	ICAO location indicator	WMO SIGMET Headings			FIR/ACC served	Remarks
		WS	WC	WV	ICAO location indicator	
1	2	3	4	5	6	7
ANGOLA LUANDA/4 de Fevereiro	FNLU	WSAN31		WVAN31	FNAN	
BOTSWANA GABORONE/Sir Seretse Khama	FBSK	WSBC31	WCBC31	WVBC31	FBGR	
BURUNDI BUJUMBURA/Bujumbura	HBBA	WSBI31		WVB131	HBBA	
CAPEVERDE SAL I/Amilcar Cabral	GVAC	WSCV31		WVCV31	GVSC	
CHAD N'DJAMENA/N'djamena	FTTJ	WSCD31		WVCD31	FTTT	
CONGO BRAZZAVILLE/Maya-Maya	FCBB	WSCG31		WVCG31	FCCC	
D.R.CONGO KINSHASA/N'Djili	FZAA	WSZR31	WCZR31	WVZR31	FZAA	
ETHIOPIA ADDIS ABABA/Bole Intl	HAAB	WSET31		WVET20	HAAA	
ERITREA ASMARA	HHAS	WSEI31		WVEI31	HHAA	
GHANA ACCRA/Kotoka Int'l	DGAA	WSGH31		WVGH31	DGAC	
KENYA KENYA/Jomo Kenyatta Int'l	HKJK	WSKN31	WCKN31	WVKN31	HKNA	
LIBERIA MONROVIA/Roberts Int'l	GLRB	WSLI31		WVSL31	GLRB	
MADAGASCAR ANTANANARIVO/Ivato	FMMI	WSMG31	WCMG20	WVMG20	FMMM	
MALAWI LILONGWE/Lilongwe Int'l	FWLI	WSMW31	WCMG31	WVLI31	FWLL	

MWO Location	ICAO location indicator	WMO SIGMET Headings			FIR/ACC served	Remarks
		WS	WC	WV	ICAO location indicator	
1	2	3	4	5	6	7
MAURITIUS MAURITIUS/Sir Seewoosagur Ramgoolam Int'l	FIMP	WSMA31	WCMG20	WVMA31	FIMM	
MOZAMBIQUE MAPUTO/Maputo Int'l	FQMA	WSMZ31	WCMZ20	WVMZ31	FQBE	
NAMIBIA WINDHOEK/Hosea Kutako	FYWH	WSNM31		WVNM31	FYWH	
NIGER NIAMEY/Diori Hmani Int'l	DRRN	WSNR31		WVNR31	DRRR	
NIGERIA KANO/Mallam Aminu Kano Int'l	DNKN	WSNI31		WVNI31	DNKK	
RWANDA KIGALI/Gregoire Kayibanda	HRYR	WSRW31		WVRW31	HRYR	
SENEGAL Leopold Sedar Senghor	GOOY	WSSG31		WVSG31	GOOO	
SEYCHELLES MAYE/Seychelles Int'l	FSIA	WSSC31	WCSC20	WVSC31	FSSS	
SOMALIA MOGADISHU/Mogadishu	HCMM	WSSI31		WVSI31	HCSM	
SOUTH AFRICA JOHANNESBURG/Johannesburg	FAOR	WSZA31	WCZA31	WVZA31	FACA FAJA FAJO	
UGANDA ENTEBBE/Entebbe Int'l	HUEN	WSUG31		WVUG31	HUEC	
UNITED REPUBLIC OF TANZANIA DAR-ES-SALAAM/Dar-es-Salaam	HTDA	WSTN31	WCTN31	WVTN31	HTDC	
ZAMBIA LUSAKA/Kenneth Kaunda Int'l	FLKK	WSZB31		WVZB31	FLFI	
ZIMBABWE HARARE/Harare	FBVA	WSZW31	WCZW31	WVZW31	FBVA	

APPENDIX H1: OPERATIONAL UNITS

OPERATIONAL UNITS/UNITES OPERATIONNELLES

MWO, RODB, VAAC, TCAC AND ACC/FIC AFTN ADDRESSES OF THE AFI REGION

ADRESSES RSFTN DES CVM, BRDO, VAAC, TCAC ET CCR/CIV DE LA REGION AFI

MWO, RODB, VAAC, TCAC AND ACC/FIC Location	ICAO location indicator	AFTN Address /Adresse RSFTA			FIR/ACC SERVED	Confirmation Date/Date de confirmation
		MWO/CVM	ACC/CCR	FIC/CIV	ICAO location indicator	
1	2	3	4	5	6	7
ANGOLA 4 de Fevereiro	FNLU	FNLU MYX	FNAN ZAZX	FNAN ZQZX	FNAN	02/05/2008
BOTSWANA Gaborone/Sir Seretse Khama Int	FBSK	FBSK MYX	FBGR ZRZX	FBGR ZRZX	FBGR	18/03/2008
BURUNDI BUNJUMBURA	HBBA	HBBA MYX	HBBA ZQZX	HBBA ZQZX	HBBA	
CHAD N'Djamena/Hassan Djamous International	FTTJ	FTTJ MYX	FTTT ZQZX FTTT ZRZX FTTT ZUZX FTTT ZFZX	FTTT ZIZX FTTT ZFZX FTTT ZQZX	FTTT	15/04/2009. Fax N° 2009/000119/ASECNA/DEED/DEETT
CONGO BRAZZAVILLE/Maya-Maya	FCBB	FCBB MYX	FCCC ZQZX FCCC ZRZX FCCC ZUZX FCCC ZFZX	FCCC ZQZX FCCC ZFZX FCCC ZIZX	FCCC	15/04/2009. Fax N° 2009/000119/ASECNA/DEED/DEETT
D.R. CONGO KINSHASA/N'Djili	FZAA	FZAA MYX	FZAA ZQZX	FZAA ZQZX	FZAA	18/01/2008. Email from ASECNA HQ (Sougué)
ERITREA ASMARA	HHAS	HHAS MYX	HHAS ZQZX	HHAS ZQZX	HHAA	
ETHIOPIA ADDIS ABABA/Bole Int	HAAB	HAAB MYX	HAAA ZQZX	HAAZ ZQZX	HAAA	07/03/2008

GHANA ACCRA/Kotoka International Airport	DGAA	DGAAYMYX	DGACZQZX	DGACZQZX	DGAC	24/12/2007. Email at 09:12 from Juati Ayilari-Naa
KENYA NAIROBI/Jomo Kenyatta	HKJK	HKJKYMYX	HKNAZQZX	HKNAZQZX	HKNA	10/03/2008
LIBERIA MONROVIA/Roberts International Airport	GLRB	GLRBYMYX	GLRBZQZX	GLRBZQZX	GLRB	
MADAGASCAR ANTANANARIVO/Ivato	FMMI	FMMIYMYX	FMMIZTZX	FMMIZQZX	FMMM	14/03/2008
MALAWI LILONGWE/Kamuzu Int.	FWKI	FWKIYMYX	FWLLZQZX	FWLLZQZX	FWLL	
MAURITIUS MAURITIUS/Seewoosagur Ramgoolam Int.	FIMP	FIMPYMYX	FIMMZQZX	FIMMZQZX	FIMM	17/03/2008
MOZAMBIQUE MAPUTO/Maputo Int	FQMA	FQMAYMYX	FQBEZQZX	FQBEZIZX	FQBE	07/03/2008
NAMIBIA WINDHOEK/Hosea Kutako	FYWH	FYWHYMYX	FYNMZQZX	FYNMZQZX	FYNM	06/03/2008
NIGER NIAMEY/Diori Hmani International Airport	DRRN	DRRNYMYX	DRRRZQZX DRRRZRZX DRRRZUZX DRRRZFZX	DRRRZIZX DRRRZQZX DRRRZFZX	DRRR	15/04/2009. Fax N° 2009/000119/ASECNA/DEED/DEETT
NIGERIA KANO/Mallam Aminu Kano International Airport	DNKN	DNKNYMYX	DNKNZQZX	DNKNZQZX	DNKK	07/01/2008. Email at 14:08 from Rahim Adewara
RWANDA KIGALI/Gregoire Kayibanda	HRYR	HRYRYMYX	HRYRZQZX	HRYRZQZX	HRYR	
SENEGAL DAKAR/ Leopold Sedar Sengor	GOOY	GOOYYMYX	G000ZQZX G000ZRZX G000ZUZX G000ZFZX	G000ZIZX G000ZFZX G000ZQZX G000ZOZX	G000	15/04/2009. Fax N° 2009/000119/ASECNA/DEED/DEETT
SEYCHELLES MAHE/Seychelles Intl.	FSIA	FSIAYMYX	FSSSZQZX	FSSSZQZX	FSSS	06/03/2008
SOMALIA MOGADISHU/Mogadishu	HCMM	HCMMYMYX	HCSMZQZX	HCSMZQZX	HCSM	

SOUTH AFRICA JOHANNESBURG/O.R. Tambo Int	FACA	FACAYMYX	FACAZQZX	FACAZQZX	FACA	
	FAOR	FAORYMYX	FAORZQZX	FACORQZX	FAOR	06/03/2008
SUDAN KHARTOUM	HSSS	HSSSYMYX	HSSSZQZX	HSSSZQZX	HSSS	
						24/04/2009. Fax N° 01391 du 27 avril 2009
UGANDA ENTEBBE/Entebbe Int	HUEN	HUENYMYX	HUECZQZX	HUECZQZX	HUEC	
UNITED REPUBLIC OF TANZANIA DAR-ES-SALAAM	HTDA	HTDAYMYX	HTDCZQZX	HTDCZQZX	HTDC	
ZAMBIA LUSAKA/Kenneth Kaunda	FLKK	FLKKYMYX	FLFIZQZX	FLFIZQZX	FLFI	25/03/2008
ZIMBABWE HARARE/Harare	FVHA	FVHAYMYX	FVHAZQZX	FVHAZQZX	FVHA	
RODB/BRDO Dakar DAKAR/Leopold Sedar Sengor		G00YYZYZ	G00YYZYZ	G00YYZYZ		15/04/2009. N° 2009/000119/ASECNA/DEED/DEETT
RODB/BRDO Pretoria Pretoria		FAPRYMYX	FAPRYMYX	FAPRYMYX		
VAAC Toulouse ,France		LFPWYMYX				
TCAC La Reunion, France		FMEEYMYX	FMEEYAYX	FMEEYAYX	FMEE	

APPENDIX I: WMO Headings for Tropical Cyclone and Volcanic Ash Advisory Bulletins (FK And FV)Used by AFITCAC And VAAC**Explanation of Table**

Col. 1: Name of the TCAC or VAAC

Col 2: ICAO location indicator used by the TCAC or VAAC

Col 3: WMO heading (TTAAii CCCC) of the FK or FV bulletin

Col 4: Remarks (e.g., Area of coverage of the advisory, or any other bulletin-specific information)

TCAC/VAAC (State)	ICAO location indicator	WMO Heading TTAAii CCCC	Remarks
1	2	3	4
TC Advisories (FK)			
Réunion (France)	FMEE	FKIO20 FMEE	
VA Advisories (FV)			
Toulouse (France)	LFPW	FVXX01LFPW 1st volcano in activity FVXX02LFPW 2nd volcano in activity, FVXX03LFPW 3rd volcano in activity FVXX04LFPW 4th volcano in activity FVXX05LFPW used for VAAC TOULOUSE back up by LONDON	

J-1

APPENDIX J - AFI SIGMET Test Procedures
(Amendment 1 – May 2010)**1. Introduction**

1.1 The MET Divisional Meeting (2002) formulated recommendation 1/12 b), *Implementation of SIGMET requirements*, which call, *inter alia*, for the relevant planning and implementation regional groups (PIRGs) to conduct periodic tests of the issuance and reception of SIGMET messages, especially those for volcanic ash.

1.2 Concerns by the users for the timely reception of SIGMET information has prompted the need to improve awareness on the critical and important nature of SIGMETs. In order to maintain the International Airways Volcano Watch (IAVW) and TC watch systems ready-for-action, regular exercises involving the advisory centres and the MWOs under their areas of responsibility should be performed.

1.3 The requirements for dissemination of SIGMET are specified in Annex 3, Appendix 6, 1.2. Regional guidance on the preparation and dissemination of SIGMET is provided in this *Regional SIGMET Guide*.

2. Purpose and Scope of SIGMET tests

2.1 The purpose of the tests is to check the awareness of the participating MWOs of the ICAO requirements for the issuance of SIGMET, and the adequacy of the existing telecommunication procedures for dissemination of the advisories and SIGMETs. Based on the results of the tests, the States will be provided with advice aimed at improving their practices and procedures.

2.2 In the case of SIGMET for tropical cyclones and volcanic ash clouds (referred hereafter as WC SIGMET and WV SIGMET respectively) the scope of the tests will involve issuance of test advisories by the VAACs and TCACs in the region, which will be disseminated to the corresponding MWOs and the Regional OPMET Data Banks (RODBs). The MWOs will have to issue a test SIGMET on receipt of a test advisory from the responsible VAAC or TCAC, and disseminate it according to the distribution list used for normal (non-test) SIGMETs.

2.3 The RODBs will record the reception of the test SIGMETs and the corresponding time and will provide a summary table to the VAAC or TCAC with a copy to the Regional Office.

2.4 A consolidated summary report will be prepared by the ICAO Secretariat and reported to the AFI OPMT MTF and MET/SG. The report will include recommendations for improvement of the SIGMET exchange and availability.

3. SIGMET test procedures

3.1 *Procedures for WC and WV SIGMET TEST:*

3.1.1 **Operational Units:**

3.1.1.1 Tropical Cyclone Advisory Centre (TCAC): **La Réunion**

3.1.1.2 Volcanic Ash Advisory Centre (VAAC): **Toulouse**

3.1.1.3 Regional OPMET Data Bank (RODB): **Dakar, Pretoria**

3.1.1.4 Meteorological Watch Office (MWO): FASID Table MET 1B

3.1.1.4.1 All MWOs listed in AFI FASID Table MET 3A and MET 3B, under the responsibility of Toulouse, VAAC and La Réunion, TCAC.

Note: The participation of MWOs of States, which do not belong to AFI region, should be coordinated through the relevant ICAO Regional Office.

3.1.2 **Test date and time**

3.1.2.1 ICAO Regional Office will set a date and time after consultation with the VAAC, TCAC and RODB. The information about the agreed date and time will be sent to all States concerned and copied to the States SIGMET Tests Focal Points.

3.1.3 **Test messages**

3.1.3.1 Each VAAC or TCAC prepares a simple TEST message in the form of VA or TC advisory. The formats of the said TESTs are given in **Attachment 1** to this Appendix.

3.1.3.2 The MWOs, upon receipt of the TEST VA/TC advisory, should prepare a TEST SIGMET for volcanic ash or tropical cyclone, respectively, and send it to the RODBs. The WMO heading and the first line of the SIGMET should be valid ones, while the body of the message should contain an explanatory text on the tests as show in **Attachment 1** to this Appendix.

3.1.3.3 The MWOs should issue a WV or WC TEST SIGMET within the 10-minute period following the issuance of VA or TC test message by the corresponding VAAC or TCAC.

3.2 *Procedures for WS SIGMET Tests*

3.2.1 WS SIGMET advisory Test should be initiated by Pretoria RODB in coordination with ICAO Regional Offices in Dakar and Nairobi. The information about the date and time will be sent to all States concerned and copied to the State's SIGMET Tests Focal Points.

3.2.2 Operational Units:

- AFI Regional OPMET data Banks: Dakar and Pretoria;
- Meteorological Watch Offices (MWO): All MWOs listed in FASID Table MET 1B of the AFI FASID;

3.3 *Common Procedures Applicable to All Types of SIGMET*

3.3.1 The AFTN addresses of the RODBs to which the test SIGMETs should be sent are as follows:

Dakar	:	GOOYYZYZ
Pretoria	:	FAPRYMYX

3.3.2 To avoid over-writing of a valid SIGMET, the test SIGMET may not be sent if there is a valid SIGMET for responsible area of the MWO. Such MWOs are strongly encouraged to notify the Regional Office via e-mail of their non-participation in the test due to the said reasons.

3.3.3 Test for different types of SIGMET should preferably be conducted on separate dates.

3.3.4 At least two SIGMET tests per year should be conducted.

3.4 *Special procedure to avoid overwriting of a valid SIGMET*

3.4.1 It is vital to ensure that TEST SIGMET is not confused with operational SIGMET and avoid overwriting a valid operational SIGMET in an automated system. In order to prevent this it is suggested that:

- a) If at the time of the SIGMET test NO SIGMET is current for the FIR, the number of the Test SIGMET should follow the normal numbering sequence; e.g. if the last “normal” SIGMET before the test was number “03”, the TEST SIGMET should be number “04”, and the first “normal” SIGMET after the test should be number “05”.
- b) If a SIGMET is VALID at the time of the test then the TEST SIGMET should be issued and the valid SIGMET should be repeated immediately after the TEST SIGMET. E.g., if the following SIGMET is issued at 0100 on the date of the test:

J-4

WSCG31 FCBB 250100
FCCC SIGMET 1 VALID 250100/250500 FCBB-
FCCC BRAZZAVILLE FIR SEV TURB FCST WI=

A SIGMET test is scheduled for 0200 UTC on the 25th. The TEST SIGMET is issued with the next consecutive sequence number as follows:

WSCG31 FCBB 250200
FCCC SIGMET 2 VALID 250200/250210 FCBB-
FCCC THIS IS A TEST SIGMET PLEASE DISREGARD=

The original SIGMET is then retransmitted immediately after this with the next consecutive sequence number and the validity period is amended accordingly:

WSCG31 FCBB 250200
FCCC SIGMET 3 VALID 250200/250500 FCBB-
FCCC BRAZZAVILLE FIR SEV TURB FCST WI ... =

4. Dissemination of test SIGMETs and Advisories

4.1 All TEST SIGMETs and TC/VA advisories should be sent to the two AFI RODBs. The AFTN addresses to be used by the MWOs, TCACs and VAACs are as follows:

Dakar – GOOYYZ YZ
Pretoria – FAPRYMYX

4.2 SIGMET tests should be terminated within **2 hours** of the test start time.

4.3 Coordination with the ATS units

4.3.1 MWOs should inform the associated ATS units of the forthcoming SIGMET tests by a suitable advanced notice.

4.4 Processing of the test messages and results

4.4.1 The RODBs will be requested to file all incoming TEST advisories and SIGMETs and perform an analysis of the availability, timeliness of arrival and the correctness of the headers and meteorological content of all test SIGMETs. A SIGMET TEST Summary Table as shown in **Attachment 4** to this Appendix should be prepared by each RODB and sent to the Secretariat of the AFI OPMET Management Task Force (AFI OPMET MTF), and the contact given below with a copy to the ICAO Dakar and Nairobi Regional Office.

4.4.2 The Secretariat and SIGMET test contact should prepare the final report of the test and present it to the AFI Regional Offices. A summary report should be submitted to the next AFI OPMET MTF meeting.

4.4.3 The current contact information for sending summary tables is as follows :

J-5

WS SIGMET summary table sent to:

Mr Dieme Saidou
Service Exploitation Météorologique ASECNA – Sénégal
Tél 221 33 869 22 03
Fax 221 33 820 06 00
E-mail : saidoudieme@yahoo.fr

WV/WC SIGMET summary table sent to:

Mrs G.E Khambule
South African Weather Service
Tel 27113909326
Fax 27113209332
Email : gaborekwe.khambule@weathersa.co.za

All Summary Tables and any enquires about SIGMET tests sent to :

ICAO Regional Office, Dakar
E-mail : icaowacaf@dakar.icao.int
Cc : aokossi@dakar.icao.int

And

ICAO Regional Office, Nairobi
Email : icaoesaf@icao.int
Cc: VAhago@icao.int

Attachment 1 to Appendix J**AFI SIGMET TEST PROCEDURES****Format of VA Test advisories and SIGMETs**

1. The format of VA and TC advisories are as in ICAO Annex 3:
 - **Table A2-1. Template for advisory message for volcanic ash**
 - **Table A2-2. Template for advisory message for tropical cyclones.**

2. Example of TEST Volcanic Ash Advisory

VA ADVISORY
 DTG : YYYYMMDD/hhmm
 VAAC: (name of VAAC)
 VOLCANO : TEST
 PSN : UNKNOWN
 AREA : (name of VAAC) VAAC AREA
 SUMMIT ELEV : UNKNOWN
 ADVISORY NR : YYYY/nn (actual number)
 INFO SOURCE : NIL
 AVIATION COLOUR CODE : NIL
 ERUPTION DETAILS : NIL
 OBS VA DTG : DD/0150Z
 OBS VA DTG : ASH NOT IDENTIFIABLE FROM SATELLITE
 DATA
 FCST VA CLD + 6HR : 01/ 0800 Z SFC/FL600 NO ASH EXP
 FCST VA CLD + 12 HR : 01/1400 Z SFC/FL600 NO ASH EXP
 FCST VA CLD + 18 HR : 01/2000 Z SFC/FL600 NO ASH EXP
 RMK: THIS IS A TEST VA ADVISORY. MWO SHOULD NOW ISSUE A TEST SIGMET
 FOR VA, UNLESS THERE IS A VALID SIGMET FOR VA.
 PLEASE REFER TO THE LETTER FROM ICAO AFI OFFICE DATED xxxxxx.
 NXT ADVISORY : NO FURTHER ADVISORIES =

3. Example of Format of TEST Tropical Cyclone ADVISORY**TC ADVISORY**

DTG : YYYYMMDD/hhmm
 TCAC : (name of TCAC)
 TC : TEST
 NR : nn (actual number)
 PSN : NIL
 MOV : NIL
 C: NIL
 MAX WIND : NIL
 FCST PSN + 06HR : NIL
 FCST MAX WIND + 6HR : NIL

FCST PSN +12 HR :	NIL
FCST MAX WIND +12HR :	NIL
FCST PSN +18HR :	NIL
FCST MAX WIND +18HR :	NIL
FCST PSN + 24 HR :	NIL
FCST MAX WIND +24HR :	NIL

J-7

RMK : THIS IS A TEST TC ADVISORY. MWO SHOULD NOW ISSUE A TEST SIGMET FOR TC, UNLESS THERE IS VALID SIGMET FOR TC
 PLEASE REFER TO THE LETTER FROM ICAO AFI OFFICE DATED XXXXXX
 NXT MSG : NIL

4. Example of TEST SIGMET for Volcanic Ash

WVXXii CCCC YYGGgg
CCCC SIGMET n (nn) VALID YYGGgg/ YYGGggCCCC-
THIS IS A TEST SIGMET , PLEASE DISREGARD. TEST VA ADVISORY NUMBER
xx

RECEIVED AT YY GGggz =

Example:

WVHK31 VHHH 180205
VHHK SIGMET 01 VALID 180205/180215 VHH-
THIS IS A TEST SIGMET, PLEASE DISREGARD. TEST VA DVISORY NUMBER 01
RECEIVED AT 180200Z =

5. Format of TEST SIGMET for Tropical Cyclone

WCXXii CCCC YYGGgg
CCCC SIGMET n (nn) VALID YYGGgg/YYGGgg CCCC-
THIS IS A TEST SIGMET, PLEASE DISREGARD. TEST VA DVISORY NUMBER xx
RECEIVED AT YYGGggZ=

Example :

WCHK31 VHHH 180205
VHHK SIGMET 01 VALID 180205/180215 VHHH-
THIS IS A TEST SIGMET, PLEASE DISREGARD. TEST TC ADVISORY NUMBER 01
RECEIVED AT 180200Z=

6. Format of TEST SIGMET for other weather phenomena

WSXXii CCCC YYGGgg
CCCC SIGMET n (nn) VALID YYGGgg/YYGGgg CCCC
THIS IS A TEST SIGMET, PLEASE DISREGARD =

Example :

WSHK31 VHH H180200

VHHK SIGMET 04 VALID 180200/ 180210 VHHH-
THIS IS A TEST SIGMET, PLEASE DISREGARD =

- Note :* 1) “ x x ” in the WMO heading to be used replaced by the respective WMO geographical designator
2) Actual number to be used in all TEST SIGMETS

J-8

7. AFI Volcanic ash test procedure

Format of the test VAA

- a) The format for the TEST VAA that will be provided by the Toulouse VAAC can be seen below. DD is the day of the month, HH the hour of issuance.

FVAF01 LFPW **DDHH00**
VOLCANIC ASH ADVISORY
ISSUED: 200506**DD/HH**00Z
VAAC: TOULOUSE
VOLCANO: FICTITIOUS
LOCATION: NIL

AREA : NIL
SUMMIT ELEVATION : NIL
ADVISORY NUMBER : 2005/01
INFORMATION SOURCE: NIL
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS : NIL
OBS ASH DATE/TIME : NIL
OBS ASH CL: NIL
FCST ASH CL+6H:NIL
FCST ASH CL+12H:NIL
FCST ASH CL+18H:NIL
NEXT ADVISORY: NO FURTHER ADVISORIES

REMARKS:

THIS IS A VAA TEST MESSAGE APPLICABLE TO THE WHOLE OF ICAO AFI REGION. EACH METEOROLOGICAL WATCH OFFICE, AREA CONTROL CENTRE AND FLIGHT INFORMATION CENTRE SERVING FLIGHT INFORMATION REGIONS WITHIN THE AFI REGION RECEIVING THIS MESSAGE SHOULD ISSUE AN ADMINISTRATIVE MESSAGE USING THE WMO HEADER NOAF33 LFPW AND SEND IT TO THE AFTN ADDRESS LFZZMAFI TO ACKNOWLEDGE THE RECEPTION OF THIS VAA MESSAGE.

- b) Template of the SIGMET (without meteorological content = acknowledgement of receipt) to be sent by the MWO/ACC/FIC to both RODBs:

TO: VAAC TOULOUSE, RODB DAKAR, RODB PRETORIA
WVFR31LFPW080200

LFFF SIGMET 1 VALID 080400/081000 LFPW-
LFFF PARIS FIR/UIR TEST TESTTESTTEST
ACK RECEP TEST VAA FROM VAAC TOULOUSE
VOLCANO UNKNOWN AREA ICAO AFI REGION

J-9

INFO SOURCE TEST VOLCAFI
DTG 20071127/0615Z RECEIVED AT 27/0621Z
TEST VA SIGMET PLEASE DISREGARD
TEST TESTTESTTESTTESTTESTTESTTESTTESTTESTTEST TEST=

Note: *Parts of the SIGMET message (acknowledgement of receipt) highlighted, must be replaced with information about the Recipients, date, your MWO/ACC/FIC and corresponding FIR.*

*Attachment 2 to Appendix J***EXAMPLE OF TCA TEST MESSAGE FORMAT FROM LA REUNION TCAC**

KIO20 FMEE 100900
TC ADVISORY
DTG: 20090610/0900Z
TCAC: REUNION
TC: TEST
NR: 01
PSN: NIL
MOV: NIL
C: NIL
MAX WIND: NIL
FCST PSN +06HR: NIL
FCST MAX WIND +06HR: NIL
FCST PSN +12HR: NIL
FCST MAX WIND +12HR: NIL
FCST PSN +18HR: NIL
FCST MAX WIND +18HR: NIL
FCST PSN +24HR: NIL
FCST MAX WIND +24HR: NIL
RMK: THIS IS A TEST TC ADVISORY. MWO SHOULD NOW ISSUE A TEST SIGMET FOR TC,
UNLESS THERE IS A VALID SIGMET FOR TC.
NXT MSG: NIL

Attachment 3 to Appendix J**SIGMET TEST PROCEDURES
- Examples of TEST advisories and SIGMETs -****1. Format of TEST SIGMET for Volcanic Ash**

WVXXiiCCCCYYGGgg
CCCC SIGMET n(nn) VALID YYGGgg/YYGGgg CCCC-
THIS IS A TEST SIGMET PLEASE DISREGARD. TEST VA ADVISORY NUMBER XX RECEIVED
AT YYGGggZ=

Example:

WVSG31 GOOY 180205
GOOO SIGMET 01 VALID 180205/180215 GOOY-
THIS IS A TEST SIGMET, PLEASE DISREGARD. TEST VA ADVISORY NUMBER 01
RECEIVED AT 180200Z=

2. Exemple of TEST SIGMET for Tropical Cyclone

WCXXiiCCCCYYGGgg
CCCC SIGMET n(nn) VALID YYGGgg/YYGGggCCCC-
THIS IS A TEST SIGMET PLEASE DISREGARD. TEST TC ADVISORY NUMBER XX RECEIVED
AT YYGGggZ=

Example:

WCHK31 VHHH 180205
VHHK SIGMET 01 VALID 180205/180215 VHHH-
THIS IS A TEST SIGMET PLEASE DISREGARD. TEST TC ADVISORY NUMBER 01
RECEIVED AT 180200Z=

3. Exemple of TEST SIGMET for other weather phenomena

WSXXiiCCCCYYGGgg
CCCC SIGMET n(nn) VALID YYGGgg/YYGGggCCCC-
THIS IS A TEST SIGMET PLEASE DISREGARD=

Example:

WSCG31 FCBB 180200
FCCC SIGMET 04 VALID 180200/180210 FCBB-
THIS IS A TEST SIGMET PLEASE DISREGARD=

J-12

*Attachment 4 to Appendix J***SAMPLE TABLE TO BE USED BY RODBS****AFI SIGMET TEST Summary (Reception time at RODBs)**

Name of RODB : Dakar or Pretoria
 Date of test : YYYY/MM/DD
 Target : VA (Volcanic Ash)

VAA	Header		Received time (UTC)
TTAAii	CCCC	YYGGgg	
FVXX01	LFPW	180200	18:00:27

SIGMET (UTC)	Header				Received time
TTAAii	CCCC	YYGGgg	MWO	FIR/UIR	
WVSG31	GOOY	180235	GOOY	GOOO	18:06:02
WVCD31	FTTJ	180311	FTTJ	FTTT	18:07:58
WVNI31	DNKN	180255	DNKN	DNKK	18:17:55

Name of RODB : Dakar or Pretoria
 Date of test : YYYY/MM/DD
 Target : TC (Tropical Cyclone)

TCA	Header		Received time (UTC)
TTAAii	CCCC	YYGGgg	
FKIO01	FMEE	180200	18:08:27

SIGMET (UTC)	Header				Received time
TTAAii	CCCC	YYGGgg	MWO	FIR/UIR	
WCMG20	FMMI	180250	FMMI	FMMM	18:02:55
WCTN31	HTDA	180402	HTDA	HTDC	18:03:58
WCZA31	FAJS	180356	FAJS	FAJA	18:03:44
WCBC31	FBSK	180322	FBSK	FBGR	18:03:15

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

1/58

INTERNATIONAL CIVIL AVIATION ORGANIZATION



AFI MET BULLETINS EXCHANGE (AMBEX) HANDBOOK

Seventh Edition – Amendment 3

July - 2013

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

2/58

**Prepared by the ICAO ESAF & WACAF Offices
And published under the authority of the Secretary General**

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

The designations employed and the presentation of the 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.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

4/58

Record of amendments

Inscription des amendements

AMBEX HANDBOOK - 7TH EDITION -

MANUEL AMBEX - 7EME EDITION -

Amendment No. Amendement No.	Dated En date du	Date entered Date d'inscription	Entered by Inscrit par
1	15/03/2010	01/04/2010	RO/MET
2	01/07/2011	15/08/2011	MET/SG Secretariat
3	15/07/2013	01/09/2013	MET/SG Secretariat

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

5/58

TABLE OF CONTENTS

	Page
ABBREVIATIONS AND ACCRONYMES	8
1. INTRODUCTION.....	10
2. AMBEX SCHEME - GENERAL	12
2.1 Objective	12
2.2 Structure	12
2.3 Products	12
2.4 Communications -General	12
2.4.1 Use of AFS Components	12
2.4.2 Use of the AFTN	13
2.4.3 Use of the Satellite Distribution System for aeronautical information (SADIS-operated by the UK)	13
2.5 Use of the Internet	13
2.6 Management	14
2.7 Documentation	14
3. DEFINITIONS AND SYMBOLS.....	15
4. OPMET INFORMATION AND OPMET EXCHANGES.....	17
4.1 OPMET Data Type	17
4.2 OPMET bulletins	17
4.3 Types of OPMET exchange	17
4.3.1 Regional exchange – AMBEX scheme	17
4.3.2 Inter-regional OPMET exchange	18
4.3.3 Exchange of OPMET information through the satellite segment of the AFS	18
4.3.4 Other OPMET exchanges	Error! Bookmark not defined.
5. COMPOSITION OF AMBEX.....	19
5.1 Components of the AMBEX	19
5.2 Originating Station	19
5.3 National OPMET Center (NOC).....	19
5.4 AMBEX Bulletin Compiling Centre (AMBEX BCC or, in brief, AMBEX centre).....	19
5.5 Regional OPMET Data Banks (RODB)	20
5.6 Inter-regional OPMET Gateways (IROG).....	20
6. TAF EXCHANGE.....	22
6.1 General	22
6.2 Responsibilities and procedures to be followed by originating aerodrome meteorological offices (AMOs) and NOCs	23

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

6/58

6.3	Responsibilities and procedures to be followed the AMBEX Centres (BCCs)	25
6.4	Format and content of TAF bulletins	27
7.	SPECIAL AIREP EXCHANGE.....	29
8.	METAR/SPECI EXCHANGE.....	30
8.1	General	30
8.2	Responsibilities of originating stations and NOCs	30
8.3	Responsibilities of AMBEX Centres	31
8.4	Format and content of METAR Bulletins	32
8.5	Format and content of SPECI Bulletins	33
9.	EXCHANGE OF SIGMET AND ADVISORIES	34
10.	REGIONAL OPMET DATA BANKS (RODB).....	35
11.	INTER-REGIONAL OPMET EXCHANGE - IROG FUNCTIONS.....	36
12.	MANAGEMENT OF OPMET EXCHANGE UNDER THE AMBEX SCHEME	38
12.1	OPMET Bulletins Update Procedure	38
12.2	Quality Management of OPMET Exchange under the AMBEX Scheme	38
12.2.1	Objectives and Scope	38
12.2.2	Quality Control – General Requirements	38
12.2.3	Quality Control Procedures	39
12.3	OPMET Monitoring	39
12.3.1	Monitoring of Scheduled OPMET Data	39
12.3.2	Monitoring of Non-Scheduled OPMET data	40
12.4	AMBEX Focal Points	41
APPENDIX A		42
APPENDIX B		47
APPENDIX C		53
APPENDIX D		58
APPENDIX E		60
APPENDIX F		65
APPENDIX G		76

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

8/58

ABBREVIATIONS AND ACCRONYMES

ADMIN	Administrative
AFI	Africa and Indian Ocean region of ICAO
AFMAG	AFI MET Advisory Group
AFS	Aerodrome flight information service
AFTN	Aeronautical fixed telecommunication network
AIREP	Air-report
AMBEX	AFI MET Bulletins Exchange (System)
AMD	Amend/Amended
ANP	Air Navigation Plan
APIRG	AFI Planing and Implementation regional Group
ASIA/PAC	Asia and Pacific Region of ICAO
BCC	Bulletin Compilation Centre
BRDO	Banque Régionale des Données OPMET
COM	Communications
ESAF	East and South African (Office)
EUR	Europe region of ICAO
FASID	Facilities and Services Implementation Document
ICAO	International Civil Aviation Organization
ICD	Interface Control Document
IROG	Inter-regional OPMET gateway
MET	Meteorology
MET/SG	MET Sub-group
METAR	Aerodrome routine meteorological report
MID	Middle East region of ICAO
NAM	North American region of ICAO
NOC	National OPMET Centre
ODREP	OPMET Data Regional Exchange Points
OMM	Organisation Météorologique Mondiale
OPMET	Operational meteorological (<i>information</i>)
RODB	Regional OPMET Data Bank
SADIS	Satellite Distribution of Aeronautical Information
SAM	South African (Office)
SARP	Standards and Recommended Practices [ICAO]
SIGMET	Information concerning en-route weather phenomena which may affect the safety of aircraft operation
SPECI	Aerodrome special meteorological report (<i>in meteorological code</i>)
TAF	Aerodrome forecast
TCA	Tropical Cyuclone Advisory
TCAC	TCA Centre

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

9/58

VAA	Volcanic Ash Advisory
VAAC	VAA Centre
WACAF	Western and Central African (Office) of ICAO
WIFS	WAFS Internet File Services
WMO	World Meteorological organization

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

10/58

1. INTRODUCTION

1.1 The Africa- Indian (AFI) Meteorological Bulletin Exchange (AMBEX) scheme was established by the AFI Planning and Implementation Regional Group (APIRG) in 1986. The scheme became operational in 1986 and has since then been successfully serving the ICAO AFI Region in the exchange of the required OPMET information.

Note: AFI Meteorological Advisory Group (AFMAG) was created by the LIM AFI (COM/MET/RAC) RAN Meeting in Lome April 1988 and established by APIRG/6 Meeting in November 1989. AFMAG was replaced by AFI Meteorology Sub Group (MET/SG) at APIRG/11 Nairobi 1998. AMBEX was implemented starting on 29 August 1986.

1.2 AMBEX scheme was intended initially only for TAF exchanges. AIREPs and METAR were added to the scheme at a later stage and SIGMET, Volcanic Ash Advisory (VAA) and tropical Cyclone (TCA) has been added in this edition. The operation of the AMBEX scheme included exchange of OPMET bulletins between the originating tributary offices and the bulletin compiling centres, which, according to their functions and responsibilities, were classified as METAR Collection Centres, TAF Collection Centres and AIREP Collection Centre. The operational exchange has been carried out according to agreed transmission schedules; the bulletin contents were specified in the AMBEX Handbook.

1.3 The procedures described hereunder are based to a significant degree on corresponding procedures in use in the Regional OPMET Bulletin Exchange (AMBEX) Scheme (AFI). Although uniformity is desired, the AMBEX Scheme is not intended as a rigid scheme for the AFI Region where variations or adaptation of the basic principles appear more efficient. AMBEX centre authorities are strongly requested to suggest to the Secretary of the MET/SG any local changes that are considered desirable for the enhancement of the efficiency of the scheme.

1.4 Based on communications (COM) facilities of very limited capacity in the early seventies, the AMBEX scheme was strictly planned to accommodate only those OPMET exchanges considered vital for the flight operations. Over the years, the COM facilities have been improving considerably and the AMBEX scheme has been developed accordingly.

1.5 Recently, it has been identified that significant changes in the scheme were needed in order to make it compatible with the existing COM environment and satisfy the evolving user requirements. In view of this, APIRG adopted conclusions that called for further development of the AMBEX scheme according to the new operational requirements.

1.6 The AMBEX Handbook is the main guidance material providing detail on the procedures for OPMET exchange under the AMBEX scheme. The Handbook defines the responsibilities of the AMBEX centres and the procedures to be followed. It defines also the content and format of the AMBEX bulletins.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

11/58

1.7 The AMBEX Handbook is published and kept up-to-date by the ICAO ESAF and WACAF
Offices.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

12/58

2. AMBEX SCHEME - GENERAL

2.1 Objective

2.1.1 The main purpose of the AFI Meteorological Bulletins Exchange (AMBEX) Scheme is to:

- ensure the most efficient and economical exchange of operational meteorological (OPMET) information within the AFI Region as well as with the other ICAO regions to meet the requirements of users of OPMET information, and
- ensure the implementation of the OPMET-related SARPs in Annex 3 and Annex 10, and the relevant provisions of the ICAO Air Navigation Plan (ANP) for the AFI Region in a highly efficient and standardized way.

2.2 Structure

2.2.1 The above objective is achieved by implementing a number of AMBEX collecting and disseminating centres (AMBEX centres), Regional OPMET data banks (RODBs)*, and inter-regional OPMET gateways (IROGs). All these operational units form the **AMBEX scheme**. In order to ensure seamless global exchange of the required OPMET information, the AMBEX Scheme should be developed in compliance with similar structures in the other ICAO regions, as well as with the aeronautical fixed system (AFS) satellite distribution systems used to disseminate OPMET data.

** Note: The AFI OPMET Regional Data Banks are located in Dakar, Senegal and Pretoria, South Africa.*

2.3 Products

2.3.1 The AMBEX scheme prepares and delivers to the aviation users the required OPMET information in the form of **bulletins**. The scheme should handle all types of OPMET information in alphanumeric bulletin form and should provide facilities and services for scheduled and non-scheduled delivery of OPMET information to users.

2.4 Communications -General

2.4.1 Use of AFS Components

According to Annex 3, 11.2,” telecommunications facilities used for the exchange of operational meteorological information should be the aeronautical fixed service”. The use the AFS for the OPMET exchange encompass two components:

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

13/58

-
- Use of terrestrial AFTN circuits; and
 - Use of satellite distribution systems-SADIS.

2.4.2 Use of the AFTN

2.4.2.1 In the AMBEX scheme AFTN circuits are used for collection of the OPMET messages by the AMBEX centres and for regional and inter-regional exchanges of OPMET bulletins. The access to the regional OPMET data banks (request-reply service provided by the RODBs) is also provided through the AFTN.

2.4.2.2 OPMET bulletins transmitted via the AFTN shall be in encapsulated in the text part of the AFTN message format (Annex 3, Appendix 10, 2.1.4).

2.4.2.3 Transit times of the AFTN messages and OPMET bulletins are specified in Annex 3, Appendix 10, 1.1.

2.4.2.4 OPMET bulletins via AFTN should use the following **priority indicators**:

- **FF: SIGMET, AIREP SPECIAL, VAA,TCA and amended TAF** (cf. Annex 10 Vol II, 4.4.1.1.3)
- **GG: TAF, METAR and SPECI** (cf. Annex 10 VolII, 4.4.1.1.4)

2.4.2.5 Filing times of the OPMET bulletins should be according to Annex 3, Appendix 10, 2.1.2

2.4.3 Use of the Satellite Distribution System for aeronautical information (SADIS-operated by the UK)

2.4.3.1 SADIS satellite broadcast is used by the authorized users in the States for receiving global OPMET Data.

2.4.3.2 FASID Table MET 7 of the AFI regional plans contains a list of authorized users for the SADIS broadcast.

2.5 Use of the Internet

2.5.1 Internet may be used to the dedicated internationally agreed circuits for exchange of meteorological data. An internet based secure FTP service to SADIS has been operational since 2010.

2.5.2 RODBs provide internet based facilities for retrieval of OPMET information.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

14/58

2.6 Management

2.6.1 Monitoring of the OPMET exchange under the AMBEX Scheme, planning for improvements and preparation of proposals for any changes that may be necessary, are carried by the APIRG. In order to achieve these tasks, the AMBEX implementation status and planning is part of the agenda of the AFI MET Sub-group MET/SG.

Note: When necessary, contributory bodies may be established by APIRG or the MET Sub-group to deal with OPMET specific issues. The AFI OPMET Management Task Force, established by APIRG/16 is currently tasked to deal with all OPMET related issues in the AFI Region

2.6.2 Any proposals for amendments to the AMBEX Scheme, which States or international organizations concerned consider it necessary, due to changes in operational requirements for OPMET data or to developments of the AFS, should be forwarded for consideration by the ICAO Regional Offices of Dakar, Senegal and Nairobi, Kenya as the case may be.

2.7 Documentation

2.7.1 The AMBEX Handbook is the main guidance material related to the AMBEX Scheme. It should be kept up-to-date by the ICAO Regional offices referred to above coordinated by the Secretary of the OPMET Task Force in close coordination with the Secretary of the MET Sub-group.

2.7.2 The AFI OPMET Data Banks Interface Control Document (ICD) is a supplementary document which provides users with guidance on the interrogation procedures and the content of the RODBs.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

15/58

3. DEFINITIONS AND SYMBOLS

3.1 Within the AMBEX Scheme, the following definitions and symbols are used:

- i) AMBEX: AFI MET Bulletins Exchange (Scheme);
- ii) AMBEX Bulletin: A collection of AMBEX messages originating from MET offices within a collection area, always containing the same type of OPMET data and identified by an appropriate identifier. Bulletins should not exceed 1800 characters in length;
- iii) **National OPMET center (NOC)**. Normally, a NOC is associated with the State's national AFTN centre/switch. The role of the NOC is to collect all required OPMET messages generated by the originating stations in the State and to send them to the responsible AMBEX bulletin compiling center (AMBEX BCC). Some NOCs serve also as AMBEX BCCs. National regulations should be developed to ensure that NOCs disseminate the international OPMET data within their own State, as necessary.
- iv) AMBEX Bulletin Compiling Centre (BCC): AMBEX centres (former TCC, MCC or ACC, etc..) are responsible for collection of OPMET messages from the originating stations or NOCs in their area of responsibility and for compiling these messages into AMBEX bulletins. FASID Tables MET 4A and MET 4B determine the areas of responsibility (or, collection areas) of the AMBEX centres for METAR/SPECI, and TAF, respectively.
- v) OPMET Inter-regional Gateway (IROG) A designated centre charged with the responsibility of exchanging OPMET data between stations within the AFI Region and in adjacent regions, as prescribed in this Handbook. The plan of OPMET data exchange between regions through an IROG is based on pre-determined distributions responsibilities;
- vi) YPYX: Fifth, sixth, seventh and eighth letter of an addressee indicator to be used:
 - a) with the normal four-letter location indicators, to designate BCCs
 - b) with indicators for pre-determined distribution within a BCC collection area.
- vii) Regional OPMET Data Bank (RODB): A centre charged with task to collect required OPMET bulletins from AMBEX centres, handle all types of OPMET bulletins, provide facilities for “request-reply” service to authorized users, maintain a catalogue of bulletins, quality control the incoming bulletins and inform AMBEX centres on any deficiencies, monitor the OPMET traffic and report to the ICAO Regional Office on the results

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

16/58

Note: The designated RODB and their responsibilities are described in **Appendix E**

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

17/58

4. OPMET INFORMATION AND OPMET EXCHANGES

4.1 OPMET Data Type

4.1.1 The following OPMET data types should be handled by the AMBEX scheme:

Data type	Abbreviated name	WMO data type designator
Aerodrome reports	METAR	SA
	SPECI	SP
Aerodrome forecasts	TAF: 24 and 30 hours	FT
SIGMET information	SIGMET	WS
	SIGMET for TC	WC
	SIGMET for VA	WV
Volcanic ash and tropical cyclone advisories	Volcanic Ash Advisory	FV
	Tropical Cyclone Advisory	FK
Air-reports	AIREP SPECIAL (ARS)	UA
Administrative	ADMIN	NO

4.2 OPMET bulletins

4.2.1 The exchange of OPMET data is carried out through bulletins containing one or more meteorological messages (METAR, SPECI, TAF or other OPMET information). An OPMET bulletin contains messages of the same type.

4.2.2 The format of OPMET bulletins is determined by:

- ICAO Annex 10, *Aeronautical telecommunications*, as regards the AFTN envelope of the bulletin;
- WMO-No.386, *WMO Manual on the Global telecommunication System*, as regards the WMO abbreviated heading of the bulletin;
- ICAO Annex 3 and WMO-No.306, *Manual on Codes*, as regards the format and coding of the information included in the bulletin.

4.3 Types of OPMET exchange

4.3.1 Regional exchange – AMBEX scheme

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

18/58

4.3.1.1 The AMBEX scheme covers the exchange of OPMET information in the AFI region. It includes several types of exchanges as described below.

4.3.1.1.1 *Regular Exchange under AMBEX.* This is a scheduled exchange that encompasses collection of messages from the originating stations, compiling of bulletins and their dissemination according to predetermined distribution schemes. The collection and distribution is carried out at fixed times and the bulletin content is defined in the current Handbook.

4.3.1.1.2 *Non-regular exchange.* This includes:

- a) *Exchange on request (request-reply service).* The RODBs store OPMET data and make them available on request.
- b) *Exchange of non-routine reports:* SPECI; TAF AMD; SIGMET; TCA and VAA; ADMIN messages.

4.3.2 Inter-regional OPMET exchange

4.3.2.1 Exchange of OPMET data between the AFI and the other ICAO Regions is carried out via designated centres, which serve as Inter-regional OPMET Gateways (IROG). An IROG is set up for sending/receiving required OPMET data between AFI and every other ICAO regions.

4.3.2.2 Inter-regional OPMET exchange via IROGs is carried out through the ground segment of the AFS (currently, through the AFTN).

4.3.3 Exchange of OPMET information through the satellite segment of the AFS

4.3.3.1 The satellite broadcast provided by the United Kingdom (Satellite Distribution System for Aeronautical Information Relating to Air Navigation - SADIS) forms another type of OPMET exchange, which is global in nature and is intended to cover the emerging requirement for global access to all available OPMET data.

4.3.3.2 All AFI data handled by the AMBEX scheme should be relayed to the SADIS for global broadcast.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

19/58

5 COMPOSITION OF AMBEX

5.1 Components of the AMBEX

5.1.1 AMBEX scheme involves a number of aeronautical meteorological stations, aeronautical telecommunication stations, aerodrome meteorological offices and other operational units. The following operational units should be considered as components of the AMBEX scheme:

- Originating station
- National OPMET center (NOC)
- AMBEX bulletin compiling centre (BCC)-AMBEX Centre
- Regional OPMET Data Banks (RODBs)
- Interregional OPMET gateway (IROG)

5.2 Originating Station

5.2.1 It is an aeronautical meteorological station or an aerodrome meteorological office, or a forecasting office, or a MWO, or a TCAC, or a VAAC. The duties and responsibilities of these originating stations should be defined by the State's meteorological authority.

5.3 National OPMET Center (NOC).

5.3.1 Normally, a NOC is associated with the State's national AFTN centre/switch. The role of the NOC is to collect all OPMET messages generated by the originating stations in the State and to send them to the responsible AMBEX bulletin compiling center (AMBEX BCC). Some NOCs serve also as AMBEX BCCs. National regulations should be developed to ensure that NOCs disseminate the international OPMET data within their own State, as necessary.

5.4 AMBEX Bulletin Compiling Centre (AMBEX BCC or, in brief, AMBEX centre).

5.4.1 AMBEX centres are responsible for collection of required OPMET messages from the originating stations or NOCs in their area of responsibility and for compiling these messages into AMBEX bulletins. FASID Tables MET 4A and MET 4B determine the areas of responsibility (or, collection areas) of the AMBEX centres for METAR, SPECI and AIREP SPECIAL, and TAF, respectively.

5.4.2 The AMBEX centres are responsible for the transmission of the bulletins compiled by them to:

- other AMBEX centres, according to predefined distribution lists, specific for each bulletin;
- AFI RODBs (Dakar and Pretoria);

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

20/58

- NOCs or other COM or MET offices in the States in their area of responsibilities, as agreed between the AMBEX centre and the States' authorities concerned.

5.5 Regional OPMET Data Banks (RODB)

5.5.1 Two centres have been designated by APIRG (APIRG/13 Conclusion 13/67, 2001), to serve as Regional OPMET Data Banks: Dakar and Pretoria. FASID Table MET 4C reflects the requirements for the operation of the AFI OPMET data banks to support the AMBEX Scheme.

5.5.2 The **main responsibilities** of the RODBs are defined, as follows:

- to support the AMBEX Scheme and to facilitate a regular exchange of required OPMET information based on predetermined distribution within the AFI Region;
- to provide facilities for request/response type of access to the stored OPMET data for users to obtain non-regular or occasional information.

Note. — The interrogation procedures applicable to the OPMET data banks and catalogues are provided in the “AFI Regional Interface Control Document (ICD) - OPMET Data Bank Access Procedures”, published and maintained by the ICAO Regional Offices in Dakar and Nairobi

5.6 Inter-regional OPMET Gateways (IROG).

5.6.1 The Inter-regional OPMET Gateways in the AFI Region are the designated RODBs. Each RODB is assigned responsibility for exchange of required OPMET information between AFI region and the adjacent ICAO Regions. The responsibilities of the IROGs for AFI is shown in para. 11.1 of this Handbook.

5.6.2 **Support to the SADIS broadcast.** The RODBs and IROGs should facilitate the global exchange of OPMET data carried out through the SADIS satellite broadcast via the EUR IROG in charge of exchange between the AFI and EUR regions. In order to achieve this, close liaison should be maintained between the IROGs and the corresponding SADIS gateway. Availability of AFI data on SADIS should be monitored and any systematic shortfalls of data identified should be reported to the relevant ICAO regional office.

5.7 Structure of the AMBEX Scheme

5.7.1 The overall structure of the AMBEX scheme is presented in the following diagram

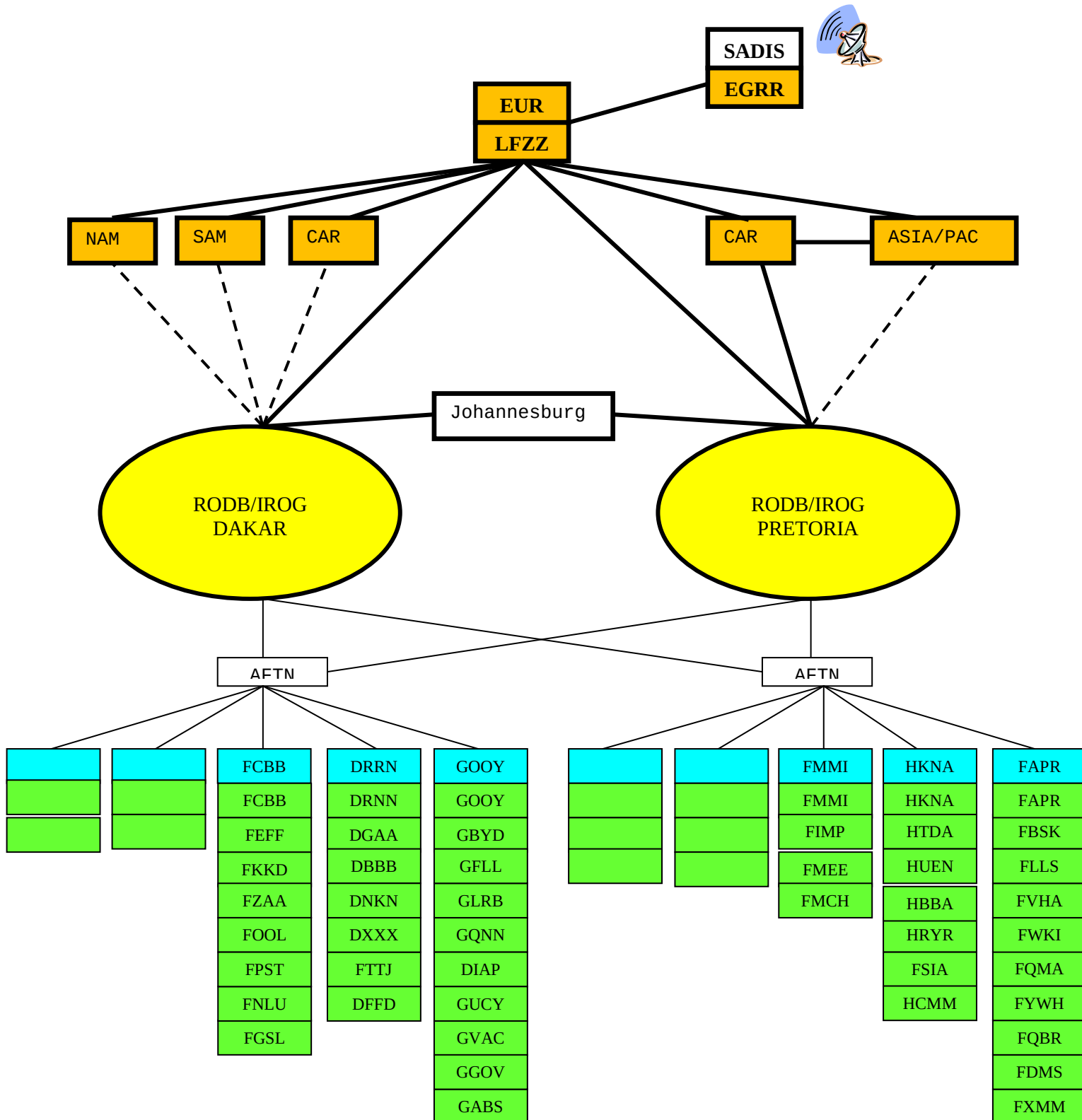
APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C

AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3

AMBEX HANDBOOK 7th Ed.

21/58

AMBEX SCHEME



**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

22/58

6. TAF EXCHANGE

6.1 General

6.1.1 Aerodrome forecast (TAF) should be prepared by the aerodrome meteorological offices (AMOs) or other meteorological offices, designated for provision of TAF by the State's meteorological authority, for all international aerodromes, for which TAF is required according to FASID Table MET 1A of the AFI ANP.

6.1.2 All TAFs as described in the **AFI FASID Table MET 2A** should be included in the regular AMBEX exchange. The AFI FASID Table MET 2A is available at the following link: <http://www.icao.int/safety/meteorology/Documents/FASID%20Table%20MET%202A%20-%20SUG%20Annex%201%20-%20Complete.pdf>

Note : SADIS User Guide (SUG) Annex 1 presents the requirements for OPMET data (METAR and TAF) by aviation users. When OPMET data from domestic airports (so called non-AOP airports) is required by users, the corresponding State is consulted on its agreement for providing this additional information. If the information is available and the State agrees to include it in the exchange, the additional airports are included in SUG Annex 1 and the State should provide the additional OPMET information on a continuous basis.

6.1.3 The requirements for the exchange of 24 or 30-hour TAFs (so called “long” TAFs with WMO data designator – FT), are set in FASID Table MET 1A of the ANP. “Short” TAFs with 9- or 12-hour period of validity (WMO data designator - FC), are no longer issued by States in the AFI region

6.1.4 OPMET messages and bulletins are normally sent via the AFTN. In exceptional circumstances, when the AFTN cannot give adequate support to AMBEX traffic, the temporary use of alternative existing communications systems should as far as possible be coordinated with the concerned ICAO Regional Offices.

6.1.5 Each OPMET message and OPMET bulletin should conform strictly to the Annex 10 message format.

6.1.6 Each OPMET message and OPMET bulletin should carry a WMO abbreviated heading (see **Appendix C**).

6.1.7 Each OPMET message or bulletin, should terminate with an equal (=) sign (signal no. 22

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

23/58

of International Telegraph Alphabet no.2 in the figure case).

6.1.8 The procedures described in this Handbook are intended for the manual preparation of AMBEX messages and bulletins. It is not intended, however, that the Handbook precludes the use of automated or semi-automated procedures. When required, the procedures described hereunder should be modified and applied in a manner which will fully exploit the capabilities of the equipment available. The AMBEX messages and bulletins produced by application of such modified procedures should be in a format compatible with the format described in this Handbook.

6.2 Responsibilities and procedures to be followed by originating Aerodrome Meteorological Offices (AMOs) and NOCs

6.2.1 Originating AMOs (or other designated forecasting offices) should prepare the required TAF messages for the periods of validity indicated in **Appendix B**. TAFs should be sent by the AMOs or NOCs and to the responsible AMBEX center before the cut-off time set up by this centre.

6.2.2 Aerodrome meteorological offices in preparing TAF should follow strictly the template for TAF in Annex 3, Appendix 5 and the WMO TAF code form (FM 51-XII TAF, WMO – No. 306, *Manual on Codes*, Volume I.1, Part A – *Alphanumeric Codes*).

6.2.3 TAFs should be monitored by the originating AMOs and amended TAF (TAF AMD) should be issued according to the established criteria. Amended TAFs should be sent by the originating station to the responsible AMBEX centre with no delay. The optional group BBB should be used in the WMO abbreviated heading to indicate amended TAF in accordance with **Appendix C**.

6.2.4 TAF messages should be quality controlled by the originating meteorological offices and, when necessary, a corrected TAF (TAF COR) should be sent immediately after an error in an already transmitted message had been identified.

6.2.5 The NOC should have sent the TAF messages so that the BCC have receive them not later then 5 minutes after the time shown in column 6 of Appendix B.

6.2.6 The BCC should have sent the TAF bulletins so that the RODBs have receive them not later then 10 minutes after the time shown in column 6 of Appendix B.

6.2.7 The following is an outline of the procedures to be applied in preparing an AMBEX message at an office other than a BCC:

Parts of Message

Resulting Page Copy

a) Priority Indicator and Address

GG DRRNYPYX

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

24/58

b)	Date and Time of Filing and Originator	281100 DGAAYMYX
c)	WMO Abbreviated Heading (see Appendix C)	FTGH31 DGAA 281100
d)	TAF	TAF DGAA 281100Z 2812/2918 ... =
e)	Normal Ending.	

6.2.8 If an amendment to a TAF previously issued becomes necessary, a new AMBEX message should be prepared and sent to the BCC concerned. The WMO abbreviated heading for this message should be the same as for the AMBEX message containing the original TAF, with the addition of the optional groups AAA, AAB, AAC etc. (to indicate the first, second, third etc. amendment to the original TAF). Optional groups are also used for sending delayed TAFs, RRA, RRB, RRC, etc and corrected TAFs CCA, CCB, CCC, etc in accordance with **Appendix C**.

6.2.9 Requests for missing bulletins should be sent to the BCC responsible for compiling the bulletins and should be in the following format:

<u>Parts of Message</u>	<u>Resulting Page Copy</u>
a) Priority Indicator and Address of the BCC concerned	GG HKJKYPYX
b) Date and Time of filing and Originator	051305 FMMIYMYX
c) Text	RQM/SAYSSY, YBBN, YMML=
d) Normal ending	.

6.2.11 Provisions concerning request messages to the AFI RODBs are given in the ICD of the Dakar and Pretoria RODBs.

6.2.12 The OPMET data catalogue given in AFI ICD shall be implemented by AFI NOCs, BCCs and RODBs (Conclusion 18/46 of APIRG/18 refers).

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

25/58

6.3 Responsibilities and procedures to be followed the AMBEX Centres (BCCs)

6.3.1 Bulletins compilation centres should collect TAFs from the AMOs and/or NOCs in their area of responsibility and compile TAF Bulletins **so that the RODBs have receive them not later then 10 minutes after the time shown in column 6 of Appendix B.** The areas of responsibility, as far as practicable, should group together aerodromes and their alternates. AMBEX centres should ensure that TAFs within their area of responsibility have common periods of validity.

6.3.2 AMBEX centres should establish a cut-off time for reception of TAFs from AMOs and/or NOCs in their area of responsibility, **e.g., not earlier than one hour prior to the beginning of its validity period and not after 10 minutes after the filing/transmission times specified in Appendix B.** At the cut-of time AMBEX centres should compile TAF bulletin(s) containing all prescribed aerodromes, without indicating any missing TAF with “NIL”.

6.3.3 The filing time for 24- and 30-hour TAF bulletins should be **one hour** before the start of the validity period.

6.3.4 AMBEX centres should transmit the compiled TAF bulletins to other AMBEX centres and the RODBs according to the distribution lists as specified for each TAF bulletin in **Appendix B.**

6.3.5 AMBEX centres should transmit the TAF bulletins compiled by them, as well as TAF bulletins received from other AMBEX centres, as necessary, to the NOCs and/or other offices in the States in their area of responsibility, as agreed between the AMBEX centre and the meteorological authorities of the States concerned.

6.3.6 A TAF message received by a AMBEX centre after the scheduled transmission of the corresponding bulletin is a delayed TAF. The AMBEX centre should then prepare an AMBEX bulletin of all TAFs received.

6.3.7 Amended TAF (TAF AMD) received from an AMO or NOC should be distributed with no delay as an amended TAF bulletin to all recipients in the distribution list for the TAF bulletin, to which the originating aerodrome belongs. The optional BBB group should be used in the WMO bulletin heading accordingly.

6.3.8 Each BCC should establish a cut-off time for the reception of AMBEX messages from stations within its AOR. The cut-off time should be about **twenty minutes** after the times of preparation of TAFs shown in column 6 of **Appendix B.**

6.3.9 A new tape, containing the address, origin and WMO abbreviated heading of the bulletin, is prepared. The bulletin is then assembled by combining this new tape with the text portions of the AMBEX messages received and adding a normal ending. Details of the WMO abbreviated headings that should be used by BCCs in their bulletins are given in **Appendix C.**

6.3.10 AMBEX centres should disseminate their own bulletins to the stations listed in column 9

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

26/58

of **Appendix B**. This dissemination should take place some **thirty minutes** after the time for preparation of the TAFs shown in column 6 of **Appendix B**.

6.3.11 No addresses other than those listed in column 10 of **Appendix B** should be used except in response to request messages.

6.3.12 The following is an outline of the procedures to be followed by AMBEX centres in the preparation of AMBEX bulletins.

<u>Parts of Bulletin</u>	<u>Resulting Page Copy</u>
a) Priority Indicator and Address	GG DAZZYPYX FAJSYMYX FCZZXLBX GOOZZSNGX HAZZYPYX HEZZYPYX HKZZYPBX
b) Date and Time of Filing and Originator	281030 DRRNYPYX
c) WMO Abbreviated Heading (see Appendix B)	FTA033 DRRN 281100
d) TAFs received from the stations in the AOR, in order shown in column 2 of Appendix B	TAF DRRN 281100Z 2812/2912 24003KT 8000 BKN020 BECMG 2813/2815 SCT018CB BKN020 TEMPO 2817/2820 VRB03 TSRA SCT015CB BKN020 FM290600 16008KT 9999 BKN020 BKN120 =

TAF DGAA 281100Z 2812/2912 13010KT 9000 BKN020 TEMPO 2816/2820 3000
DZ BKN005 OVC050 FM290400 17010KT 9999 BKN015 BKN100 =

TAF DBBB 281030Z 2812/2912 26008KT 9000 BKN020 PROB30 TEMPO 2815/2818
3000 TSRA BKN005 SCT020CB FM290000 24006KT 9000 BKN010 =

TAF DNKN 281030Z 2812/2912 VRB03KT 9999 BKN015 PROB30 TEMPO
2813/2816 2000 FG BKN003 BKN010 FM282000 24006KT 9000 BKN020 =

TAF DNMM 281028Z 2812/2912 24006KT 9000 BKN020 PROB30 TEMPO
2814/2816 3000 DZ BKN005 BKN010=

TAF DXXX 281030Z 2812/2912 26008KT 9999 BKN015 BECMG 2815/2817
SCT015CB BKN020 TEMPO 2818/2820 22020G35KT 2000 TSRA SCT010CB BKN020
FM282030 26006 9999 BKN020 BKN100 =

TAF FTTJ 281030Z 2812/2912 12006KT CAVOK TEMPO 2818/2820 SCT030 =

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

27/58

TAF DFFD 281030Z 2812/2912 20004KT 9999 BKN020 BECMG 2814/2816
SCT018CB BKN020 TEMPO 2816/2818 24010KT TSRA SCT015CB BKN020
FM290600 22008KT 9999 BKN020 BKN100 =

e) Normal Ending NNNN.

6.3.13 TAFs received by an AMBEX Centre after the cut-off time, and which have still at least 6-hour validity left, should be included in one or more bulletins of delayed TAFs. The WMO Abbreviated Heading for such bulletins should be the same as for the bulletin from which the TAFs are missing, with the addition of the optional groups RRA, RRB, RRC etc. (to indicate the first, second, third etc. bulletin of delayed TAFs), in accordance with **Appendix C**, paragraph 4.

6.3.14 When an AMBEX centre receives amended TAFs from originating stations or NOCs, it should prepare bulletins of amended TAFs. The WMO abbreviated heading for such bulletins should be the same as for the bulletin containing the original TAF, with the addition of the optional groups AAA, AAB, AAC etc. (to indicate the first, second, third etc. amendment to TAFs in the original bulletin), in accordance with **Appendix C**, paragraph 4.

6.3.15 "NIL" to indicate a missing TAF should not be used in AMBEX bulletins.

6.3.16 If an AMBEX centre finds it impossible to meet the specified filing times due to systematic late receipt of TAFs from originating stations or NOCs, it should reach an agreement with these stations on another filing time for their AMBEX messages and thereafter propose to the Secretary of the AFI MET/SG that this filing time be incorporated in the Handbook.

6.3.17 In addition to its own AMBEX bulletins, each BCC should distribute bulletins received from other BCCs to the MET offices within its originating stations or NOCs.

6.4 Format and content of TAF bulletins

6.4.1 Issuance and period of validity:

6.4.1.1 24- and 30-hour TAFs should be issued at intervals of six hours, with the period of validity beginning at one of the main synoptic hours (00, 06, 12, 18 UTC), as shown in the table below.

Synoptic hours (UTC)	24-hour TAF		30-hour TAF	
	Period of validity	Filing Time	Period of validity	Filing Time
00	00-24	23*(-1)	00-06 (+1)	23*(-1)
06	06-06	05	06-12 (+1)	05
12	12-12	11	12-18 (+1)	11
18	18-18	17	18-24 (+1)	17

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

28/58

**Note: “-1” indicates the previous day and “+1” indicates the next day*

6.4.1.2 All TAFs in a AMBEX TAF bulletin should have a common period of validity. It is not allowed to mix “long” and “short” TAFs in one bulletin.

6.4.2 Each TAF message in a TAF bulletin should start with the code word TAF followed by the ICAO location indicator (CCCC) of the aerodrome and the date/time group (YYGGggZ), indicating the official time of issuance. Corrected TAF messages, should start with TAF COR. Amended forecasts should start with TAF AMD.

6.4.3 The use of the BBB group in the WMO heading for delayed, corrected, or amended TAFs is described in **Appendix C**.

6.4.4 The following is an outline of the format to be applied by a AMBEX centre in preparing a TAF bulletin, containing “long” TAFs (24 or 30 hour):

Parts of Message	AMBEX FT Bulletin
AFTN header	
Priority Indicator and Address	GG YBBBYPYX
Date and Time of filing and Originator	271104 ZBBBYPYX
WMO Abbreviated Heading	FTCI31 ZBBB 271100
TAF messages	TAF ZBAA 271100Z 2712/2812.....= TAF ZBTJ 271100Z 2712/2818.....=
AFTN Normal Ending	NNNN.....

6.4.5 A missing TAF in a non TAF bulletin should be indicated with “NIL”, as shown in the following example:

TAF VTBD 281100Z NIL=

6.4.6 A cancelled TAF in a TAF bulletin should be indicated with “CNL”, as shown in the following example:

TAF VTBD 281100Z 2812/2912 CNL=

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

29/58

7. SPECIAL AIREP EXCHANGE

7.1 The meteorological watch offices (MWO) are responsible for collection through their associated ATS units of special air reports (AIREP SPECIAL) received from aircrafts within their FIR or CTA.

Note: – Routine air-reports received by data-link communications should be relayed directly to the WAFCS by the ATS unit.

7.2 MWOs should collect all special air-reports and prepare one-hour collectives in the form of a UA bulletin for transmission to the responsible AMBEX centre at the time specified by the AMBEX centre.

Notes:

- 1) *The transmission of air-reports to the WAFCS as required by Annex 3 should be arranged by the meteorological authorities concerned.*
- 2) *MWOs should follow the special requirements for the dissemination of special air-reports as defined by Annex 3,*

7.3 AFI FASID Table 2B describes the exchange of SIGMET and special AIREP reports procedures.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

30/58

8. METAR/SPECI EXCHANGE

8.1 General

8.1.1 Hourly METAR reports should be prepared by all international aerodromes listed in FASID Table MET 1A. METAR should be issued **on an hour intervals** for those aerodromes, included in the HF VOLMET broadcasts (cf. FASID Table ATS 2 – HF Radiotelephony VOLMET Broadcasts), or D-VOLMET.

8.1.2 METAR from all international aerodromes listed in Table AOP 1 of the Basic ANP and , in FASID Table MET 1A, should be included in the regular AMBEX exchange. In addition, METAR from a number of domestic aerodromes, required by the users, should also be included in the regular AMBEX exchange in accordance with para. 12.1.3, if so agreed by the States concerned.

Note: SADIS User Guide (SUG) Annex 1 presents the requirements for OPMET data (METAR and TAF) by aviation users. When OPMET data from domestic airports (so called non-AOP airports) is required by users, the corresponding State is consulted on its agreement for providing this additional information. If the information is available and the State agrees to include it in the exchange, the additional airports are included in SUG Annex 1 and the State should provide the additional OPMET information on a continuous basis.

8.1.3 Description of the AFI METAR bulletins included in the regular AMBEX exchange, containing the responsible compiling AMBEX centre, WMO bulletin identification, and the list of aerodromes included in the bulletin, is given in **Appendix A**.

8.1.4 The official hour of observation to be included in the METAR bulletin heading is indicated in the table in **Appendix A**.

8.1.5 All METAR bulletins should be sent to both RODBs Dakar and Pretoria. AMBEX centres should exchange METAR bulletins according to the distribution lists given in **Appendix A**.

7.1.6 SPECI reports should be disseminated in the same way as the METAR reports originated by the same aerodrome.

8.1.7 Exchange of METAR/SPECI messages outside AMBEX scheme, if necessary should be carried out by direct AFTN addressed messages.

8.2 Responsibilities of originating stations and NOCs

8.2.1 The originating stations (aeronautical meteorological stations) and/or NOCs should prepare METAR messages for the observation times indicated in **Appendix A** and send them to their responsible AMBEX center.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

31/58

8.2.2 SPECI should be prepared between the regular observation times, following the requirements set in Annex 3 and sent with no delay to the responsible AMBEX centre.

8.2.3 In preparing METAR and SPECI messages the originating stations should follow strictly the specifications for METAR and SPECI in Annex 3 (Chapter 4 and Appendix 3 including the template in Table A3-2) and the WMO METAR and SPECI code forms (FM 15-XII METAR and FM 16-XII SPECI, WMO – No. 306, *Manual on Codes*, Volume I.1, Part A – *Alphanumeric Codes*).

8.2.4 METAR messages should be sent to the responsible AMBEX centre before the cut-off time specified by the AMBEX centre, to allow for timely compilation of the METAR bulletin. If, for some reason, a METAR message has not been sent before the cut-off time, the originating station/NOC should send it as soon as possible after that, as a **delayed message**. The originating stations/NOCs should follow strictly the schedules specified for METAR messages and keep to a minimum the number of delayed messages.

8.2.5 METAR and SPECI messages should be quality controlled by the originating stations/NOCs and, when necessary, a corrected message should be sent immediately after an error in an already transmitted message had been identified.

Note: *Procedures applying to the corrected and delayed messages are given in **Appendix C**.*

8.3 Responsibilities of AMBEX Centres

8.3.1 AMBEX centres should collect METAR messages from the aerodromes in their area of responsibility and compile METAR bulletins, according to **Appendix A**. The content of bulletins and the order of stations in each bulletin should be kept fixed until a bulletin change is requested and coordinated according to the established procedure.

8.3.2 AMBEX centers should determine a cut-off time for the reception of METAR from the stations in their area of responsibility. At the cut-off time, the AMBEX centre should compile METAR bulletin(s) containing all prescribed aerodromes, indicating any missing METAR with “NIL”.

8.3.3 At scheduled transmission times AMBEX centres should transmit the compiled METAR bulletins to other AMBEX centres and RODBs according to the distribution lists specified for each METAR bulletin in **Appendix A**. METAR bulletins should be filed for transmission not later than 5 minutes after the observation time.

8.3.4 AMBEX centres should transmit the METAR bulletins compiled by them, as well as bulletins received from other AMBEX centres, as necessary, to the NOCs and/or other offices in the States in their area of responsibility, as agreed between the AMBEX centre and the meteorological authorities of the States concerned.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

32/58

8.3.5 A SPECI when received by an AMBEX centre should be sent as a SPECI bulletin to the same addresses, to which METAR from the issuing aerodrome are sent. Normally, a SPECI bulletin should contain a single SPECI.

8.3.6 The WMO heading of a SPECI bulletin should be constructed in the same way as the WMO heading of the METAR bulletin, which contains the aerodrome, for which the SPECI is issued, by using SP data type designator instead of SA.

8.3.7 A METAR message received by the AMBEX centre after the scheduled transmission of the corresponding bulletin is a delayed METAR. The AMBEX centre should send a delayed bulletin as soon as one or more delayed messages are received or at specified times after the scheduled bulletin time (e.g., the first delayed bulletin (RRA) issued 10 minutes after the regular time; the second delayed bulletin (RRB) issued 20 minutes after the regular time, etc.).

8.3.8 As soon as a corrected METAR or SPECI message is received from a station the AMBEX centre should transmit it as a corrected bulletin to all recipients.

8.4 Format and content of METAR Bulletins

8.4.1 Each METAR message in a METAR bulletin should start with the code word METAR followed by the ICAO location indicator (CCCC) of the aerodrome and the date/time group (YYGGggZ), indicating the official time of observation. Corrected METAR messages, should start with METAR COR.

8.4.2 The following is an example of the format to be applied in preparing a METAR bulletin by the AMBEX centre:

Parts of Message	AMBEX SA Bulletin
<i>AFTN header</i>	
Priority Indicator and Address Date and Time of filing and Originator	GG VTBBYPYX 271304 ZBBBYPYX
<i>WMO Abbreviated Heading</i>	SACI31 ZBBB 271300
<i>METAR messages</i>	METAR ZBAA 271300Z = METAR ZBTJ 271300Z=
<i>AFTN Normal Ending</i>	NNNN

Note: The inclusion of the code name METAR in front of each message in the METAR bulletin is compulsory.

8.4.3 The rules related to the use of the BBB group in the WMO abbreviated heading, in regard to delayed or corrected bulletins, are given in **Appendix C**.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

33/58

8.4.4 For METARs, which are not available at the time of compilation of the bulletin, the code word NIL should be inserted following the date/time group indicating the time of the observation.

Example: METAR ZBTJ 271200Z NIL=

8.5 Format and content of SPECI Bulletins

8.5.1 A SPECI message included in a SPECI bulletin should start with the code word SPECI followed by the ICAO location indicator (CCCC) of the aerodrome and a date/time group (YYGGggZ) indicating the time of the observation of the meteorological conditions for which the SPECI is issued. Corrected SPECI messages, should start with SPECI COR. The following is an example of the format to be applied in preparing a SPECI bulletin by the AMBEX centre:

Parts of Message	AMBEX SP Bulletin
<i>AFTN header</i>	
Priority Indicator and Address Date and Time of filing and Originator	GG VTBBYPYX 081647 ZBBBYPYX
<i>WMO Abbreviated Heading</i>	SPCI31 ZBBB 081645
<i>SPECI message</i>	SPECI ZBAA 081645Z =
<i>AFTN Normal Ending</i>	NNNN

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

34/58

9. EXCHANGE OF SIGMET AND ADVISORIES

9.1 SIGMET should be prepared by the meteorological watch offices (MWO) designated by the State's meteorological authority. The MWOs and their areas of responsibility are given in the FASID Table MET 1B of AFI ANP.

9.2 SIGMET should be distributed to the two RODBs, either directly or through the responsible AMBEX centre. The RODBs should make SIGMET messages available on request. In order to facilitate that, the originating MWOs, should use fixed WMO headings for their SIGMET bulletins as given in **Appendix E**.

9.3 SIGMET messages should be distributed to other ICAO regions and made available for uplink through SADIS. This distribution should be carried out through the relevant Inter-regional OPMET Gateways (IROGs).

9.4 Detailed information on the format of the SIGMET messages is provided in the AFI Regional SIGMET Guide, 9th edition, 2007, Amendment 2, June 2011, at the Web page

http://www.icao.int/wacaf/edocs/WACAF_Regional_SIGMET_Guide_en.pdf

9.5 Tropical Cyclone Advisories (TCAs) and volcanic ash advisories (VAAs) should be issued by the designated tropical cyclone and volcanic ash advisory centres (TCAC and VAAC), as indicated in the FASID Table MET 3A and MET 3B.

9.6 The TCACs and VAACs should send the advisories to the RODBs. The RODBs should make TCAs and VAAs messages available as appropriate or on request. In order to facilitate that, the originating TCACs and VAACs should use fixed WMO headings for their TCA and VAA bulletins as given in **Appendix E**

9.7 VAA and TCA messages should be distributed to other ICAO regions and made available for uplink through SADIS. This distribution should be carried out either directly by the VAACs and TCACs or through the relevant Inter-regional OPMET Gateway (IROG) such as Toulouse, France.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

35/58

10. REGIONAL OPMET DATA BANKS (RODB)

10.1 The AFI Regional OPMET Data Banks and the AFTN addresses to be used for direct access to the banks are shown below:

RODB	AFTN ADDRESS	AMBEX CENTRES AND AREA OF RESPONSIBILITY
Dakar	GOOYYZYZ	Brazzaville/FCBB Dakar/GOOO Niamey/DRNN
Pretoria	FAJSYMYX	Addis Ababa/HAAB Antananarivo/FMMI Cairo/HECA Johannesburg/FAJS Nairobi/HKNA

10.2 Responsibilities:

10.2.1 Collect OPMET bulletins from the AMBEX centres in the area of responsibility and store them in a data base.

10.2.2 Handle all type of OPMET bulletins, as described in p. 3.1.1.

10.2.3 Provide facilities for “request-reply” service to the authorized users.

10.2.4 Maintain a catalogue of bulletins and introduce changes to the bulletins when necessary according to the established procedures.

10.2.5 Quality control the incoming bulletins and inform the AMBEX centres of any discrepancies or shortfalls.

10.2.6 Monitor the OPMET traffic by carrying out regular tests on the availability and timeliness of the bulletins; report to the ICAO Regional Office on the results.

10.3 The interrogation procedures applicable to the designated RODBs and the OPMET information stored are presented in the AFI Regional Interface Control Document (ICD) - OPMET Data Bank Access Procedures.

10.4 Guidance on the management and quality control is provided in chapter 12 of this Handbook.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

36/58

11. INTER-REGIONAL OPMET EXCHANGE - IROG FUNCTIONS

11.1 Inter-regional OPMET Gateways (IROGs) are designated in the AFI Region for the the purpose of exchanging OPMET data between the AFI and the other ICAO Regions, as shown in the table below.

AMBEX IROG	For Excchange of OPMET data between Regions
Dakar	AFI and EUR; SAM, NAM, CAR; MID, ASIA/PAC as backup to Pretoria
Pretoria	AFI and MID; ASIA/PAC, EUR; SAM, NAM, CAR as backup to Dakar

11.2 IROGs and their functions are described at **Appendix D**. IROGs arrange for relaying all AMBEX bulletins to a corresponding OPMET Gateway in the other ICAO regions concerned. In particular:

- *Dakar IROG* relays all AFI bulletins to ROC Toulouse in the EUR Region, which serves the EUR, SAM, NAM and CAR Regions, and should receive and store all required OPMET bulletins from these Regions;
- *Pretoria IROG* relays all AFI bulletins to ROC Toulouse in the EUR Region and IROG Bangkok in the the ASI/PAC Regions, and should receive and store all required OPMET bulletins from MID, ASIA/PAC, EUR, SAM Regions;

11.3 The following principles are applied to IROGs:

- a) IROGs should have reliable and efficient AFTN connection to the regions, for which they have exchange responsibilities, with adequate capacity to handle the OPMET data flow between the regions;
- b) IROGs should be associated with AFTN relay centres capable of handling efficiently the volume of traffic anticipated;
- c) IROGs should be capable of handling all OPMET data types, as described in para.4.1.1.

11.4 In order to avoid duplication of the OPMET traffic and information, all inter-regional OPMET exchange should be directed through the IROGs. Inter-regional exchange via direct AFTN addressing from the originator or AMBEX centre to recipients in the other ICAO Regions should be avoided, except when bilateral or other agreements require such direct exchanges.

11.5 Implementation of AFI RODB Backup Procedures

11.5.1 In accordance with Draft Decision 11/05 of MET/SG/11 meeting, the AFI OPMET MTF shall coordinate the implementation of the following measures for the implementation of RODBs Back up Procedures:

- a) Dakar and Pretoria RODBs implement and maintain an identical OPMET bulletins catalogue;

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

37/58

-
- b) Dakar and Pretoria RODBs implement the AFI Interface Control Document (ICD);
 - c) The bulletin compiling centres (BCCs) disseminate OPMET data to both Dakar and Pretoria RODBs using appropriate AFTN addresses;
 - d) Dakar and Pretoria RODBs conduct monitoring activities in order to ensure that the databanks contain required OPMET data at all times;
 - e) The MTF include AFTN addresses of both RODBs in the AFI ICD; and
 - f) Dakar and Pretoria RODBs implement the same validation criteria.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

38/58

12. MANAGEMENT OF OPMET EXCHANGE UNDER THE AMBEX SCHEME

12.1 OPMET Bulletins Update Procedure

12.1.1 Information for changes of AMBEX bulletins should be disseminated to all AMBEX centres and national OPMET centres (NOC) concerned well in advance in order to allow the centres to introduce the necessary changes to their message handling systems. In this regard, a lead time period of two months (*or two AIRAC cycles*) is considered appropriate.

12.1.2 The AMBEX centre planning the change, should send a notification by e-mail or fax to the ICAO Office, Dakar or Nairobi with copy to all AMBEX Focal Points. The notification should include detailed information of the changes and the proposed time schedule. The Regional Office should inform all other ICAO Regional Offices of the changes to be introduced and the effective date of implementation.

12.1.3 All requests by users for changes to AMBEX bulletins should be addressed to the ICAO Regional Office concerned. The Regional Office should carry out the necessary coordination with the States and AMBEX centres concerned. The duration of the coordination process should be minimized so that the period between the user request and the implementation of the change (if agreed) should normally be less than 3 months.

12.2 Quality Management of OPMET Exchange under the AMBEX Scheme

12.2.1 Objectives and Scope

12.2.1.1 **Objectives:** Develop a management system that provides general guidance on procedures applied to OPMET exchange, which includes quality control aspects and introduces a non-real-time monitoring for OPMET exchange.

12.2.1.2 **Scope:** Management of OPMET data exchange will be organized in the following sections:

Quality Control	<i>Data quality control applies to OPMET validation and correction during data processing and during preparation of messages</i>
OPMET monitoring	<i>Monitor and evaluate the performance indicators for the scheduled OPMET data</i>

12.2.2 Quality Control – General Requirements

12.2.2.1 Quality control (QC) consists of examination of OPMET data at NOCs, AMBEX Centres and RODBs to check the messages for formatting and coding errors, as well as, for time and space consistency.

12.2.2.2 OPMET data should be checked in real time or as close to it as possible, at the first point, i.e., the originator, which may be: meteorological station, aerodrome meteorological office or

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

39/58

meteorological watch office. Errors may occur during coding or transcription of meteorological messages by the observer or forecaster. The originating office should apply quality control procedures during data processing and preparation of messages, in order to eliminate the main sources of errors.

12.2.2.3 The national OPMET centre (NOC) should apply QC procedures on the incoming messages from national sources and on the compiled national bulletins.

12.2.2.4 It is also advisable to apply QC checks at the AMBEX Centre, where the AMBEX bulletins are received or compiled. If automation is available it should be used, or partly assisted by computing facilities. The principle is that every message should be checked, preferably at the various points along the data chain.

12.2.2.5 The checks that have already been performed by originating offices and AMBEX Centres are usually repeated at the OPMET data banks. Erroneous messages found by the RODB should be either rejected or corrected by reference back to the source or by the data bank itself. Data corrected by the data banks should be flagged in the database for record purpose.

12.2.2.6 As a result of the quality control process described above, OPMET data of established quality will be used in the exchange and stored in the data banks. The RODBs should compile information with regard to errors that were found and compile records, such as the numbers and types of errors detected during quality control. Such non-conformities should be reported to ICAO Regional Office, Dakar or Nairobi for follow-up action.

12.2.3 Quality Control Procedures

12.2.3.1 General guidance on the quality control procedures for each type of OPMET is outlined in **Appendix F**.

12.3 OPMET Monitoring

12.3.1 Monitoring of Scheduled OPMET Data

12.3.1.1 The monitoring shall focus on the measurement of three performance indicators (PIs), viz., Compliance, Availability and Regularity indices of the scheduled, routine OPMET data (SA, FT, FC) exchanged in the region. The PIs are described in detail in **Appendix F**.

12.3.1.2 Monitoring Reference. The monitoring shall involve the recording and analysis of data provided by the AFTN circuit. The three PIs should be monitored against the respective AMBEX Tables.

12.3.1.3 Methodology: Data is monitored with reference to the procedures defined in **Appendix G** the EUR OPMET Data Monitoring Procedures as produced by APIRG MET/SG (Bulletin Management Group).

12.3.1.4 In accordance with Conclusion 18/41 of APIRG/18 Meeting, Dakar and Pretoria RODB Provider States shall

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

40/58

-
- a) implement an automatic OPMET data monitoring scheme on quarterly basis (March 31, June 30, August, 31 and December 31 of each year);
 - b) perform regular 24 hour simultaneous monitoring starting at 0000 UTC on the first Wednesday of every month; and
 - c) distribute the monitoring statistics to the Chairman of the OPMET Management and the Secretariat with effect from July 2012.

12.3.2 Monitoring of Non-Scheduled OPMET data

12.3.2.1 Monitoring of non-routine OPMET data shall be executed for FK, FV, WC, WS, and WV.

12.3.2.2 Monitoring of SIGMET, VAA and TCA should be performed during the scheduled regional SIGMET tests in accordance with the procedures published by the Regional Offices, Dakar and Nairobi.

12.3.2.3 The monitoring results shall be presented in bulletin-oriented format, one line per bulletin indicating the abbreviated header (TTAAii CCCC YGGgg), the FIR/UIR where applicable, receipt time and originator.

12.3.2.4 In accordance with Conclusion 18/45 of APIRG/18 meeting,

- a) the two AFI RODB Provider States shall monitor the reception of SIGMET information during the regular (twice yearly) EUR Region SIGMET tests and report;
- b) the two AFI IROGs and ROC Toulouse shall exchange their routing tables and verify the coherency of these tables; and
- c) the AFI IROGs shall review their current routing tables, the status of OPMET reception, and update the routing tables as necessary

12.4 Improving OPMET data exchange in the AFI region

12.4.1 In accordance with Draft Conclusion 11/02 of the MET/SG/11 meeting,

- a) Dakar and Pretoria RODBs shall implement the following procedure:
 - 1) Conduct the monitoring of OPMET received from AFI BCCs within the areas of responsibilities;
 - 2) Analyze the monitoring results and identify shortcomings and deficiencies;
 - 3) Develop and forward on a quarterly basis, the monitoring results and recommendations to be implemented by the concerned BCC of NOC provider States;
 - 4) Engage directly with the concerned State to assist removing the shortcomings which can be solved quickly; and
 - 5) Issue on semester basis, a report on the above four actions to be forwarded to ICAO Dakar and Nairobi regional Offices.
- b) ICAO Dakar and Nairobi regional Offices shall

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

41/58

-
- 1) distribute the report through State Letters to AFI States with particular emphasis on the concerned States with the deficiencies; and
 - 2) Visit the concerned States during State missions to provide further advice and awareness if necessary.

12.5 AMBEX Focal Points

12.5.1 In order to facilitate exchange of information between the AMBEX centres a system of AMBEX focal points have been developed. Contact details of the persons designated as AMBEX focal points by the relevant State's authorities is provided in **Appendix I**.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

42/58

APPENDIX A

AMBEX COLLECTION AND DISSEMINATION OF METAR (SA) BULLETINS

Table A : METAR

Explanation of Table

Column

1:	Name of the AMBEX Centre (BCC) compiling the bulletin.
2.	ICAO location indicator of the AMBEX Centre compiling the bulletin.
3.	Bulletin identifier- The identifier to be used in the WMO abbreviated heading of AMBEX METAR bulletins prepared by the BCC in Column 1.
4.	ICAO location indicator of the aerodrome forming part of the collection area of the BCC in Column 1.
5.	Name of the aerodrome forming part of the collection area of the BCC in Column 1.
6.	Preparation - Times at which BCC in column 1 should prepare METAR bulletins for further dissemination.
7.	Distribution of the bulletin to other AMBEX centres and RODBs – Name of the AMBEX/RODB Centre
8.	Distribution of the bulletin to other AMBEX centres and RODBs – AFTN address of the AMBEX/RODB Centre.

*Note: The RODB responsible for storing the bulletin is in **bold***

Notes:

1	Aerodromes with shaded text are included in the HF VOLMET Broadcast
2	The RODB responsible for storing the bulletin is in bold
3	Non-AOP aerodeomes indicated in <i>italics</i>

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

43/58

AMBEX CENTRE		METAR BULLETIN				DISSEMINATION TO	
Name	CCCC	Bul. Id.	CCCC	Aerodrome	Prepar.	RODB/AMBEX Centre	AFTN Address
1	2	3	4	5	6	7	8
ADDIS ABABA	HAAB	SAEA31	HAAB HADR HDAM HHAS	Addis Ababa Dire Dawa Djibouti Asmara	H+10	Addis Ababa Nairobi Dakar Brazzaville Niamey Antananarivo Cairo Pretoria Dakar	HKZZYPBX GOZZSNGX FCZZXLBX DRZZNAZX FMZZYPYX HEZZYPYX FAPRYMYX GOOYYZYX
ANTANANARIVO	FMMI	SAI031	FMMI FMNM FIMP FMCH FMEE FMMT	Antananarivo Mahajanga Mauritius Moroni Saint-Denis Toamasina	H+10	Nairobi Addis Ababa Pretoria Nairobi Dakar Dakar	HKZZYPBX HAZZYPYX FAPRYMYX HKZZYPBX GOOYYZYX GOZZSNGX
BRAZZA VILLE	FCBB	SAAM31	FCBB FCPP FEFF FKKD FKYS	Brazzaville Pointe Noire Bangui Douala Yaounde	H+10	Dakar Niamey Addis Ababa Pretoria Nairobi Dakar Dakar	GOOYYZYX DRZZNAZX HAZZYPYX FAPRYMYX HKZZYPBX GOOYYZYX GOZZSNGX

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

44/58

			FZAA FOOL FOOG FNLU FGSL FPST	Kinshasa Libreville Port Gentil Luanda Malabo Sao Tome			
CAIRO	HECA	SAAF32	HECA HEAX HELX HSSS	Cairo Alexandria Luxor	H+10	Addis Ababa Nairobi Antananarivo Niamey Pretoria Dakar Dakar	HAZZYPYX HKZZYPBX FMZZYPYX DRZZNAZX FAPRYMYX GOOYYZYZ GOZZSNGX

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

45/58

AMBEX CENTRE		METAR BULLETIN				DISSEMINATION TO	
Name	CCCC	Bul. Id.	CCCC	Aerodrome	Prepar.	RODB/AMBEX Centre	AFTN Adress
1	2	3	4	5	6	7	8
DAKAR	GOOY	SAA032	GOOY DIAP GBYD GABS GUCY GFLI GLRB GQPP GQNN GVAC GGOV	Dakar Abidjan Banjul Bamako Conakry Freetown Monrovia Nouadhibou Nouakchott Sal Bissau	H+10	Niamey Pretoria Brazzaville Nairobi Addis Ababa Toulouse Dakar Rio de Janeiro Dakar	GMMCPYX DAZZYPYX DRZZNAZX FAPRYMYX FCZZXLBX HKZZYPBX HAZZYPYX LFZZMAFI GOOYYZYX SBGLYMYX GOZZSNGX
PRETORIA	FAPR	SAAP32	FAOR FABL FACT FALE FBSK FVHA FWKI FLLS FDMS FALE FQBR FQMA FXMM FAPE FYWH FAUT	Johannesburg Bloemfontein Cape Town King Shaka Gaborone Harare Lilongwe Lusaka Manzini Lanseria Beira Maputo Maseru Port Elizabeth Windhoek Upington	H+10	Addis Ababa Antananarivo Brazzaville Cairo Dar Es Salaam Dakar Nairobi Toulouse Pretoria Rio de Janeiro Bangkok Jeddah Dakar	HAZZYPYX FMZZYPYX FCZZXLBX HFZZYPYX HTDAYMYX GOOYYZYX HKZZYPBX LFZZMAFI FAJSYMYX SBGLYMYX VTBDYMYX OEJNYMYX GOZZSNGX

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

46/58

AMBEX CENTRE		METAR BULLETIN				DISSEMINATION TO	
Name	CCCC	Bul. Id.	CCCC	Aerodrome	Prepar.	RODB/AMBEX Centre	AFTN Adress
1	2	3	4	5	6	7	8
NAIROBI	HKJK	SAEA32	HKJK	Nairobi	H+10	Addis Ababa	HAABYPYX
			HKMO	Mombasa		Antananarivo	FMZZYPYX
			HTDA	Dar-Es-Salaam		Pretoria	FAJPRMYX
			HTKJ	Kilimanjaro		Brazzaville	FCZZXLBX
			HBBA	Bujumbura		Dakar	GOZZSNGX
			HUEN	Entebbe		Cairo	HEZZYPYX
			HRYR	Kigali		Niamey	DRZZNAZX
			FSIA	Mahe		Dakar	GOOYYZYZ
						Dakar	GOZZSNGX
			HCMM	Mogadishu			
NIAMEY	DRRN	SAAO33	DRRN	Niamey	H+10	Addis Ababa	HAZZYPYX
			DGAA	Accra			DAZZYPYP
			DBBB	Cotonou		Cairo	HEZZYPYX
			DNKN	Kano		Brazzaville	FCZZXLBX
			DNMM	Lagos		Dakar	GOOYYZYZ
			DXXX	Lome		Pretoria	FAPRYMYX
			FTTJ	N'djamena		Nairobi	HKZZYPBX
						Dakar	GOZZSNGX
			DFFD	Ouagadougou			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

47/58

APPENDIX B

AMBEX COLLECTION AND DISSEMINATION OF LONG TAF (FT) BULLETINS

Table B : FT TAF

Explanation of the Table

Column

- 1: Name of the AMBEX Centre (BCC) compiling the bulletin.
2. ICAO location indicator of the AMBEX Centre compiling the bulletin.
3. Bulletin identifier- The identifier to be used in the WMO abbreviated heading of AMBEX TAF (FT) bulletins prepared by the BCC in Column 1.
4. ICAO location indicator of the aerodrome forming part of the collection area of the BCC in Column 1.
5. Name of the aerodrome forming part of the collection area of the BCC in Column 1.
6. Bulletin Filing Time -The latest filing times for AMBEX bulletins containing TAFs with the validities listed in Column 8.
7. Start of validity period
8. TAF validity
9. Distribution of the bulletin to other AMBEX centres and RODBs – Name of the AMBEX/RODB Centre
10. Distribution of the bulletin to other AMBEX centres and RODBs – AFTN address of the AMBEX/RODB Centre

Notes: 1 The RODB responsible for storing the bulletin is in bold

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

48/58

AMBEX CENTRE		TAF BULLETIN						DISSEMINATION TO	
Name	CCCC	Bul. Id.	CCCC	Aerodrome	Filing Time	Start of validity	TAF validit	RODB/ AMBEX Centre	AFTN Address
1	2	3	4	5	6	7	8	9	10
ADDIS ABABA	HAAB	FTEA31	HAAB	Addis Ababa	0400 1000 1600 2200	0600 1200 1800 0000	30h	Addis Ababa Nairobi Dakar Brazzaville	HAABYMYX HKZZYPBX GOZZSNGX FCZZXLBX
		FTEA39	HAAS HADR HDAM	Asmara Dire Dawa Djibouti	0400 1000 1600 2200	0600 1200 1800 0000	24h	Niamey Antananarivo Cairo Pretoria Dakar Jeddah	DRZZNAZX FMZZYPYY HEZZYPYX FAPRYMYX GOOYYZYZ OEJDYPYX
ANTANA NARIVO	FMMI	FTI031	FMMI FIMP FMEE	Antananarivo Mauritius Saint-Denis	0400 1000 1600 2200	0600 1200 1800 0000	30h	Dakar Nairobi Addis Ababa Pretoria	GOOYYZYZ HKZZYPBX HAZZYPYX FAPRYMYX
		FTI039	FMNM FMMT FMCH	Mahajanga Toamasina Moroni	0400 1000 1600 2200	0600 1200 1800 0000	24h	Nairobi Dakar	HKZZYPBX GOZZSNGX
BRAZZA VILLE	FCBB	FTAM31	FCBB FEFF FKKD FZAA FOOL FPST FGSL	Brazzaville Bangui Douala Kinshasa Libreville Sao Tome Malabo	0400 1000 1600 2200	0600 1200 1800 0000	30h	Dakar Niamey Addis Ababa Pretoria Dakar	GOOYYZYZ DRZZNAZX HAZZYPYX FAPRYMYX
			FCPP	Pointe Noire	0400	0600		Nairobi	GOZZSNGX HKZZYPBX

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

49/58

		FTAM39	FKYS	Yaounde	1000	1200			
			FOOG	Port Gentil	1600	1800			
			FNLU	Luanda	2200	0000			

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

50/58

AMBEX CENTRE		TAF BULLETIN						DISSEMINATION TO	
Name	CCCC	Bul. Id.	CCCC	Aerodrome	Filing Time	Start of validity	TAF validity	RODB/ AMBEX Centre	AFTN Address
1	2	3	4	5	6	7	8	9	10
CAIRO	HECA	FTAF31	HECA HEAX HELX	Cairo Alexandria Luxor	0400 1000 1600 2200	0600 1200 1800 0000	30h 24h	Addis Ababa Nairobi Antananarivo Niamey	HAZZYPYX HKZZYPBX FMZZYPYX DRZZNAZX
		FTAF39	HSSS					Pretoria Dakar Dakar	FAPRYMYX GOZZSNGX GOOYYZYZ
DAKAR	GOOY	FTA032	GOOY GBYD GABS GFL	Dakar Banjul Bamako Freetown	0400 1000 1600 2200	0600 1200 1800 0000	30h	Niamey Pretoria	GMMCYPYX DAZZYPYP DRZZNAZX FAPRYMYX
			GUCY GQNN DIAP GVAC	Conakry Nouakchott Abidjan Sal				Brazzaville Dakar	FCZZXLBX GOZZSNGX
		FTA039	GLRB	Monrovia	0400 1000 1600 2200	0600 1200 1800 0000	24h	Nairobi Addis Ababa Toulouse Dakar	HKZZYPBX HAZZYPYX LFZZMAFI GOOYYZYZ
			GQPP GGOV	Nouadhibou Bissau					
PRETORIA	FAPR	FTAP32	FAOR FACT FALE FBSK FVHA FWKI	Johannesburg Cape Town King Shaka Gaborone Harare Lilongwe	0400 1000 1600 2200	0600 1200 1800 0000	30h	Dakar Addis Ababa Antananarivo Brazzaville Cairo Dar Es Salaam	GOZZSNGX HAZZYPYX FMZZYPYX FCZZXLBX HFZZYPYX HTDAYMYX

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

51/58

			FLLS	Lusaka				Dakar	GOOYYZYZ
			FQMA	Maputo				Nairobi	HKZZYPBX
			FYWH	Windhoek					
		FTAP39	FQBR	Beira	0400	0600		Toulouse	LFZZMAFI
			FABL	Bloemfontein	1000	1200	24h	Pretoria	FAPRYMYX
			FAPE	Port Elizabeth	1600	1800			
			FDMS	Manzini	2200	0000		Rio de Janeiro	SBGLYMYX
			FXMM	Maseru				Bangkok	VTBDYMYX
			FYWH	Windhoek				Jeddah	OEJNYMYX
			FALA	Lanseria					
			FAUP	Upington					

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

52/58

AMBEX CENTRE		TAF BULLETIN						DISSEMINATION TO	
Name	CCCC	Bul. Id.	CCC C	Aerodrome	Filing Time	Start of validity	TAF validit	RODB/ AMBEX Centre	AFTN Adress
1	2	3	4	5	6	7	8	9	10
NAIROBI	HKJK	FTEA32	HKJK	Nairobi	0400	0600	30h	Addis Ababa Antananarivo Pretoria	HAABYPYX FMZZYPYX FAPRYMYX
			HTDA	Dar-Es-Salaam	1000	1200			
			HUEN	Entebbe	1600	1800			
					2200	0000			
		FTEA39	HKMO	Mombasa	0400	0600	24h	Brazzaville Dakar Cairo Niamey Dakar	FCZZXLBX GOZZSNGX HEZZYPYX DRZZNAZX GOZZSNGX
			HTKJ	Kilimanjaro	1000	1200			
			HBBA	Bujumbura	1600	1800			
			HRYR	Kigali	2200	0000			
			FSIA	Mahe					
			HCMM	Mogadishu					
NIAMEY	DRRR	FTAO33	DRNN	Niamey	0400	0600	30h	Addis Ababa Cairo Brazzaville Dakar Pretoria Nairobi Dakar	HAZZYPYX DAZZYPYP HEZZYPYX FCZZXLBX GOOYYZYZ FAPRYMYX HKZZYPBX GOZZSNGX
			DGAA	Accra					
			DBBB	Cotonou	1000	1200			
			DNKN	Kano	1600	1800			
			DNMM	Lagos	2200	0000			
			DXXX	Lome					
			FTTJ	N'djamena					
			DDFY	Ouagadougou					

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

53/58

APPENDIX C

WMO ABBREVIATED HEADINGS
(for use in AMBEX messages and bulletins)

1. Each AMBEX bulletin should have a WMO abbreviated heading in accordance with WMO No. 386, Manual on the Global Telecommunication System, Part II – Operational Procedures for the GTS. The symbolic form of the WMO abbreviated heading is as follows:

TTAAii CCCC YYGGgg (BBB)

2. Explanation of symbols

2.1. TTAAii - TT - This group is used in accordance with WMO No. 386, Manual on the Global Telecommunication System, Part II – Operational Procedures for the GTS, Attachment II-5.

2.1.1 **TT** - Data type designator, used for OPMET data as follows:

Data Type	Abbreviated Name	WMO data type designator TT
Aerodrome reports	METAR SPECI	SA SP
Aerodrome forecasts	TAF: 24 and 30 hour 9 and 12 hour	FT FC
SIGMET information	SIGMET SIGMET for TC SIGMET for VA	WS WC WV
Volcanic ash and tropical cyclone advisories	VAA TCA	FV FK
Air-reports	AIREP	UA
Administrative	ADMIN	NO

2.1.2 **AA** - Geographical designator, composed of two letters. according to WMO No. 386, Manual on the Global Telecommunication System, Part II – Operational Procedures for the GTS, Attachment II-5, Table C1. The following principles shall apply:

- a) For AMBEX bulletins containing OPMET data from a single State or territory, the AA designator should be chosen from Table C1, Part I – Country or territory designators;
- b) For AMBEX bulletins containing OPMET data from more than one State or territory, a suitable AA designator should be chosen from Table C1, Part II – Area Designators;

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

54/58

- c) The part of the Table C1, Part II – Area Designators, which is relevant to the AMBEX scheme is reproduced bellow.

2.1.3 In AMBEX messages prepared by offices other than BCCs for transmission to BCCs, the following geographical designators should be used:

Aerodrome	AA	Aerodrome	AA
Abidjan	IV		
Accra	GH	Conakry	GN
Addis Ababa	ET	Cotonou	BJ
Aden	DY	Dakar	SG
Agadir	MC	Dar-es-Salaam	TN
		Djibouti	DJ
Alexandria	EG	Douala	CM
Annaba	AL	Durban	ZA
Antananarivo	MG	Entebbe	UG
Asmara	ET	Freetown	SL
Bamako	MI	Gaborone	BC
Bangui	CE	Harare	ZW
Banjul	GB	Jeddah	SD
Beira	MZ	Johannesburg	ZA
Beirut	LB	Kano	NI
Benghazi	LY		
Bissau	GW	Kigali	RW
Bloemfontein	ZA	Kilimanjaro	TN
Brazzaville	CG	Kinshasa	ZR
Bujumbura	BI	Lagos	NI
Cairo	EG	Las Palmas	CR
Cape Town	ZA	Libreville	GO
Lilongwe	MW	Niamey	NR
Lomé	TG	Nouadhibou	MT
Luanda	AN	Nouakchott	MT
Lusaka	ZB	Oran	AL
Luxor	EG	Ouagadougou	HV
Madinah	SD	Pointe Noire	CG
Mahajanga	MG	Port Gentil	GO
Mahé	SC	Rabat	MC
Malabo	GQ	Riyadh	SD
Manzini	SV	Saint-Denis	RE
Maputo	MZ	Sal	CV
Marrakech	MC	Sao Tomé	TP

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

55/58

Maseru	LS	Tamanrasset	AL
Mauritius	MA	Tanger	MC
Mogadishu	SI	Tenerife	CR
Mombasa	KN	Toamasina	MG
Monrovia	LI		
Moroni	IC		
Nairobi	KN	Windhoek	NM
N'Djamena	CD	Yaounde	CM

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

56/58

2.1.4 In bulletins prepared by BCCs, the following geographical designators should be used:

BCC	AA	BCC	AA
Addis Ababa	EA		
		Dakar	AO
Antananarivo	IO	Johannesburg	AP
Brazzaville	AM	Nairobi	EA
Cairo	AF	Niamey	AO

2.1.5 **ii** Number used to differentiate two or more bulletins which contain data in the same code and which originate from the same geographical area and from the same originating centre. It shall be a number with a maximum of two digits. The IROGs may use numbers 36 to 38. The numbers 31 to 35, 39 shall be used in AMBEX bulletins for purposes other than those of IROG functions. .

2.2 **CCCC:** ICAO location indicator of location preparing the AMBEX bulletin (BCCs) or AMBEX messages (offices other than BCCs).

2.3. **YYGGgg:** Date-time group. To be used as follows:

2.3.1 YY - Day of the month

2.3.2 GGgg - hours and minutes.

- For METAR bulletins/messages: the standard time of observation in UTC.
- For TAF bulletins: the full hour in UTC (the last two digits shall be 00) preceding the transmission time.
- For all other bulletin/messages - the time of compilation in UTC.

2.4. **BBB** - Optional group indicating an amended, corrected or delayed bulletin.

2.4.1 An abbreviated heading defined by TTAAii CCCC YYGGgg shall be used only once. Consequently, if this abbreviated heading has to be used again for an addition, a correction or an amendment, it shall be mandatory to add an appropriate BBB indicator, which shall be added after the date-time group. The indicator BBB shall be used as defined below:

- RRx – for delayed routine meteorological messages/bulletins;
- CCx – for corrections to previously relayed messages/bulletins;
- AAx – for amendments to TAF messages/bulletins;
- Pxx – for segmenting a large set of information into several bulletins.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

57/58

Note 1: *The “x” above is an alphabetic character of A through X, indicating the sequential number of the irregular bulletin of certain type. For instance, for amended TAFs, AAA is used for the first amendment, AAB for the second, AAC for the third, etc.; for delayed METARs or TAFs, RRA is used for the first delayed message, RRB for the second, etc.; and, for corrections to any OPMET bulletin, CCA is used for the first correction, CCB for the second, etc.*

Note 2: *The use of the third letter A, B, C, etc. permits differentiation between bulletins/messages with the same type of information of the original bulletin/message. For example, assuming that a certain bulletin had the following abbreviated heading: "FTA031 DIAP 281000", a delayed bulletin containing TAF(s) which are missing from the original bulletin will bear the heading: "FTA033 DRRN 281000 RRA"; and a second delayed bulletin, containing additional missing TAF(s) will bear the heading: "FTA031 DIAP 281000 RRB".*

Note 3: *The following data designators should be used by BCCs:*

	TAF	METAR
Addis Ababa	FTEA31 HAAB FTEA39 HAAB	SAEA 31
Antananarivo	FTIO31 FMMI FTIO39 FMMI	SAIO 31
Brazzaville	FTAM31 FCBB FTAM39 FCBB	SAAM 31
Cairo	FTAF32 HECA	SAAF 32
	FTMC39 GMMC	
Dakar	FTAO32 GOOY FTAO39 GOOY	SAAO 32
Johannesburg	FTAP32 FAJS FTAP39 FAJS	SAAP 32
Nairobi	FTEA32 HKJK FTEA39 HKJK	SAEA 32
Niamey	FTAO33 DRRN	SAAO 33

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

58/58

APPENDIX D

EXCHANGE OF OPMET DATA BETWEEN THE AFI, EUR, MID AND ASIA REGION

IROGs RESPONSIBILITIES

1. DAKAR IROG

1.1. Outgoing responsibilities

1.1.1 The whole set of METAR, TAF, AIREP SPECIAL and SIGMET bulletins, as described in appendices A, B, C and D of this Handbook, received by RODB DAKAR shall be distributed to Rio de Janeiro and ROC Toulouse, which shall send them to the EUR ROCs deserving other adjacent regions and to the SADIS.

1.2. Incoming responsibilities

1.2.1 The bulletins containing the required international OPMET data as indicated in the FASID Table MET 1A (or 2A) shall be sent by Rio de Janeiro, Jedda and ROC Toulouse to IROG DAKAR, that shall send the bulletins following the States requirements.

1.2.2 Regular contacts with the adjacent IROG (s) shall insure the efficiency of the data exchange. A list of exchanged bulletins should be agreed and updated, as necessary.

2. PRETORIA IROG

2.1. Outgoing responsibilities

2.1.1 The whole set of METAR, TAF, AIREP SPECIAL and SIGMET bulletins, as described in appendices A, B, C and D of this Handbook received by RODB Pretoria shall be distributed to Rio de Janeiro, Jeddah, Bangkok and ROC Toulouse, that shall send to the EUR ROCs deserving other adjacent regions and to the SADIS

2.2. Incoming responsibilities

2.2.1 The bulletins containing the required international OPMET data as indicated in the FASID table MET 1A (or 2A) shall be sent by Rio de Janeiro, Jedda, Bangkok and ROC Toulouse to IROG PRETORIA, that shall send the bulletins following the States requirements.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

59/58

2.2.2 Regular contacts with the adjacent IROG(s) should insure the efficiency of the data exchange. A list of exchanged bulletins should be agreed and updated, as necessary

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

60/58

APPENDIX E

AFI REGIONAL OPMET DATA BANKS AND SIGMET REQUIREMENTS

The AFI Regional OPMET Data Banks (RODBs) and the AFTN address to be used for direct access to the banks are shown below:

RODB	AFTN Address	AMBEX Centres of Responsibility
Dakar	GOOYYZYZ	, Brazzaville/FCBB Dakar/GOOO Niamey/DRNN
Pretoria	FAJSYMYX	Addis Ababa/HAAB, Antananarivo/FMMI Cairo/HECA Johannesburg/ (FAJS)** Nairobi/HKNA ** BCC located at South African Weather Service HQ.

Responsibilities:

1. Collect OPMET bulletins from AMBEX centres and store them in the data base;
2. Handle all types of required OPMET bulletins;
3. Provide facilities for “request-reply” service to authorized users;
4. Maintain a catalogue of bulletins and introduce changes to the bulletins when necessary according to established procedures;
5. Quality control the incoming bulletings and inform AMBEX centres on any deficiencies. Derive action plans where deficiencies are monitored.
6. Monitor the OPMET traffic by carrying on regular test on the availability and timeliness of the bulletins; Derive action plans where deficiencies are monitored and report to the ICAO Regional Office on the results.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

62/58

APPENDIX E-1

**WMO HEADINGS FOR SIGMET BULLETINS USED BY AFI
METEOROLOGICAL WATCH OFFICES (MWOs)**

EXPLANATION OF THE TABLE

Col 1: State and name of the MWO

Col 2: ICAO location indicator of the MWO

Col 3: T₁T₂A₁A₂ii group of the WMO heading for the WS SIGMET bulletin

Col 4: T₁T₂A₁A₂ii group of the WMO heading for the WC SIGMET bulletin (tropical cyclone)

Col 5: T₁T₂A₁A₂ii group of the WMO heading for the WV SIGMET bulletin (volcanic ash)

Col 6: ICAO location indicator of the FIR/CTA served by the MWO

Col 7: Remarks

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

63/58

**WMO HEADINGS FOR SIGMET BULLETINS
USED BY AFI METEOROLOGICAL WATCH OFFICES**

MWO Location	ICAO location indicator	WMO SIGMET Headings			FIR/ACC served	Remarks
		WS	WC	WV	ICAO location indicator	
1	2	3	4	5	6	7
ANGOLA LUANDA/4 de Fevereiro	FNLU	WSAN31		WVAN31	FNAN	
BOTSWANA GABORONE/Sir Seretse Khama	FBSK	WSBC31	WCBC31	WVBC31	FBGR	
BURUNDI BUJUMBURA/Bujumbura	HBBA	WSBI31		WVB131	HBBA	
CAPE VERDE SAL I/Amilcar Cabral	GVAC	WSCV31		WVCV31	GVSC	
CHAD N'DJAMENA/N'djamena	FTTJ	WSCD31		WVCD31	FTTT	
CONGO BRAZZAVILLE/Maya-Maya	FCBB	WSCG31		WVCG31	FCCC	
D.R. CONGO KINSHASA/N'Djili	FZAA	WSZR31	WCZR31	WVZR31	FZAA	
ETHIOPIA ADDIS ABABA/Bole Intl	HAAB	WSET31		WVET20	HAAA	
ERITREA ASMARA	HHAS	WSEI31		WVEI31	HHAA	
GHANA ACCRA/Kotoka Int'l	DGAA	WSGH31		WVGH31	DGAC	
KENYA KENYA/Jomo Kenyatta Int'l	HKJK	WSKN31	WCKN31	WVKN31	HKNA	
LIBERIA MONROVIA/Roberts Int'l	GLRB	WSLI31		WVSL31	GLRB	
MADAGASCAR ANTANANARIVO/Ivato	FMMI	WSMG31	WCMG20	WVMG20	FMMM	
MALAWI LILONGWE/Lilongwe Int'l	FWKI	WSMW31	WCMW31	WVMW31	FWLL	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

64/58

MWO Location	ICAO location indicator	WMO SIGMET Headings			FIR/ACC served	Remarks
		WS	WC	WV	ICAO location indicator	
1	2	3	4	5	6	7
MAURITIUS MAURITIUS/Sir Seewoosagur Ramgoolam Int'l	FIMP	WSMA31		WVMA31	FIMM	
MOZAMBIQUE MAPUTO/Maputo Int'l	FQMA	WSMZ31	WCMZ20	WVMZ31	FQBE	
NAMIBIA WINDHOEK/Hosea Kutako	FYWH	WSNM31		WVNM31	FYWH	
NIGER NIAMEY/Diori Hmani Int'l	DRRN	WSNR31		WVNR31	DRRR	
NIGERIA KANO/Mallam Aminu Kano Int'l	DNKN	WSNI31		WVNI31	DNKK	
RWANDA KIGALI/Gregoire Kayibanda	HRYR	WSRW31		WVRW31	HRYR	
SENEGAL Leopold Sedar Senghor	G00Y	WSSG31		WVSG31	G000	
SEYCHELLES MAYE/Seychelles Int'l	FSIA	WSSC31	WCSC20	WVSC31	FSSS	
SOMALIA MOGADISHU/Mogadishu	HCMM	WSSI31		WVSI31	HCSM	
SOUTH AFRICA JOHANNESBURG/Johannesburg	FAJS	WSZA31	WCZA31	WVZA31	FACA FAJA FAJO	
UGANDA ENTEBBE/Entebbe Int'l	HUEN	WSUG31		WVUG31	HUEC	
UNITED REPUBLIC OF TANZANIA DAR-ES-SALAAM/Dar-es-Salaam	HTDA	WSTN31	WCTN31	WVTN31	HTDC	
ZAMBIA LUSAKA/Lusaka Int'l	FLLS	WSZB31		WVZB31	FLFI	
ZIMBABWE HARARE/Harare	FVHA	WSZW31	WCZW31	WVZW31	FVHA	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

65/58

APPENDIX F

OPMET Quality Control and Monitoring Procedures

(To be developed and confirmed by the QC team of the OPMET Management Task Force)

1 Quality Control Procedures

1.1 OPMET Data Validation

1.1.1 The AMBEX Centres and RODBs should not modify the content of the meteorological data, e.g. visibility, QNH etc., but only items contained in the WMO bulletin headings, such as, location indicators or observation times.

1.1.2 *WMO Abbreviated Heading (TTAAii CCCC YYGGgg BBB) Validation*

TT	Message Type, shall comprise two alphabetical characters
AA	Location Indicator, shall comprise two alphabetical characters
ii	comprise two digits, from 01 to 99
CCCC	A 4-letter ICAO location indicator shall comprise 4 alphabetical characters
YYGGgg	The date time group of the bulletin, shall be configured to validate it with the current time
BBB	BBB is an optional group. The use of BBB group shall comply with the rules in the WMO abbreviated heading, in regard to delayed, corrected and amended bulletins.

Examples	After QC check
METAR with incorrect YYGGgg: SABM31 VYMD 100830 UTC VYMD 100830Z 18005KT 8000 FEW025 31/18 Q1000 =	SABM31 VYMD 100830 VYMD 100830Z 18005KT 8000 FEW025 31/18 Q1000 =
TAF without AHL: 112324 WIDDYMYX TAF WIDD 112324Z 1200/1224 00000KT 4000 RA BKNT017 BECMG 1203/1205 20010KT 9000 SCT017=	FTID31 WIDD 112300 TAF WIDD 112324Z 1200/1224 00000KT 4000 RA BKNT017 BECMG 1203/1205 20010KT 9000 SCT017=

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

66/58

TAF with invalid BBB: FTBN31 OBBI 030525 AMD TAF AMD OBBI 030525Z 0306/0406 16010KT CAVOK BECMG 0308/0312 33017KT 5000 PROB30 TEMPO 0308/0314 0800 DU=	FTBN31 OBBI 030525 AAA TAF AMD OBBI 030525Z 0306/0406 16010KT CAVOK BECMG 0308/0312 33017KT 5000 PROB30 TEMPO 0308/0314 0800 DU=

1.1.3 METAR/SPECI Validation

For each individual METAR or SPECI within a bulletin the following additional fields shall be validated:

Prefix checks	METAR METAR COR SPECI SPECI COR	SA SA SP SP
Observation Time YYGGggZ	The report shall have a valid date and time of observation, including the character 'Z'. In a SPECI bulletin, this group will be same as (or very close to) the YYGGgg, part of the abbreviated bulletin heading.	
End-of-message format “=”	Each METAR or SPECI report shall be terminated by the "=" character.	

Examples	After QC check
METAR with Observation Time error: SAPK31 OPKC 030159 RRA OPKC 030200 26004 8000 BKN020 27/23 Q1007 NOSIG=	SAPK31 OPKC 030200 RRA OPKC 030200 26004 8000 BKN020 27/23 Q1007 NOSIG=
METAR with mistyped observation time: SAID31 WADD 120100 METAR WADD 121000Z 17004KT 9999 FEW018CB SCT120 BKN300 28/26 Q1005=	SAXX31 WADD 120100 METAR WADD 120100Z 17004KT 9999 FEW018CB SCT120 BKN300 28/26 Q1005=
SPECI with incorrect Message Type, TT: SANZ31 NZKL 040000 SPECI NZWP 040000Z 17005KT	SPNZ31 NZKL 040000 AAA SPECI NZWP 040000Z 17005KT

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

67/58

010V240 25KM FEW020 FEW020CB SCT035 BKN050 18/15 Q1018 NOSIG=	010V240 25KM FEW020 FEW020CB SCT035 BKN050 18/15 Q1018 NOSIG=

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

68/58

1.1.4 TAF Validation

For each individual TAF within a bulletin, the following additional items shall be validated:

Prefix checks	TAF TAF COR TAF AMD	FT or FC FT or FC FT or FC
Issue Time YYGGggZ	If the field is included, it shall have a valid date and time of origin of forecast including 'Z'.	
Validity Y ₁ Y ₁ G ₁ G ₁ /Y ₂ Y ₂ G ₂ G ₂	Some TAFs are still produced with a 4-digit validity period. These shall be corrected by inserting a date consistent with the current date and the date time group of the bulletin header. If a TAF is received without a validity period it shall be discarded.	
End-of-Message format “=”	Each forecast shall be terminated by the “=” character.:	

Examples	After QC check
TAF with issue time error (wrong date): FCID31 WIII 181630 TAF WIII 041630Z 0418/0503 00000KT 9000 FEW025 BECMG 0422/0424 16005KT=	FCID31 WIII 181630 TAF WIII 181630Z 0418/0503 00000KT 9000 FEW025 BECMG 0422/0424 16005KT=
TAF with mistyped Validity Period: FTPH31 RPLL 132200 TAF RPLC 132200Z 1400/1428 04006KT 9999 SCT036 BKN300 TEMPO 1400/1406 02010KT 5000 –SHRA FEW020 BKN270 TX32/1405Z TN22/1421Z=	FTPH31 RPLL 132200 TAF RPLC 132200Z 1400/1424 04006KT 9999 SCT036 BKN300 TEMPO 1400/1406 02010KT 5000 –SHRA FEW020 BKN270 TX32/1405Z TN22/1421Z=
TAF with Validity error (wrong date): FCMS33 WMKK 170748 TAF WMKK 170700Z 3009/3018 30005KT 9999 FEW017CB SCT140 BKN270=	FCMS33 WMKK 170748 TAF WMKK 170700Z 1709/1718 30005KT 9999 FEW017CB SCT140 BKN270=
TAF with 4-digit Validity period:	

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

69/58

FTXX31 WIDD 170121 TAF WIDD 0618 06010G20KT 9999 SCT018 BECMG 1712/1714 00000KT 7000=	FTXX31 WIDD 170121 TAF WIDD 1706/1718 06010G20KT 9999 SCT018 BECMG 1712/1714 00000KT 7000

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

70/58

1.1.5 SIGMET Validation

CCCC on the AHL	A valid 4-letter ICAO location indicator indicating the FIR for which the SIGMET was	
Prefix checks	SIGMET for TS, CB, TURB, ICE, MTW, DS and SS	WS
	SIGMET for VA	WV
	SIGMET for TC	WC
Validity Period DDHHMM/DDHHMM	Shall have a valid period of validity. Validity periods may be corrected if: • Missing VALID string • Incorrect SIGMET number format • Incorrectly formatted validity period	
Note: For SIGMET validation, please refer to the format described in the AFI (WACAF or ESAF) Regional SIGMET Guide		

Examples	After QC check
SIGMET without TTAAii: SIGMET OYSN 121525Z OYSC SIGMET 1 VALID 121530/122130 OYSNSANAA FIR EMBD TS OBS/FCST OVER WESTERN AND SOUTHWESTERN MOUNTAINS AND COASTAL AREAS CB TOPS FL36 NC=	WSXX31 OYSN 121525Z OYSC SIGMET 1 VALID 121530/122130 OYSNSANAA FIR EMBD TS OBS/FCST OVER WESTERN AND SOUTHWESTERN MOUNTAINS AND COASTAL AREAS CB TOPS FL36 NC=
SIGMET with incorrect number format WCPH30 RPLL 210445 SIGMET NO 01 VALID 210000/210600 RPLL TC OBS N0830 E12900=	WCPH30 RPLL 210445 SIGMET 01 VALID 210000/210600 RPLL TC OBS N0830 E12900 ... =
SIGMET with incorrect formatted validity period: WSIN90 VIDP 181800 VIDP SIGMET 06 VALID 18/1600 TO 18/2000 UTC VIDPDELHI FIR ISOL TS ... =	WSIN90 VIDP 181800 VIDP SIGMET 06 VALID 181600/182000 VIDPDELHI FIR ISOL TS ... =

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

71/58

WSSD20 OEJD 220503 OEJD SIGMET 01 VALID 220500 TO 220900 OEJN- JEDDAH FIR=	WSSD20 OEJD 220503 OEJD SIGMET 01 VALID 220500/220900 OEJN-JEDDAH FIR

1.2 Quality Control Methods

OPMET Data	Elements Defining	Control Methods
METAR METAR COR SPECI (SA,SP)	• AHL • Code name • Observation date/time	Software verification Manual validate Periodic Quality Control & PI Monitoring
TAF TAF AMD TAF COR (FT,FC)	• AHL • Code name • Originating station ICAO location indicator • Date/time of issue • Date, time of starting, time of end of the period the forecast refers to	Software verification Manual validate Periodic Quality Control & PI Monitoring
SIGMET (WS, WC, WV)	• AHL • SIGMET Sequence No • Date/time groups indicating the period of validity Additional Checks (recommended): • Name of the FIR or the CTA the message is issued for • Location indicator of the MWO originating the message	Software verification Manual validate Periodic SIGMET Quality Control Monitoring
Volcanic Ash Advisory FV	• Type of message • Issue date and time Additional Checks (recommended): • Location indicator or name of the VAAC centre originating the message	Software verification Manual validate Periodic VA Quality Control Monitoring
Tropical Cyclone Advisory	• Type of message • Issue date and time	Software verification

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

72/58

FK	Additional Checks (recommended): • Location indicator or name of the TCAC centre originating the message	Manual validate Periodic TC Quality Control Monitoring

2 **OPMET Monitoring**

2.1 **Monitoring of Scheduled OPMET data**

2.1.1 Performance Indicators (PIs). The indices to be used by the RODBs are based on those developed by the European BMG for monitoring the SADIS distribution (ref. SADISOPSG/8, IP/5 – SADIS OPMET Performance Indices).

(i) **Compliance Index**

The AMBEX Compliance index can be calculated from:

$$V_{bul\ compliance} = \frac{\text{No of reports received for a bulletin}}{\text{No of reports required for the bulletin}}$$

The Compliance Index is to assess the level of compliance to the AMBEX scheme. The determination of the compliance index is performed as follows:

- Total number of reports received for AMBEX bulletin during the monitoring period, include reports in the retard bulletins.
- Weed out correction and amendment bulletins, as these are re-transmitted messages, can be disregarded.

(ii) **Availability Index**

The availability index measures the current coverage of the OPMET distribution against the AMBEX exchange requirements. The determination of the availability index is performed on a daily basis from the data captured during the monitoring period. If at least one non-NIL report is received from the aerodrome during the 24-hour period, that aerodrome is considered to have been available. The daily availability index of a particular bulletin can be calculated as:

$$V_{bul\ availability} = \frac{\text{No of aerodromes for which one or more non-NIL data type are received}}{\text{No of aerodromes required in the bulletins}}$$

(iii) **Regularity Index**

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

73/58

The regularity index measures the consistency in the number of reports provided by an aerodrome. The computation of Regularity Index assumes that the number of report follows a normal distribution and attempts to ascertain the distribution characteristics (mean and standard deviation) from a set of data. These

characteristics are used to determine if subsequent number of reports from an aerodrome is “regular”.

Denoting mean and standard deviation by μ and σ , a threshold report numbers (τ) can be established as:

$$\tau = \mu - \sigma$$

The threshold is a reporting characteristic of an aerodrome. If the subsequent daily number of reports meets or exceeds the threshold, it is considered “regular”. The daily regularity index for a bulletin can be expressed as:

$$V_{bul\ regularity} = \frac{\text{No of aerodromes for which the number of reports equals or exceeds the threshold}}{\text{No of aerodromes required in the bulletin}}$$

2.2 Monitoring of non-scheduled OPMET data

2.2.1 Monitoring of non-scheduled OPMET data should be executed for FK, FV, WC, WS, and WV types of bulletins.

2.2.2 The monitoring results should be presented in bulletin-oriented format, one line per bulletin indicating the abbreviated header (TTAAii CCCC YGGgg), the FIR/UIR where applicable, receipt time and originator.

2.2.3 Example non-routine OPMET monitoring result file formats:

TT	AAii	CCCC	YYGGgg	FIR/UIR Rx	Time	Origin
WS	PF21	NTAA	271004	NTTT	271004	NTAAYMYX
WS	IN90	VIDP	271000	VIDP	271007	VECCYMYX
WS	BW20	VGZR	271100	VGZR	271030	VGZRYMYX
WS	CI31	RCTP	271150	RCTP	271150	RCTPYMYX
WS	MS31	WMKK	272013	WBFC	272013	WMKKYMYX
WS	CI35	ZGGG	272225	ZGZU	272228	ZGGGYZYX
FV	AU01	ADRM	270323		270330	YMMCYMYX
FK	PQ30	RJTD	270500		270504	RJTDYMYX

Explanations to the table:

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Edition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

74/58

- TT: Type of bulletin FK, FV, WC, WS, WV
- AAii: Bulletin ID
- CCCC: Compiling Station
- YYGGgg: Standard time of report
- FIR/UIR: ICAO Location indicator of the FIR/UIR or blank (4 spaces) as applicable
- RxTime: Time of receipt
- Origin: Originator address.

2.2.4 Analysis of Monitoring Results:

2.2.4.1 Each RODB collects and analyses the relevant result in order to determine the effectiveness and suitability of the quality management system and to highlight any possible improvement to ICAO Regional Offices, Dakar and Pretoria.

2.3 Examples of Monitoring Results – PI Measurements

The following tables show values of Compliance, Availability and Regularity Index for ASIA/PAC OPMET bulletins compiled by Singapore RODB in March 05:

TABLE A	ROBEX Compliance Index		
	SA	FT	FC
AE31 VECC	0.81	--	
AS31 VABB	---	0.99	
AS31 VTBB	0.96	0.99	
SA32 VABB	--	0.98	
AS32 VTBB	--	0.85	
AU31 YBBN	1.00	0.99	0.97

Note: Entry dashed out (--) means no reports of this type (SA or FT) are required

TABLE B	Availability Index		
	SA	FT	FC
AE31 VECC	0.98	--	
AS31 VABB	---	1.00	
AS31 VTBB	0.99	1.00	
SA32 VABB	--	0.99	
AS32 VTBB	--	0.96	
AU31 YBBN	1.00	1.00	1.00
.	.	.	.
.	.	.	.

TABLE C	Regularity Index		
	SA	FT	FC

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

75/58

AE31 VECC	0.86	--	
AS31 VABB	---	0.96	
AS31 VTBB	0.93	0.96	
SA32 VABB	--	0.96	
AS32 VTBB	--	0.96	
AU31 YBBN	0.90	0.90	0.96
.	.	.	.
.	.	.	.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

76/58

APPENDIX G

AMBEX FOCAL POINTS (August 2011)

	State/Etat/ Organisation	Name/Nom et Prénom	Address/Adresse	E-mail	Fax	Telephone
2	Cameroon	ABONDO Cyrille	Chef de Service de la Météorologie Aéronautique	abondocyrille@yahoo.com	+237 22 30 33 62	+ 237 22 30 30 90
3	Congo	OLEMBE Alexis Laurence	B.P. 218 Brazzaville Aéroport CONGO	aolembe@yahoo.fr	+242 282 00 51	+242 972 16 77 / +242 411 48 95
4	Egypt					
5	Ethiopia					
6	Kenya					
7	France					
8	Madagascar	RAKOTONDRIANA Jérôme RABENASOLO Mamitiana Alain	Direction Générale de la Météo, BP 1254 Antananarivo B.P. 46 Ivato Aéroport MADAGASCAR	madagascarmto@asecna.org ; jerome@asecna.mg mamyalain6@yahoo.fr	+261 202 258 115 +261 20 22 581 15	+ 261 33 12 108 05 +261 3410 034 54

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

AMBEX HANDBOOK 7th Ed.

77/58

10	Niger	YERIMA Ladan	B.P. 1096 Niamey Aéroport NIGER	E-mail : yeriladan@yahoo.fr	+227 20 73 55 12	+227 94 85 22 27
11	Nigeria	IKEKHUA O. Felix Mrs. M. O. Iso	NIMET	felix_ikekhua@yahoo.com maryottuiso@yahoo.com	+234 9 4130710 +234 9 4130711	+234 1 477 16 62 +234 9 4130709 + 234 9 4130710
12	Senegal (Rapporteur)	DIEME Saïdou	ASECNA Sénégal B.P. 8132 Dakar Aéroport Yoff SENEGAL	saidoudieme@yahoo.fr saidoudieme@yahoo.fr	+221 33 820 06 00 +221 33 820 02 72/ +221 33 820 06 00	+221 33 869 22 03 : +221 77 652 53 87
13	South Africa					
14	United Kingdom (RU)					
15	ASECNA	NGOUAKA Dieudonné	ASECNA DG BP 3144 Dakar, Sénégal	ngouakadie@asecna.org	+221 33 8234654	+221 33 8695714
16	IATA					
17	WMO/OMM	Mr Scylla Siliayo,	WMO Scientific Officer, Aeronautical Meteorological Division Weather and Disaster Risk Reduction Services Department	ssillavo@wmo	+ 41.22.730.81.28	: + 41.22.730.84.08
18	EUR BMG					
19	IROG Toulouse					
20	ASIA/PAC/M TSF					

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6C**

**AFI MET Bulletins Exchange (AMBEX) Handbook
Seventh Aedition – Amendment 3**

Report on Agenda Item 3

CATALOGUE

MBE Centre	Bul ID	SA	FC	FT	BCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC	CCCC

[illegible]

Eastern Mediterranean	M631		FT	OEIO	QIAI	QIAM	QIAQ	OLBA	OSAP	OSDI	OSLK			
Eastern Mediterranean	M631		FT	OLBA	QIAI	QIAM	QIAQ	OLBA	ORMM	OSAP	OSDI	OSLK		
Eastern Mediterranean	M631	SA		OLBA	QIAI	QIAM	QIAQ	OLBA	OSAP	OSDI	OSLK			
Ecuador	EQ00		FT	SEGU	SEGU	SELT	SEMT	SEQU						
Ecuador	EQ41		FT	SEGU	SEGU	SELT	SEMT	SEQU						
Ecuador	EQ01	SA		SEGU	SEGU	SELT	SEMT	SEQU						
Ecuador	EQ31			SEGU	SEGU									
El Salvador	ES11		FT	MSLP	MSLP	MSSS								
El Salvador	ES20		FT	MSLP	MSLP	MSSS								
Estonia	EO32	FC		EETN	EEXA	EEXE	EETU							
Estonia	EO31		FT	EETN	EETN									
Estonia	EO31	SA		EETN	EETN									
Estonia	EO32	SA		EETN	EEXA	EEXE	EEPU	EETU						
Estonia	EO32	SA		EGGY	EEXA	EEXE	EEPU	EETU						
Estonia	EO31			EETN	EETT									
Estonia	EO31			EETN	EETT									
Europe	EU31		FT	BKPR	BKPR									
Europe	EU31	SA		BKPR	BKPR									
Falkland Island	FA41		FT	EOTY	EOTY									
Falkland Island	FA41	SA		EOTY	EOTY									
Faroe Island	FA31	FC		EXCH	EXVG									
Fiji	F331	SA		NFFN	NFFN									
Fiji	F301			NFFN	NFFF									
Fiji	F302			NFFN	NFFF									
Finland	F131	FC		EFHK	EFHA	EFHF	EFKA	EFKK	EFMA	EFPO	EFSI			
Finland	F132	FC		EFHK	EFJO	EFLP	EFMI	EFSA	EFUT	EFVR				
Finland	F331	FC		EFHK	EFET	EFV	EFKI	EFKS	EFKT					
Finland	F131		FT	EFHK	EFHK	EFYJ	EFKU	EFRO	EFRT	EFTU	EFVA			
Finland	F101	SA		MBIV	MBIV									
Finland	F131	SA		EFHK	EFHK	EFYJ	EFKU	EFQO	EFRO	EFTP	EFTU	EFVA		
Finland	F132	SA		EFHK	EFHA	EFHF	EFKA	EFKK	EFMA	EFPO	EFSI			
Finland	F131	SA		EFHK	EFJO	EFLP	EFMI	EFSA	EFUT	EFVR				
Finland	F134	SA		EFHK	EFET	EFV	EFKI	EFKS	EFKT					
Finland	F131			EFHK	EFIN									
Finland	F132			EFHK	EFIN									
Finland	F131			EFHK	EFIN									
Macedonia	M631		FT	LWSK	LWOH	LWSK								
Macedonia	M041	SA		LWOH	LWOH									
Macedonia	M041	SA		LWSK	LWSK									
Macedonia	M331			LWSK	LWSK									
Macedonia	M331			LWSK	LWSK									
France	FR22	FC		LPFW	LFBC	LFBG	LFBM	LFBY	LFKS	LFMC	LFMO	LFMY		
France	FR23	FC		LPFW	LFOC	LFOE	LFOJ	LFQI	LFRI	LFRL				
France	FR24	FC		LPFW	LFSD	LFSD	LFSD	LFSD	LFSD	LFSD				
France	FR31	FC		LPFW	LFBA	LFBE	LFBN	LFBG	LFBG	LFBK				
France	FR32	FC		LPFW	LFQI	LFJR	LFMO	LFMH	LFOT					
France	FR33	FC		LPFW	LFQA	LFRR	LFRL	LFSL						
France	FR34	FC		LPFW	LFBU	LFUN	LFPM	LFRT						
France	FR21		FT	LPFW	LFQA	LFPC	LPFV							
France	FR21		FT	LPFW	LFQA	LFPC	LPFV							
France	FR31		FT	LPFW	LFLL	LFMN	LFPG	LFPO						
France	FR32		FT	LPFW	LFQJ	LFBB	LFSS							
France	FR33		FT	LPFW	LFBD	LFBD	LFLL	LFML						
France	FR34		FT	LPFW	LFBN	LFBI	LFBL	LFBP	LFBT	LFBZ	LFBL			
France	FR35		FT	LPFW	LFBB	LFKC	LKEF	LFKI	LFLL	LFMP	LFMY			
France	FR36		FT	LPFW	LFCH	LFSL	LFSL	LFVJ	LFMT	LFMU	LFVW			
France	FR37		FT	LPFW	LFLL	LFGB	LFCH	LFCK	LFOP	LFPH	LFSA			
France	FR38		FT	LPFW	LFRO	LFRR	LFRO	LFRR	LFSS	LFST				
France	FR39		FT	LPFW	LFMM	LFMI	LFMK	LFSD	LFTH					
France	FR22	SA		LPFW	LFQA	LFPC	LPFV							
France	FR22	SA		LPFW	LFBC	LFBG	LFBM	LFBY	LFKS	LFMC	LFMO	LFMY		
France	FR23	SA		LPFW	LFOC	LFOE	LFOJ	LFQI	LFRI	LFRL				
France	FR24	SA		LPFW	LFSD	LFSD	LFSD	LFSD	LFSD	LFSD				
France	FR31	SA		LPFW	LFLL	LFMN	LFPG	LFQJ	LFBB	LFSS				
France	FR32	SA		LPFW	LFBD	LFBI	LFBL	LFBD	LFBP	LFBT	LFBZ	LFBL	LFLL	LFML
France	FR33	SA		LPFW	LFBB	LFKC	LKEF	LFKI	LFLL	LFMP	LFMY	LFSL		
France	FR34	SA		LPFW	LFCH	LFSL	LFSL	LFVJ	LFMT	LFMU	LFOP	LFPH	LFPS	LFSA
France	FR35	SA		LPFW	LFMI	LFPM	LFVJ	LFRR	LFRR	LFRR	LFRR	LFSS	LFST	LFTH
France	FR36	SA		LPFW	LFBA	LFBE	LFBJ	LFBL	LFBN	LFBT	LFBI	LFBC	LFBE	
France	FR37	SA		LPFW	LFQA	LFAT	LFBU	LFUN	LFPM	LFPT	LFRR	LFRL	LFSD	LFVW
France	FR31			LPFW	LFLL									
France	FR32			LPFW	LFBB									
France	FR33			LPFW	LFEE									
France	FR34			LPFW	LFMM									
France	FR35			LPFW	LFRR									
France	FR31			LPFW	LFEE	LFVJ								
France	FR32			LPFW	LFBB									
France	FR33			LPFW	LFEE									
France	FR34			LPFW	LFMM									
France	FR35			LPFW	LFRR									
French Guiana	FG20		FT	SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									
French Guiana	FG20	SA		SOCA	SOCA									

Eastern Mediterranean
Eastern Mediterranean
Ecuador
Ecuador
El Salvador
Estonia
Estonia
Estonia
Estonia
Europe
Falkland Island
Faroe Island
France
Fiji
Finland
Finland
Finland
Finland
Finland
Finland
Finland
Finland
Finland
Finland
Macedonia
Macedonia
Macronesia
France
France
France
France
France
France
France
France
France
France
France
France
France
France
France
France
France
France
France
France
France
France
France
France
French Guiana
French Guiana
French Polynesia
French Polynesia
Georgia
Georgia
Germany
Germany
Germany
Germany
Germany
Germany
Germany
Germany
Germany

[illegible]

[illegible][illegible]

[illegible]

[illegible][illegible]

Ukraine
Ukraine
Ukraine
Ukraine
Ukraine
Ukraine
United Arab Emirates
United Arab Emirates
United Arab Emirates
United Arab Emirates
United Kingdom
United Kingdom
United Kingdom
United Kingdom
United Kingdom
United Kingdom
United Kingdom
United Kingdom
United Kingdom
United Kingdom
United Kingdom
United Kingdom
Uruguay
Uruguay
Uruguay
Uruguay
Uzbekistan
Uzbekistan
Uzbekistan
Uzbekistan
Venezuela
Venezuela
Venezuela
Venezuela
Venezuela
Venezuela
Venezuela
Venezuela
Venezuela
Vietnam
Western Europe
Western Europe
Western North Pacific

Q1TL Q1TR Q1TT Q1TU Q1TY Q1ZB Q1ZC Q1ZH Q1ZI Q1ZJ Y

[illegible]

SPSO SPTN SPYL SPZO SUAA SUCA SULS SUMU SURV SVBC SVMC SVMG SVMI SVVA SYCI Y

SBSN SBSP SBST SBVV SBTC SBTE SBTF SBTK SBTT SBTU SBUG SBUL SBUR SBVH SBVT SBYS SCAP SCAR SCAS SCBA SCCH SCCI SCDA SCEL SCFA SCGE SCGZ SCIE SCNT SCON SCRD SCSE SCTB SCTE SECU SEGU SELT SEMT SEQU SGAS SGES SKBG SKBO SKBQ SKEG SKCL

SKLT SKMD SKNV SKPE SKRG SKSM SKSP SLCA SLCB SLCO SLCP

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
ANGOLA	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	Angola/Luanda 4 de Fevereiro Associated MET Office	The quality management system (QMS) for MET service is not yet established by the Meteorological service provider	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	CAA (oversight) Meteorological Service Provider	November 2012	U
	Requirement to provide aerodrome forecasts (AFI FASID Table MET 1A)	Angola/Luanda 4 de Fevereiro Associated MET Office	TAF of Luanda not regularly available	2003	Advice given by correspondence	Improve reliability of telecomm	INAMET and ENANA	As soon as possible	A
BURUNDI	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	Burundi/Busumbura International Airport	The quality management system (QMS) for MET service is not yet established by the Meteorological service provider	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	CAA (oversight) Meteorological Service Provider	November 2012	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
	Requirement to provide automated equipment for measuring or assessing, as appropriate, and for monitoring and remote indicating of surface wind, visibility, runway visual range, height of cloud base, air and dew-point temperatures and atmospheric pressure at Busumbura aerodrome with a runway intended for Category II instrument approach and landing operations in accordance with ICAO Annex 3, Chap 4, para. 4.1.5 and 4.6.3.1	Burundi/ Busumbura International Airport	MET station located very far from the runway and among buildings	2006	Data observed not representative of weather conditions along the runway. Unreliable exchange of data to users	Install an automatic weather observing system with sensors appropriately located. Install a MET message distribution system.	Meteorological Services Department	2007	U
CAMEROON	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	Cameroon, Douala International Airport	The quality management system (QMS) for MET service is not yet established by the National Meteorological Office and ASECNA	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	ANAC (oversight) National MET Department (Service provider) ASECNA (Service provider)	November 2012	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
CAPE VERDE	Requirement to provide automated equipment for measuring or assessing, as appropriate, and for monitoring and remote indicating of surface wind, visibility, runway visual range, height of cloud base, air and dew-point temperatures and atmospheric pressure at Sal aerodrome with a runway intended for Category II instrument approach and landing operations in accordance with ICAO Annex 3, Chap 4, para. 4.1.5 and 4.6.3.1	Cape Verde/Sal International Airport.	Visibility data, RVR, cloud base height, air temperature, dew point and pressure are not provided by an automatic weather observing system at Sal International airport equipped with an ILS	09/2009	Advice given during CODEVMET Mission	Install an automated weather observing system with sensors appropriately located.	INMG/ASA	2011	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
CAPE VERDE	Requirements for Surface wind, RVR and air pressure displays relating to each sensor to be located in the meteorological station with corresponding displays in the appropriate air traffic services units. The displays in the meteorological station and in the air traffic services units to be related to the same sensors in accordance with ICAO Annex 3, para. 4.1.5 and App. 3 para. 4.1.2.1, 4.3.3.1 and 4.7.1	Cape Verde/Sal International Airport	The meteorological parameters displayed in the control tower and those displayed in the aerodrome meteorological centre and used for issuance of observation messages METAR, MET REPORT, SPECI and SPECIAL are from two different sources of observations: the Meteorological observation station and an automatic observing system under demonstration.	09/2009	Advice given during CODEVMET Mission	Use the same sensors for the measurement of meteorological parameters to be displayed in ATS units and the aeronautical meteorological station	INMG/ASA	2011	U
	Requirements to use local routine and special reports MET REPORT and SPECIAL in the meteorological information used pour l'ATIS in accordance with Annex 11, chap. 4, para. 4.3.6.1, g) and Annex 3, Chap. 4 para. 4.3.2 and 4.4.2	Cape Verde/Sal International Airport	Meteorological information used to issue ATIS are not the local routine and special reports MET REPORT and SPECIAL	09/2009	Advice given during CODEVMET Mission	Use local routine and special meteorological reports to issue ATIS information (ATIS voice and D-ATIS)	ASA INMG	2011	A
	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users	Cape Verde/Sal International Airport	The quality management system (QMS) for MET service has not been yet implemented by the National Meteorological Office	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	CAA (oversight) NMG (met	November 2012	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
	(ICAO Annex 3, para 2.2.3.)						Service provider)		
CHAD	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	Chad, N'Djamena International Airport	The quality management system (QMS) for MET service is not yet established by ASECNA	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	ANAC (oversight) ASECNA (Service provider)	November 2012	U
	Requirement to collect, process and relay special air reports in accordance with Annex 3 Chapter 5, para 5.1, 5.2-b), 5.5, 5.8 and 5.9	Chad, N'Djamena International Airport	special aircraft observations and reports are not collected, processed and redistributed	02/2010	Advice given during Sate Mission	- Update and implement the provisions of the ATS/MET service agreement - Encourage ATS/MET/pilots coordination meetings	ADAC and ASECNA	2011	B
COMOROS	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	Comoros/ Prince Said Ibrahim International Airport of Moroni	The quality management system (QMS) for MET service is not yet established by ASECNA	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	ANAC (oversight) ASECNA (Service provider)	November 2012	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
CONGO	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	Congo, Brazzaville International Airport	The quality management system (QMS) for MET service is not yet established by ANAC, the National Meteorological Office and ASECNA	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	ANAC (oversight) ANAC (Service provider) ASECNA (Service provider)	November 2012	U
	Requirement to provide VOLMET broadcast at Brazzaville International Airport (VOLMET), in accordance with ICAO Doc 7474 Volume II, Part V, Table ATS 2A..	Congo, Brazzaville International Airport	The VOLMET broadcast service is not operational	08/2008	Deficiency identified during ICAO WACAF mission	Re-establish the VOLMET broadcast service in the Brazzaville FIR	ASECNA	2009	U
	Requirement to collect, process and relay special air reports in accordance with Annex 3 Chapter 5, para 5.1, 5.2, 5.3.2, 5.4.1, 5.5, 5.7, 5.8 and 5.9	Congo, Brazzaville International Airport	Aircraft observation and reports are not collected, processed and relayed	08/2008	Advice given during the mission	Necessary arrangements between the MET authority and the appropriate ATS authority be made.	ANAC, ASECNA, Airlines	2009	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
	Requirement to provide Automatic Terminal Information Service (ATIS) in accordance with ICAO Doc 7474 Volume II, FASID AFI, Part III - Tableau AOP 1.	Congo, Brazzaville International Airport	The ATIS service is not implemented at Brazzaville International Airport	08/2008	Deficiency identify during ICAO WACAF mission	Install and implement an operational ATIS system	ASECNA	2009	B
DJIBOUTI	Requirement to provide automated equipment for measuring or assessing, as appropriate, and for monitoring and remote indicating of surface wind, visibility, runway visual range, height of cloud base, air and dew-point temperatures and atmospheric pressure at Sal aerodrome with a runway intended for Category II instrument approach and landing operations in accordance with ICAO Annex 3, Chap 4, para. 4.1.5 and 4.6.3.1	Djibouti/ Djibouti International Airport	Djibouti International Airport equipped with a category II approach and landing operations instrument, is not using an automated equipment for measuring, assessing, monitoring and remote indicating of MET parameters	09/ 2009	Advice given during the mission	Install an automated aerodrome weather observing system with sensors and display located at required places for the provision of operational MET information	AID-DPW	December 2010	U
	Requirement to issue local routine and special reports in accordance with Annex 3, chap. 4, para. 4.3.1, 4.3.2 a) et 4.4.2 a)	Djibouti/ Djibouti International Airport	Local routine and special reports (MET REPORT) and SPECIAL) are not issued	09/ 2009	Advice given during the mission	Issue local routine and special reports (MET REPORT) and SPECIAL)	AID-DPW	June 2010	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	Djibouti/ Djibouti International Airport	The quality management system (QMS) for MET service has not been yet implemented by the National Meteorological Office	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	CAA (oversight) National MET Service provider	November 2012	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET))**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
DJIBOUTI	Requirement to issue aerodrome and wind shear warnings and wind shear alert in accordance with Annex 3, chap. 7, para. 7.3 et 7.4 et App. 6 Table A6-2 et A6-3	Djibouti/ Djibouti International Airport	Aerodrome and wind shear warnings (AD WRNG, WS WRNG) and wind shear alert are not issued at Djibouti International Airport	07/ 2009	Advice given during the mission	1. sensitize forecasters and observers in the issuance and dissemination of messages and WS WRNG AD WRNG 2. issue and disseminate WS WRNG and AD WRNG information and wind shear alert; 3. develop and enforce a letter of service agreement between the MET and ATS (TWR, CCR, Office of the runway, ..) in order inter alia to promote the regular routing of aircraft reports on wind shear at landing or take off, to assess RVR, etc. .. 4. consider the possibility of installing, after a survey with users, at Djibouti Airport, a wind shear detecting system	1. AID-DPW 2. AID-DPW 3. DACM et AID-DPW 4. DACM et AID-DPW	1. June 2010 2. June 2010 3. June 2010 End 2010	U U U A
	Requirement to provide flight documentation in accordance with AFI FASID Table MET 7 (Doc 7474 Volume II, FASID AFI)	Djibouti/ Djibouti International Airport	Flight documentation is provided from a public non-secured website ADDS	07/2009	Advice given during the mission	In the short term, a SADIS FTP service shall be accessed from the WAFC London to extract required data for the provision of flight documentation. Access procedures are described on the following Website http://www.icao.int/anb/sadisopsg/sadis%20ftp%20service%20v4.0.pdf In the medium term, install a SADIS VSAT station with the required SADIS workstation software:	AID-DPW	- SADIS FTP : avant fin juin 2010 -Station VSAT SADIS 2G : fin 2010	A

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
THE GAMBIA	Requirement to provide runway visual range (RVR) for runway intended for non-precision or Category I approach and landing Operations (Annex 3, Chapter 4, para. 4.6.3. 4 a), 4.6.3.5 and Appendix 3, para.4.3.6.4).	The Gambia/ Banjul/ Yundum International Airport.	Runway visual range (RVR) is not assessed and reported during periods of reduced visibility.	30/07/2007	Reported by the State concerned from a survey questionnaire, advice given during State mission, further advice given CODEVMET 9/2009.	In the short term: Training of MET personnel for manual assessment and reporting of RVR, or In the medium term: Installation of a RVR measurement, assessment and reporting equipment recommended.	Civil Aviation Authority and MET, The Gambia.	2009 2012	U
	Requirement to report visibility along the runway in local routine and special reports: Annex 3, Appendix 3 para; 4.2.4.2.	The Gambia, Banjul/ Yundum International Airport.	MET station located very far from the runway and behind a tree.	07/2007	Data observed not representative of weather conditions along the runway. Advice given during State Mission and CODEVMET Project 9/2009.	Install an automatic weather observing system with sensors appropriately located.	GCAA (Gambia Civil Aviation Authority).	2012	U
	Requirement to relay air reports: Annex 3 Chapter 5, para.5.8.	The Gambia, Banjul/ Yundum International Airport.	Aircraft observations and reports are not collected, processed and disseminated.	07/2007	Advice given during State Mission.	Necessary arrangements between the MET authority and the appropriate ATS authority be made.	GCAA (Gambia Civil Aviation Authority).	2010	B
	Requirement to measure and report wind direction and speed	The Gambia,	Wind direction and speed are	16/09/2009	Reported to CODEVMET	<u>Short Term:</u> Purchase wire and connect at the selected	GCAA and MET the	11//2009	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET))**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
	Annex 3 Chapter 4 para.4.6.11.	Banjul/Yundum International Airport.	estimated due to breaking of wire around the runway.		Mission, advice given for immediate solution.	point to restore measurement and reading at MET and control Tower. <u>Medium Term:</u> Installation of automatic weather observing system.	Gambia.	2012	
	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
THE GAMBIA	Requirement to issue aerodrome warnings (AW) and wind shear warning Annex 3 Chapter 7 para.7.3, 7.4 App.6 Table A6.2 and A6.3.	The Gambia, Banjul/Yundum International Airport.	No provision for issuance of AW.	16/09/2009	Deficiency assessed during CODEVMET mission, advice given.	<u>Short term</u> , write procedures for issuance of AD and implement immediately.	GCAA and MET The Gambia.	When required starting from 11/2009	U
	Requirement to issue trend forecasts as contained in AFI FASID Table MET 1 A.	The Gambia, Banjul/Yundum International Airport.	No provision to issue trend forecast.	16/09/2009	Deficiency assessed during CODEVMET Project, advice given.	Writing required procedures to follow for issuance of Trend forecasts.	GCAA and MET The Gambia	12/2009	A

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
	Requirement to provide MET Reports to ATS Units Annex 3 Chapter 10 para. 10.1.1.	The Gambia, Banjul/ Yundum International Airport.	Provision of MET reports to ATS Units deficient, messages carried by hand and no wind display at Control Tower.	16/09/2009	Deficiency assessed during CODEVMET Project, advice given.	Repair the internal communication system and the wind measurement system. <u>Medium Term</u> Acquisition of new internal communication system.	GCAA and MET the Gambia GCAA and MET	12/2009 2011	U
	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	The Gambia, Banjul/ Yundum International Airport	The quality management system (QMS) for MET service has not been yet implemented by the National Meteorological Office	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	CAA (oversight) National MET Service provider	November 2012	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET))**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
GHANA	Requirement to disseminate SIGMET information in accordance with the provisions in the AFI FASID Table 2B.	Ghana, Accra Kotoka International Airport (KIA)	SIGMET information issued by Accra MWO is not disseminated properly and the AMBEX procedures are not well known by the telecommunication staff for the dissemination of OPMET information	March 2010	Advice given during State Mission and a new version of the AMBEX Scheme was provided	Disseminate SIGMET information in accordance with AMBEX scheme and AFI FASID Table 2B.	GMet	12/2010	U
	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	Ghana, Accra Kotoka International Airport (KIA)	The quality management system (QMS) for MET service has not been yet implemented by the National Meteorological Office	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	CAA (oversight) National MET Service provider	November 2012	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
GHANA	Requirement to provide meteorological parameters affecting landing and take-off operations as surface wind, visibility, runway visual range (RVR), height of cloud base, air and dew-point temperatures and atmospheric pressure from an integrated automatic system for acquisition, processing, dissemination and display in real time: ICAO Annex 3, Chap. 4, para. 4.1.5	Ghana, Accra Kotoka International Airport (KIA)	Surface wind, visibility, runway visual range (RVR), height of cloud base, air and dew-point temperatures and atmospheric pressure are not provided from an integrated automatic system for acquisition, processing, dissemination and display in real time at Accra International Airport	March 2010	Procurement for the purchase of an integrated automatic system underway (Letter N° PPA/CEO/436/10 of 22 February 2010 from the Public Procurement Authority)	Install an automatic integrated observing system on AKIA runway (ILS Cat 2) with sensors appropriately sited in accordance with the provision in ICAO Annex 3, Chap 4, para 4.1.5 and 4.6.3.1 and Appendix 3 para; 4.2.4.2	GMet (Ghana Meteorological Agency)	12/2010	U
	Requirement to provide runway visual range (RVR): Annex 3, Chapter 4, para. 4.6.3	Ghana, Accra Kotoka International Airport (KIA)	Runway visual range (RVR) is not assessed and reported	March 2010	Advice given during State Mission	Install a RVR assessment and reporting system	GMet	12/2010	U
	Requirement to issue compliant local routine report (MET REPORT) and local special report (SPECIAL) in accordance with provisions in ICAO Annex 3, Table 3-1	Ghana, Accra Kotoka International Airport (KIA)	MET REPORT and SPECIAL are not compliant with Annex 3, Table 3-1	March 2010	Advice given during the mission	Issue compliant local routine and special reports and display them at the MET Office and at all ATS units	GMet	12/2010	U
GUINEA							DNAC and DNM	December 2011	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
GUINEA	Requirement to issue compliant local routine report (MET REPORT) and local special report (SPECIAL) in accordance with provisions in ICAO Annex 3, Table 3-1	Republic of Guinea, Conakry International Airport.	MET REPORT and SPECIAL are not compliant with Annex 3, Table 3-1	09/2009	Advice given during CODEVMET mission	Issue compliant local routine and special reports and display them at the MET Office and at all ATS units	DNM	Before December 2010	U
	Requirement to provide meteorological information to aerodrome control tower, approach control unit and flight information centre in accordance with ICAO Annex 3, App. 9, para. 1.1, 1.2 and 1.3	Republic of Guinea, Conakry International Airport.	Aerodrome Warning (AD WRNG) and wind shear (WS WRNG) reports are not displayed in the control tower and at the ATS units	09/2009	Advice given during CODEVMET mission	1. Display warning reports WRNG AD and WS WRNG in the existing system for display of weather information of the control tower of N'djamena.	DNM	Before December 2010	A
	Requirement to provide flight documentation in accordance with AFI FASID Table MET 7 (Doc 7474 Volume II, FASID AFI)	Republic of Guinea, Conakry International Airport..	Flight documentation is provided from a public non-secured website ADDS	09/2009	Advice given during CODEVMET mission	In the short term, a SADIS FTP service shall be accessed from the WAFC London to extract required data for the provision of flight documentation. Access procedures are described on the following Website http://www.icao.int/amb/sadisopsg/sadis%20ftp%20service%20v4.0.pdf In the medium term, install a SADIS VSAT station with the required SADIS workstation software:	DNAC, DNM, ANA, FIR Roberts, SOGEAC	- SADIS FTP before December 2010 - VSAT SADIS before December 2011	A

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
	Requirement to issue OPMET information from the following AOP aerodromes Kankan, Labé, N’Nzérékoré in accordance with ICAO Doc 7474 Volume II, FASID AFI, Part III - Tableau AOP 1.	Republic of Guinea, Conakry International Airport..	OPMET information from AOP aerodromes Kankan, Labé, N’Nzérékoré is not issued 24h a day	09/2009	Advice given during CODEVMET mission	issue METAR and SPECI from AOP aerodromes Kankan, Labé and N’Nzérékoré	DNAC, DNM and ANA	Before December 2015	B
	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	Republic of Guinea, Conakry International Airport..	The quality management system (QMS) for MET service has not been yet implemented by the National Meteorological Office	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	CAA (oversight) National MET Service provider	November 2012	U
GUINEA BISSAU	Requirement to measure and report wind in accordance with provisions contained in Annex, Chapter 4 para 4.6.1.1..2	Guinée Bissau, Osvaldo Vieira International Airport	The wind sensors are installed on the top of the control tower and wind information is not representative of the condition along the runway.	10/2009	Advice given during CODEVMET mission	Install wind sensors at the touch down zone	ASECNA MET Administration	2011	U
	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the	Guinée Bissau, Osvaldo Vieira International Airport	The quality management system (QMS) for MET service is not yet established by ASECNA	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	ANAC (oversight) ASECNA (Service	November 2012	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET))**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
	meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)						provider)		
	Implementation of MET facilities and services AFI/7 Rec. 14/10	Guinée Bissau, Osvaldo Vieira International Airport	Lack of personnel to ensure MET services to aviation properly	10/2009	Advice given during CODEVMET mission	Provide sufficient number of MET personnel	ASECNA et MET	2011	A
	Requirement to issue aerodrome forecasts (TAF) at Osvaldo Vieira International Airport:Annex 3 Chap. 9, para 9.13a)	Guinée Bissau, Osvaldo Vieira International Airport	TAF of Bissau issued by Dakar aerodrome meteorological Office in accordance with a bilateral agreement resulting in a lack of qualified MET personnel	1995 et 10/2009	Advice given during CODEVMET mission	Provide sufficient number of MET personnel	ASECNA , ACC, ENAG and MET	2012	A

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
GUINEA BISSAU	Requirement to issue aerodrome forecasts (TAF) at Osvaldo Vieira International Airport:Annex 3 Chap. 9, para 9.13a)	Guinée Bissau, Osvaldo Vieira International Airport	TAF of Bissau issued by Dakar aerodrome meteorological Office in accordance with a bilateral agreement resulting in a lack of qualified MET personnel	1995 et 10/2009	Advice given during CODEVMET mission	Provide sufficient number of MET personnel	ASECNA , ACC, ENAG and MET	2012	A
LESOTHO	Implementation of MET facilities and services AFI/7 Rec. 14/10	Lesotho/Maseru/Moshoeshe	Anemometer on RWY 04 has been unserviceable for many months	2003	Advice given through mission	Install a new sensor with displays at appropriate ATC and MET positions	Lesotho	As soon as possible but not later than 2007	A
	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	Lesotho/Maseru/Moshoeshe	The quality management system (QMS) for MET service has not been yet implemented by the National Meteorological Office	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	CAA (oversight) National MET Service provider	November 2012	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET))**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
LIBERIA	Requirement to re-establish the Meteorological Watch Office (MWO) of Robertsfield in accordance with Annex 3, Chap. 3, para. 3.4.1 and ICAO Doc 7474, Volume II, AFI FASID Table MET 1B.	Liberia/ Robertsfield International Airport.	The meteorological watch office (MWO) has not been re-established and the Liberian Administration has not arranged for another contracting State to provide SIGMET.	10/2009	Advice given during the mission and a draft Agreement provided for the issuance of SIGMET by an adjacent MWO	Reach an agreement with the nearest MWO for the provision of meteorological watch services including SIGMET for an interim period of time. Re-establish the MWO in the medium term	LCAA and MET Authority	-Short term: End November 2009 -Medium term: 2012	U

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
LIBERIA									
	Requirement to provide runway visual range (RVR) assessments at the	Liberia/ Robertsfield	Runway visual range (RVR) is not assessed	10/2009	Advice given	In the short term: Training of MET	LCAA,	-Short	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
	touchdown zone and the mid-point of the runway of Robertsfield International Airport intended for Category II instrument approach and landing operations in accordance with Annex 3, Chap. 4, para. 4.6.3.4 b)	International Airport.	and reported during periods of reduced visibility.		during the mission.	personal for manual assessment and reporting of RVR, and In the medium term: Installation of a RVR measurement, assessment and reporting equipment recommended.	Meteorological Authority and RIA	term: November 2009 - Medium term: 2012	
	Requirement to provide appropriate sensors of the automated equipment for measuring, assessing, monitoring and remote indicating visibility, runway visual range (RVR) and height of cloud base at the required in accordance with Annex 3, Chap 4, para. 4.1.5 and 4.6.3.1 and App. 3 para; 4.2.4.2	Liberia/ Robertsfield International Airport.	Except the wind sensor, the other required sensors of the automatic weather observing system, are not installed to support approach, landing and take-off operations.	10/2009	Advice given during the mission.	Install the required sensors of the automatic weather observing system at appropriate location	LCAA, Meteorological Authority and RIA	End of April 2010	U
	Requirement to provide briefing, consultation and flight documentation to flight crew members and/or other flight operations personnel in accordance with Annex 3, Chap. 3, para. 3.3.2 d) and Chap. 9, para. 9.3	Liberia/ Robertsfield International Airport.	Briefing, consultation and flight documentation are not provided to flight crew members and/or other flight operations personnel.	10/2009	A draft statement on the re-establishment of the AMO and the MWO established.	Provide briefing, consultation and flight documentation to flight crew members and other flight operations personnel, and equip the AMO and the future MWO with a high speed Internet access and required MET systems listed in Annex 3 Chap. 9 para. 9.1.3 h) and i). The AMO/MWO should be installed	LCAA, MET Authority, RIA and RFIR	End of April 2011	A

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
						in a suitable room having a direct access to the AIS Office itself having direct access to the apron			

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
LIBERIA	Requirement to collect, processed and disseminated aircraft observations and reports (AIREP) in accordance with Annex 3, para. 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8 and 5.9	Liberia/ Robertsfield International Airport.	Aircraft observations and reports (AIREP) are not collected, processed and disseminated at Roberts MWO.	10/2009	Advice given during the Mission.	Develop and implement a service agreement for air traffic services, aeronautic information services and aeronautical MET services at Robertsfield International Airport in	LCAA, RFIR, RIA	February 2010	A

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
						accordance with ICAO DOC 9377; Initiate regular meetings between the MET authorities, ATS units and appropriate local airlines.			
	Requirement to provide reliable data source for the preparation of aviation weather forecasts in accordance with Annex 3, Chap. 9, para. 9.1.3 c), e), g), h) and i).	Liberia/ Robertsfield International Airport.	Reliable data sources are not available for the preparation of aviation weather forecasts such as SIGMET, aerodrome warnings, Trend forecast, TAFs, flight documentation, etc..	10/2009	Advice given during the Mission.	Supply the meteorological information to operators and flight crew members in accordance with the provisions contained in ICAO Annex 3, Chap. 9, para. 9.1.3 c), e), g), h) and i).	LCAA, MET Authority and RIA	2010	B
	Requirement to use forecasts issued by the WAFCs in the preparation of flight documentation, whenever these forecasts cover the intended flight path in respect of time, altitude and geographical extent, .. in accordance with Annex 3, App. 2, para. 2.1.1	Liberia/ Robertsfield International Airport.	The Roberts AMO does not receive any WAFS products for the provision of flight documentation.	10/2009	Advice given during the Mission.	<u>Short Term:</u> Use SADIS FTP service. Access procedures are described on the following Website: http://www.icao.int/anb/sadisopsg/SADIS%20FTP%20Service%20V4.0.pdf <u>Medium Term:</u> Provide AMO/MWO with SADIS 2G VSAT equipment and compliant SADIS workstation software in accordance with SADISOPSG/9 conclusion 9/15 and SADISOPSG/10	MET Authority and RIA	11//2009 2012	B

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET))**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
						conclusion 10/4..			
	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	Liberia/ Robertsfield International Airport	The quality management system (QMS) for MET service has not been yet implemented by the National Meteorological Office	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	CAA (oversight) National MET Service provider	November 2012	U
MAURITANIA	Requirements for safety oversight in the area of meteorological service for air navigation in Islamic Republic of Mauritania, (USOAP, 2008)	Islamic Republic of Mauritania, Nouakchott, Nouadhibou, Atar, Nema and Zouerrat Airports	ANAC has not established and implemented a system to ensure effective safety oversight of MET services suppliers. In addition, inspection procedures applicable to ensure effective implementation of safety oversight system as well as verification checklists and inspection schedules are not yet developed (<i>corrective action planned in November 2010</i>)	02/2011	Advice given during the Mission.	Recruit MET inspectors to monitor operational requirements	ANAC	November 2011	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
MAURITANIA	Requirement to implement MET service for air navigation in three aerodromes listed in AFI Plan (AFI FASID MET Table 1A).	Islamic Republic of Mauritania, Nouakchott, Nouadhibou, Atar, Nema and Zouerrat Airports	FASID MET Table 1A of the AFI Air Navigation Plan, is not implemented in three aerodromes listed in the plan: Atar, Nema and Zouerrat	02/2011	Advice given during the Mission.	Develop human and material resources necessary for the issuance and dissemination of OPMET from three aerodromes (Atar, Nema and Zouerrat).	ANAC/ ONM/	August 2012	B
	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	Islamic Republic of Mauritania, Nouakchott, Nouadhibou, Atar, Nema and Zouerrat Airports	The quality management system (QMS) for MET service is not yet implemented by ANAC, the National Meteorological Office (ONM) and ASECNA	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	ANAC (oversight) ONM (Service provider) ASECNA (Service provider)	November 2012	U
NIGER	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the	Niger, Niamey International Airport	The quality management system (QMS) for MET service is not yet established by ASECNA	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	ANAC (oversight) ASECNA (Service provider)	November 2012	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
	meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)								
	Requirement to collect, process and relay special air reports in accordance with Annex 3 Chapter 5, para 5.1, 5.2-b), 5.5, 5.8 and 5.9.	Niger, Niamey International Airport	special aircraft observations and reports are not collected, processed and redistributed	03/2010	Advice given during Sate Mission	- Update and implement the provisions of the ATS/MET service agreement - Encourage ATS/MET/pilots coordination meetings	DAC and ASECNA	Before December 2010	B

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
NIGERIA	Requirement to provide measurement of MET elements representative of conditions prevailing on the Runway – Annex 3, Appendix 3 – Part 4 observing and reporting of MET element	Nigeria / Kano MA	Observing and reporting of MET elements deficient, Site of measurement about 2 kms from touchdown zone	25/09/09	Advice given by CODEVME T Phase 1 mission	Relocation of site of measurement of MET elements at a distance of 120 m or less from touchdown zone install an automatic observing system already available (NIMET Source)	NIMET NCAA and NAMA	2010 2010	U
	Requirement to measure and report RVR for runway intended for category II instrument approach and landing operations – Annex 3 Chapter 4 – Para. 4.6.3.4, 4.6.3.5 – appendix 3 – Para 4.3.6.4.	Nigeria / Kano MA	RVR not measured and reported for runway intended for category II instrument approach and landing operations	25/09/09	Advice given by CODEVME T – Phase I mission	Short term: Manuel measurement and reporting as immediate solution Medium term : install automatic observing system which is available	NIMET and NAMA	2010	U
	Requirement to assess and report wind shear in accordance with Annex 3 chapter 7 para. 7.4.1 and relevant provisions contained in low level wind shear Manuel 9817	Nigeria / Kano M.A.	Kano Airport affected by WS, no system of detection except for information received from pilots	25/09/09	Advice given by CODEVME T Phase I mission	NIMET, NAMA and NCAA to study possibility of installing WS detection system	NIMET NAMA and NCAA	2011	U
	Requirement to use WAFS products for flight documentation as in provisions contained in Annex 3 Chapter 9 para 9.4.3 and 9.1.6	Nigeria/ Kano AM	Use of other non WAFS products for coverage of flights departing Kano	25/09/2009	Advice given during CODEVME T Phase I mission	NIMET and NAMA to provide a SADIS station to Kano MET centre	NIMET and NAMA	2012	A
DEMOCRATIC REPUBLIC OF	Requirement to arrange that selected volcano observatory of Goma, observes: a) significant pre-eruption volcanic activity, or a cessation thereof; b) a volcanic eruption, or a cessation thereof; and/or c) volcanic ash in the atmosphere and	Democratic Republic of Congo (DRC), Volcano Observatory of Goma.	Volcanic activity information are not provided to air navigation units because of the lack of communication means between the	09/ 2009	Advice given during Sate Mission	Improve communication means between Goma and Djili	Goma Observatory / METELS AT/ RVA	Before December 2011	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STA TE	Requirements	Facilities or services	Description of Deficiency	Date first reporte d	Comments on deficiency	Description of corrective action	Executing body	Target date for imple- mentation	Priori ty for actio n
	1	2	3	4	5	6	7	8	9
DEMOCRATIC REPUBLIC OF CONGO	send this information as quickly as practicable to its associated ACC, MWO and VAAC: ICAO Annex 3, para. 3.6		observatory and MWO, ACC and FIC						
	Requirement to provide automated equipment for measuring or assessing, as appropriate, and for monitoring and remote indicating of surface wind, visibility, runway visual range, height of cloud base, air and dew-point temperatures and atmospheric pressure at Djili aerodrome with a runway intended for Category II instrument approach and landing operations in accordance with ICAO Annex 3, Chap 4, para. 4.1.5 and 4.6.3.1	Democratic Republic of Congo (DRC), N'Djili International Airport.	Except the wind sensor, the other required sensors of the automatic weather observing system, are not installed to support approach, landing and take-off operations.	09/ 2009	Advice given during Sate Mission	Install an automatic weather observing system with sensors appropriately located. Install a MET message distribution system..	METELS AT/ RVA	Before december 2010	U
	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	Democratic Republic of Congo (DRC), N'Djili International Airport.	The quality management system (QMS) for MET service has not been yet implemented by the National Meteorological Office	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	CAA (oversight) National MET Service provider	Novem ber 2012	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
	Requirement to issue aerodrome and wind shear warnings and wind shear alert in accordance with Annex 3, chap. 7, para. 7.3 et 7.4 et App. 6 Table A6-2 et A6-33	DRC, N'Djili International Airport.	Aerodrome and wind shear warnings (AD WRNG, WS WRNG) and wind shear alert are not issued at N'Djili International Airport	09/2009	Advice given during Sate Mission	1. issue and disseminate WS WRNG and AD WRNG information and wind shear alert; 2. develop and enforce a letter of service agreement between the MET and ATS (TWR, CCR, Office of the runway, ..) in order inter alia to promote the regular routing of aircraft reports on wind shear at landing or take off, to assess RVR, etc. .. 3. consider the possibility of installing, after a survey with users, at Djibouti Airport, a wind shear detecting system	METELS AT/ RVA	Before March 2010	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
DEMOCRATIC REPUBLIC OF CONGO	Requirements to use local routine and special reports MET REPORT and SPECIAL in the meteorological information used pour l'ATIS in accordance with Annex 11, chap. 4, para. 4.3.6.1, g) and Annex 3, Chap. 4 para. 4.3.2 and 4.4.2	DRC, N'Djili International Airport	Meteorological information used to issue ATIS are not the local routine and special reports MET REPORT and SPECIAL	09/2009	Advice given during Sate Mission	Use local routine and special meteorological reports to issue ATIS information (ATIS voice and D-ATIS)	METTEL SAT RVA	July 2010	A
SAO TOME	Requirement to issue aerodrome and wind shear warnings and wind shear alert in accordance with Annex 3, chap. 7, para. 7.3 et 7.4 et App. 6 Table A6-2 et A6-33	Sao Tome, and Principe, Sao Tome International Airport (STIA).	Aerodrome and wind shear warnings (AD WRNG, WS WRNG) and wind shear alert are not issued at Sao Tome International Airport	09/ 2009	Advice given during CODEVMET Mission	1. issue and disseminate WS WRNG and AD WRNG information and wind shear alert; 2. develop and enforce a letter of service agreement between the MET and ATS (TWR, CCR, Office of the runway, ..) in order inter alia to promote the regular routing of aircraft reports on wind shear at landing or take off, to assess RVR, etc. .. 3. consider the possibility of installing, after a survey with users, at Djibouti Airport, a wind shear detecting system	INM, ENASA	Before June 2010	U
	Requirement to issue local routine and special reports in accordance with Annex 3, chap. 4, para. 4.3.1, 4.3.2 a) et 4.4.2 a)	Sao Tome, and Principe, (STIA)..	Local routine and special reports (MET REPORT) and SPECIAL) are not issued	09/ 2009	Advice given during CODEVMET Mission	Issue local routine and special reports (MET REPORT) and SPECIAL)	INM/ ENASA	Before december 2010	A
	Requirements to issue METAR, SPECI) and TAF on 24h Sao Tome International Airport: FASID AFI, Tableau MET 1A	Sao Tome, and Principe, (STIA).	METAR and SPECI are not issued on 24h basis	09/2009	Advice given during CODEVMET Mission	Issue METAR and SPECI on 24h basis	INM et ENASA	Before June 2010	A

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Deficiencies				Corrective action		
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
	1	2	3	4	5	6	7	8	9
	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	Sao Tome, and Principe, (STIA)..	The quality management system (QMS) for MET service has not been yet implemented by the National Meteorological Office	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	CAA (oversight) National MET Service provider	November 2012	U

	Identification		Carences			Action Corrective			
ETAT	Besoins	Etat/ Installations	Description de la Carence	Date d'identification	Observations sur la carence	Description de la mesure corrective	Organe exécutif	Date de Mise en Œuvre	Priorité
1	2	3	4	5	6	7	8	9	10

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Carences			Action Corrective			
ETAT	Besoins	Etat/ Installations	Description de la Carence	Date d'identi- fication	Observa tions sur la carence	Description de la mesure corrective	Organe exécutif	Date de Mise en Œuvre	Priorité
1	2	3	4	5	6	7	8	9	10
SAO TOME	Requirement to provide flight documentation in accordance with AFI FASID Table MET 7 (Doc 7474 Volume II, FASID AFI)	Sao Tome, and Principe, Sao Tome International Airport..	Flight documentation is provided from a public non-secured website ADDS	09/2009	Advice given during CODEVMET Mission	In the short term, a SADIS FTP service shall be accessed from the WAFC London to extract required data for the provision of flight documentation. Access procedures are described on the following Website http://www.icao.int/anb/sadisopsg/sadis%20ftp%20service%20v4.0.pdf In the medium term, install a SADIS VSAT station with the required SADIS workstation software:	INM/ ENASA	Before December 2010	B
SÉNÉGAL	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	Senegal/ Leopold Sedar Senghor International Airport or Dakar	The quality management system (QMS) for MET service is not yet established by ANACIM, the National Meteorological Office and ASECNA	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	ANAC (oversight) ANACIM (Service provider) ASECNA (Service provider)	Novembre 2012	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Carences			Action Corrective			
ETAT	Besoins	Etat/ Installations	Description de la Carence	Date d'identi- fication	Observa tions sur la carence	Description de la mesure corrective	Organe exécutif	Date de Mise en Œuvre	Priorité
1	2	3	4	5	6	7	8	9	10
SÉNÉGAL	Requirement to collect, process and relay air reports in accordance with Annex 3 Chapter 5, para 5.1, 5.2, 5.3.2, 5.4.1, 5.5, 5.7, 5.8 and 5.9	Senegal/ Leopold Sedar Senghor International Airport or Dakar	Aircraft observation and reports are not collected, processed and relayed	02/2009	Deficiency identify during ICAO WACAF visit	Necessary arrangements between the MET authority and the appropriate ATS authority be made.	ANACS and ASECNA	December 2009	B
	Requirement to report visibility along the runway in local routine and special reports in accordance with Annex 3, Appendix 3 para; 4.2.4.2	Senegal/ Leopold Sedar Senghor International Airport or Dakar	Many obstacles (2 control towers, airlines hangars, etc ...) around the visibility estimation platform of the aeronautical meteorological station (SMA), does not allow to estimate the visibility along the runway .	02/2009	Deficiency identify during ICAO WACAF visit	Install visibility sensors along the runway Or Relocate the SMA at a location enabling the observer to estimate the visibility along the entire length of the runway.	ASECNA	June 2010	A
	Requirement to provide Automatic Terminal Information Service (ATIS) in accordance with ICAO Doc 7474 Volume II, FASID AFI, Part III - Tableau AOP 1.	Senegal/ Leopold Sedar Senghor International Airport or Dakar	The ATIS service is not implemented at Dakar International Airport	02/2009	Deficiency identify during ICAO WACAF visit	Install and implement an operational ATIS system	ASECNA	June 2010	A
SIERRA LEONE	Requirement to measure and report wind in accordance with provisions contained in Annex, Chapter 4 para 4.6.1.1.	Sierra Leone/ Freetown Lungi Airport	Wind measurement system old and deficient	1994	Advice given during mission CODEVMET Phase I 10/2009	Installation of new wind measurement equipment	SLAA and MET Department	2010	U
	Requirement to measure and report	Sierra Leone/	In case of reduced	29/09/	Advice given	Short term : manual	MET	10/2009	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Carences			Action Corrective			
ETAT	Besoins	Etat/ Installations	Description de la Carence	Date d'identi- fication	Observa tions sur la carence	Description de la mesure corrective	Organe exécutif	Date de Mise en Œuvre	Priorité
1	2	3	4	5	6	7	8	9	10
	RVR for runway intended for Category II instrument approach and landing operations	Freetown Lungi Airport	visibility RVR not measured and reported	2009	during mission CODEVMET Phase I	measurement Long term : Installation of RVR measurement, assessment and reporting equipment	Department and SLAA	2013	
	Requirement to issue aerodrome warnings (AW) and Wind Shear warnings (WS) as contained in provisions of Annex 3 Chapter 7 para 7.3.1 and 7.4.1 and App. 6 Table A6.2, A6.3	Sierra Leone/ Freetown Lungi Airport	AW and WS are not issued at Lungi Airport	29/09/ 2009	Advice given during mission CODEVMET Phase I	Short term: Writing of procedures for issuance of AW and WS Warnings and implement immediately. Medium term: Acquisition of MET Radar and wind shear detection equipment	MET Department and SLAA	11/2009 2013	U
	Requirement to observe and report MET elements in accordance with Annex 3, para 4.6	Sierra Leone/ Freetown Lungi Airport	Not in compliance with recommended practices on observing and reporting of MET elements	29/09/ 2009	Advice given during mission CODEVMET Phase I	Relocate measurement site and acquire automated observing system	MET Department SLAA and SLCA	2012	A
	Requirement to provide MET information to ATS units Annex 3 Chapter 10 para 10.1.5 Appendix 9 para 1.1.a)	Sierra Leone/ Freetown Lungi Airport	MET messages MET report, METAR, SPECIAL are hand carried to control TWR Lack of commu-nication system	29/09/ 2009	Deficiency reported during mission CODEVMET Phase I	Repair the communication system and install reliable display system to ATS	SLAA Roberts FIR and MET Department	2010 2012	A
	Requirement to implement MET facilities and services AFI/7 Rec. 10/14	Sierra Leone/ Freetown Lungi Airport	Insufficient number of forecasters and observers at Lungi MET centre	29/09/ 2009	Deficiency assessed during mission CODEVMET Phase I	Provide MET centre with required number of qualified personnel	MET Department SLAA Roberts FIR	2012	A

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Carences			Action Corrective			
ETAT	Besoins	Etat/ Installations	Description de la Carence	Date d'identi- fication	Observa tions sur la carence	Description de la mesure corrective	Organe exécutif	Date de Mise en Œuvre	Priorité
1	2	3	4	5	6	7	8	9	10
SIERRA LEONE	Requirement to use qualify WAFS products for flight documentation in accordance with provision contained in Annex 3 Chapter 9 para 9.1.3, 9.1.6 and 9.1.6 and FASID Table MET7	Sierra Leone/ Freetown Lungi Airport	No SADIS station at Lungi Airport	29/09/ 2009	Deficiency assessed during mission CODEVMET Phase I	Short Term: Use FTP to acquire WAFS data Acquisition of SADIS station	MET Department SLAA Roberts FIR SLAA MET Roberts FIR	10/2009 2012	A
	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	Sierra Leone/ Freetown Lungi Airport	The quality management system (QMS) for MET service has not been yet implemented by the National Meteorological Office	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	CAA (oversight) National MET Service provider	Novembre 2012	U
SOMALIA	Situation unknown	FIR Mogadishu							
SWAZI LAND	Requirement to provide MET reports to ATS Units (Annex 3, Chapter 10, para 10.1.1)	Swaziland/Manzini Matsapha Airport Associated MET Office	Provision of MET reports to ATS units deficient. No wind displays in control tower	2004	Advice was given on mission	Install a display system for MET data and information at ATS units	DCA and MET Department	As soon as possible	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Carences			Action Corrective			
ETAT	Besoins	Etat/ Installations	Description de la Carence	Date d'identi- fication	Observa tions sur la carence	Description de la mesure corrective	Organe exécutif	Date de Mise en Œuvre	Priorité
1	2	3	4	5	6	7	8	9	10
TOGO	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	Togo, Lomé International Airport	The quality management system (QMS) for MET service has not been yet implemented by the National Meteorological Office	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	CAA (oversight) National MET Service provider	Novemb er 2012	U
	Requirement to report and issue surface wind observation period averaging in accordance with Annex 3, App. 3 para. 4.1.3.1	Togo, Lomé International Airport	The direct reading of wind at the control tower, provides instantaneous observations of wind and the average speed and wind direction over periods of 10 minutes and 2 minutes	08/2010	Advice given during the mission	Arrange for the calibration of the wind direct display systems in order that the period of surface wind observations averaging is 2 minutes on the displays of the control tower and for MET REPORT/SPECIAL messages, and 10mn in METAR/SPECI	ASECNA	Before June 2011	U
ZAMBIA	1)Implementation of MET facilities and services (Annex 3, para 4.1.6)	Zambia/Lusaka International Airport	Inadequate level of equipment maintenance	2002 and missions of 2004 and 2007	Equipment remain unserviceable for a long time due to lack of spare parts	Provide financial resources including use of air navigation charges which currently is not fully available to the MET Department.	Zambia MET Department and NACL	As soon as possible	U
	2)Requirement to provide MET reports to ATS Units (Annex 3, Chapter	Zambia/Lusaka Meteorological	Provision of MET reports to ATS Units deficient	2002 and missions of 2004 and 2007	Advice given during mission by correspondence	Install display system of MET data to ATS units	MET Department	As soon as possible	U

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6E**

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

	Identification		Carences			Action Corrective			
ETAT	Besoins	Etat/ Installations	Description de la Carence	Date d'identi- fication	Observa tions sur la carence	Description de la mesure corrective	Organe exécutif	Date de Mise en Œuvre	Priorité
1	2	3	4	5	6	7	8	9	10
ZAMBIA	10, para 10.1.1)	Office							
	3)Requirement to provide meteorological data and forecasts in form of flight documentation (Annex 3, Chapter 3, para 3.3.2).	Zambia/Lusaka Meteorological Office	Provision of MET reports to ATS Units deficient	2002 and missions of 2004 and 2007	Advice given during mission and by correspondence	Install appropriate telecomms equipment to receive OPMET information and appoint adequate trained personnel	MET Department	As soon as possible	U
	4) Requirements for SIGMET information (Annex 3 para 3.4.2 b, c, d and add para. 7.1.1	Zambia/Lusaka Meteorological watch office (MWO)	SIGMET not issued	2007	Advice given on mission	Immediately provide training and issue SIGMET	MET Department	As soon as possible	U
	Requirement to establish and implement from 15 November 2012, a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users (ICAO Annex 3, para 2.2.3.)	Zambia/Lusaka Meteorological Office	The quality management system (QMS) for MET service has not been yet implemented by the National Meteorological Office	02/2011	Advice given during the Mission.	Train local trainers in QMS and implement the QMS before November 15, 2012	CAA (oversight) National MET Service provider	November 2012	U

APIRG/19 Meeting Report

Report on Agenda Item 3

Appendix 3.6E

**AIR Navigation Deficiencies in the Meteorology Field
(Ref.: Air Navigation Plan – Africa-Indian Ocean region (doc 7474)
Part IV – Meteorology (MET)**

EXPLANATORY NOTES FOR APPENDICES ON DEFICIENCIES

Requirement identified at a given meeting through a recommendation; name of the meeting and the related recommendation number

Name of the State or States involved and/or the name of the facilities such as name of airport, FIR, ACC, TWR, etc.

2. Brief description of the deficiency :
3. Date deficiency was first reported :
4. Comments.
5. Brief description of the corrective actions to be undertaken.
6. Identification of the executing body.
7. Target date for completion of the corrective action.
8. Priority and classification.
9. Target date for implementation.
10. Priority for Action.
- 11.

“U” priority = **Urgent** requirements having a **direct** impact on **safety** and requiring **immediate** corrective actions.

Urgent requirements consisting of any physical, configuration, material, performance, personnel or procedures specifications, the application of which is urgently required for air navigation safety.

“A” priority = **Top priority** requirements **necessary** for air navigation **safety**.

Top priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation safety.

“B” priority = **Intermediate** requirements **necessary** for air navigation **regularity**.

Intermediate priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation regularity and efficiency.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6F**

**MET/SG Report for the Preparation of the MET related AFI Regional
Air Navigation Implementation Action Plan**

1. Introduction

1.1 The ICAO Council approved the fourth edition of the Global Air Navigation Plan (GANP) on May 2013. The Council particularly called on every ICAO Planning and Implementation Regional Group (PIRG) to:and

- a) Develop regional action plans with priorities and targets;
- b) Determine implementation and benefit indicators/metrics; and
- c) Identify implementation challenges.

1.2 The ICAO Global PIRG and Regional Aviation Safety Groups (RASG) coordination meeting held in March 2013 as well as Recommendation 6/1 of the 12th Air Navigation Conference (AN-Conf/12) requires every PIRG to develop a Regional Air Navigation Implementation Action Plan, based on the Aviation System Block Upgrades (ASBU) methodology.

1.3 ASBU implementation is to be realized through tailored regional work programmes based on specific operational needs. This work programme will be designed first by identifying the operational characteristics of the homogeneous air traffic management (ATM) areas, major traffic flows and major international aerodromes. Analysis of this operational data will identify performance improvement opportunities and ASBU modules will then be evaluated to identify which of them best deliver the needed operational improvements. Once operational analysis and resulting implementations have been completed, the next step calls for air navigation performance monitoring through an established measurement and reporting strategy

1.4 The Nineteenth Meeting of APIRG (APIRG/19) will therefore be expected to focus on the development of the Air Navigation Implementation Action Plan for the AFI region, using a structured approach as called by the GANP.

1.5 To complete these tasks, the APIRG Secretary urged all APIRG Sub-Groups to include this activity in their agenda in preparing APIRG/19 meeting. To this end, the MET/SG was requested to provide a report to be submitted to APIRG/19 for the preparation of the MET related AFI Regional Air Navigation Implementation Action Plan. As requested by the APIRG Secretary, the said report was developed and structured as follows:

- 1) Introduction,
- 2) Analysis of the current situation,
- 3) Identification of regional priorities and targets,
- 4) Determination of implementation and benefit indicators/metrics; and
- 5) Identification of implementation challenges.
- 6) Alignment with the ASBU.

1.6 ASBU blocks are defined as follows: Block0: modules available from 2013 to 2018, Block1: modules to be available from 2018 to 2023, Block2: modules to be available from 2023 to 2028, Block3: from 2028, etc.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6F**

**MET/SG Report for the Preparation of the MET related AFI Regional
Air Navigation Implementation Action Plan**

1.7 As described in the AN-CONF/12 report, Modules related to MET are in the Performance Improvement Area 2, *Globally Interoperable Systems and Data - Through Globally Interoperable System Wide Information Management*, as follows:

- ✓ three modules in Block0 (B0) including **B0-105** identified as “*the Improved Meteorological Information Module: Meteorological information supporting enhanced operational efficiency and safety*”;
- ✓ four modules including **B1-105** identified as “*the Enhanced Operational Decisions through Integrated Meteorological Information (Planning and Near-term Service)*”; and
- ✓ two modules including **B3-105** identified as “*the Enhanced Operational Decisions through Integrated Meteorological Information (Near-term and Immediate Service)*”.

1.8 In the process of the alignment of the regional Air Navigation Plans (ANPs), the AN-Conf/12 agreed that PIRGs be focusing initially on implementing ASBU Block0 Modules and finalize the development of their ASBU aligned regional plans by May 2014. The ASBU module related to meteorological information supporting enhanced operational efficiency and safety is called ASBU B0-105 (or B0-AMET in the 4th edition of the GANP) as defined above.

1.9 **B0-AMET:** *Improved Meteorological Information - Meteorological Information Supporting Enhanced Operational Efficiency and Safety*

1.9.1 Global, regional and local meteorological information provided by world area forecast centres, volcanic ash advisory centres, tropical cyclone advisory centres, aerodrome meteorological offices and meteorological watch offices in support of flexible airspace management, improved situational awareness and collaborative decision making, and dynamically-optimized flight trajectory planning. ASBU module B0-AMET covers the following items:

- a) Forecasts provided by world area forecast centres (WAFCs), volcanic ash advisory centres (VAACs) and tropical cyclone advisory centres (TCAC);
- b) Aerodrome warnings to give concise information of meteorological conditions that could adversely affect all aircraft at an aerodrome, including wind shear; and
- c) SIGMETs to provide information on occurrence or expected occurrence of specific en-route weather phenomena which may affect the safety of aircraft operations and other operational meteorological (OPMET) information, including METAR/SPECI and TAF, to provide routine and special observations and forecasts of meteorological conditions occurring or expected to occur at the aerodrome.

1.9.2 In addition, quality management for aeronautical meteorological services (QMS) shall be implemented for continuous assessment and monitoring of the above-mentioned ASBU module B0-AMET items for the provision of timely, reliable and accurate meteorological information to aviation users in an efficient manner.

1.9.3 This information will support flexible airspace management, improved situational awareness and collaborative decision-making, and dynamically-optimized flight trajectory planning. This Module includes elements which should be viewed as a subset of all available meteorological information that can be used to support enhanced operational efficiency and safety.

1.10 Implementation of ASBU B0-AMET in the AFI region

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6F**

**MET/SG Report for the Preparation of the MET related AFI Regional
Air Navigation Implementation Action Plan**

1.10.1 The objective of the Global Air Navigation Plan related to aeronautical meteorology is to improve the availability of meteorological information in support of a seamless global ATM system among its components (Global Plan Initiative (GPI-19 – *Meteorological systems refers*). The strategy described in the Global Plan requires that the following developments be completed and implemented during the next few years:

- a) immediate access to real-time, global OPMET information is required to assist ATM in tactical decision making for aircraft surveillance and flexible/dynamic aircraft routing, which will contribute to the optimization of the use of airspace. Such stringent requirements will imply that most meteorological systems be automated and that meteorological service for international air navigation be provided in an integrated and comprehensive manner through global systems such as the WAFS, the IAVW and the ICAO tropical cyclone warning system;
- b) enhancements to WAFS, IAVW and the ICAO tropical cyclone warning system to improve the accuracy, timeliness and usefulness of the forecasts issued will be required to facilitate the optimization of the use of airspace; and
- c) increasing use of data link to downlink and uplink meteorological information (through such systems as ATIS and VOLMET) will assist in the automatic sequencing of aircraft on approach and will contribute to the maximization of capacity. The development of automated ground-based meteorological systems in support of operations in the terminal area will provide OPMET information (such as automated low-level wind shear alerts) and automated runway wake vortex reports. Exchange and monitoring of OPMET information through AFI Meteorological Bulletin Exchange (AMBEX), from the automated systems also assists in the timely provision of forecasts and warnings of hazardous meteorological phenomena. These forecasts and warnings, together with automated OPMET information, contribute to maximizing runway capacity.

2. Analysis of the Current Situation

2.1 AFI States provide aeronautical meteorological service that has been gradually improving in recent years. However, to ensure the availability of accurate, reliable and comprehensive weather information, it is imperative that all States have the necessary equipment, properly installed and/or maintained. In this respect it is essential that States have automated systems for data verification in accordance with the requirements set out in ICAO Annex 3. While quality management system (QMS) implementation process is still a challenge for most States, the process of the quality of meteorological data should be the structure of Block0.

2.2 Likewise, the lack of compliance with ICAO and WMO standards and recommendations in respect of qualification and training of personnel providing service for international air navigation should be corrected by the States in the Region.

2.3 To obtain a well-established and implemented QMS/MET in the region, any effort by ICAO will be useless if there is no full commitment and performance of the senior management of the civil aviation administrations and providers of aeronautical meteorological services.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6F**

**MET/SG Report for the Preparation of the MET related AFI Regional
Air Navigation Implementation Action Plan**

2.4 As a cross curricular subject to all these axes, there is a requirement by the World Meteorological Organization (WMO) for personnel competencies requirements.

2.5 The current implementation status of ASBU B0-AMET varies from one State to another; a well-documented survey results may provide useful information on the status of implementation in the region. However, based on an average status of implementation recorded from the ICAO Audit Reports and AFI files on the list of air navigation deficiencies in the MET field, the current situation for the AFI region can be summarized in the Table below;

ASBU B0-AMET elements		Average Implementation Status in %
1. WAFS, IAVW and Tropical Cyclone Watch		
1.1	SADIS (46 out of 54 States)	85%
1.2	SADIS 2G/FTP (41 out of 46 implementing SADIS)	89%
1.3	WIFS as back up to SADIS (36 over 46 registered)	76%
1.4	Volcano observatories (VO): (only 8 VO established out of 21 states having active or dormant volcanoes)	38%
1.5	VAAC for the AFI Region (Toulouse)	100%
1.6	TCAC for the AF Region (La Reunion)	100%
2. AD WRND, WS WRNG and Alerts		
2.1	Aerodrome warnings (AD WRNG): (average of 40 out of 54 main capital city International airports issuing AD WRNG))	74%
2.2	Wind shear warnings and alert (WS WRNG) (average of 5 out of 25 capital city International airports experiencing WS issuing WS WRNG)	20%
3. OPMET including SIGMET, VOLMET and ATIS		
3.1	METAR	95%
3.2	SPECI	80%
3.3	MET REPORT	85%
3.4	SPECIAL	80%
	TAF	100%
3.5	MWO (34 out of 35 States expected to establish a meteorological watch office (MWO) have done so)	97%
3.6	SIGMET (22 out of 35 MWO expected to issue SIGMET are issuing SIGMET)	62%
3.7	HF VOLMET (2 out of 2 aerodromes (Brazzaville and Antananarivo) expected to issue HF VOLMET are not doing so)	0%
3.8	VHF ATIS (12 out of 33 aerodromes expected to issue ATIS)	36%
	AMBEX implementation by Regional OPMET Data Banks (RODB): (implementation status of AMEX by the 2 AFI RODB)	90%
	AMBEX implementation by Bulletin Compiling Centres (BCC): (8 out of 10 BCC are implementing AMBEX correctly)	80%
	AMBEX implementation by National OPMET Centres (NOC): (40 out of 54 NOC are implementing AMBEX correctly)	74%

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6F**

**MET/SG Report for the Preparation of the MET related AFI Regional
Air Navigation Implementation Action Plan**

	4. QMS/MET	
4.1	QMS for MET established (13 out of 54 States established QMS)	24%
4.2	QMS for MET certified (6 out of 54 States certified QMS)	11%

3. Identification of regional priorities and targets

3.1 Based on the current implementation status, elements under ASBU B0-AMET are prioritized to support the safety related highest priority in ASBU methodology, the development and implementation of Performance-based Navigation (PBN), Continuous Descent Operations (CDO), Continuous Climb Operations (CCO) and Runway Sequencing capabilities (AMAN/DMAN).

3.2 In this regard, the elements of the ASBU B0-AMET module in the AFI region are prioritized and given target dates as follow:

Identification of elementary Priority	Elements of the ASBU B0-AMET module	Status of Implementation	Implementation Target date
1	QMS for MET established (13 out of 54 States established QMS in December 2012)	24%	75% by December 2014
2	SADIS 2G/FTP (41 out of 46 implementing SADIS in December 2012)	89%	95% by December 2014
3	Wind shear warnings and alert (WS WRNG) (average of 5 out of 25 capital city International airports having WS issuing WS WRNG in December 2012)	20%	50% by December 2014
4	SIGMET (22 out of 35 MWO expected to issue SIGMET are issuing SIGMET in December 2012)	62%	80% by December 2014
5	SADIS (46 out of 54 States registered in December 2012)	90%	95% by December 2014
6	Aerodrome warnings (AD WRNG): (average of 40 out of 54 main capital city International airports issuing AD WRNG in December 2012)	74%	80% by December 2014
7	AMBEX implementation by Regional OPMET Data Banks (RODB): (implementation status of AMEX by the 2 AFI RODB in December 2012)	90%	97% by December 2014
8	AMBEX implementation by Bulletin Compiling Centres (BCC): (8 out of 10 BCC are implementing AMBEX correctly in December 2012)	80%	95% by December 2014
9	AMBEX implementation by National OPMET Centres (NOC): (40 out of 54 NOC are implementing AMBEX correctly in December 2012)	74%	90% by December 2014
10	SPECI (in December 2012)	80%	95% by December 2014
11	SPECIAL (in December 2012)	80%	95% by December 2014

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6F**

**MET/SG Report for the Preparation of the MET related AFI Regional
Air Navigation Implementation Action Plan**

12	METAR (in December 2012)	95%	98% by December 2014
13	MET REPORT (in December 2012)	85%	98% by December 2014
14	Volcano observatories (VO): (only 8 VO established out of 21 states having active or dormant volcanoes)	38%	45% by December 2014
15	VOLMET (2 out of 2 aerodromes (Brazzaville and Antananarivo) expected to issue VOLMET are not doing so)	0%	50% by December 2014
16	ATIS (12 out of 33 aerodromes expected to issue ATIS)	36%	50% by December 2014
17	MWO (34 out of 35 States expected to establish a meteorological watch office (MWO) have done so)	97%	100% by December 2014
18	WIFS as back up to SADIS (36 over 46 registered)	76%	100% by December 2014
19	QMS for MET certified (6 out of 54 States certified QMS)	11%	75% by December 2014
20	TAF	100%	No change
21	VAAC for the AFI Region (Toulouse)	100%	No change
22	TCAC for the AF Region (La Reunion)	100%	No change

3.3 From the above elementary priorities, the overall regional priorities and targets are defined for the AFI region:

3.3.1 AFI Regional Priorities and targets for B0-AMET

1. Establishment of QMS for MET by at least 75% of AFI States for the provision of timely, reliable and accurate meteorological information to aviation users in an efficient manner;
2. Implementation of aerodrome warnings, wind shear warnings/alerts and information on the state of runway (water thickness observations on the runway) by at least 50% of concerned AFI States to support runway safety;
3. Full implementation of the AMBEX scheme by at least 97% of AFI States for exchange of OPMET information worldwide;
4. Implementation of SIGMET by 100% of AFI MWOs;
5. Implementation of WAFS/IAVW/TCAC including updated SADIS by 100% of AFI States;
6. At least 80% of MET forecasters well-trained to support the ASBU methodology;
7. Implementation of volcano observatories by at least 45% of concerned AFI States to support the AFI volcanic ash contingency plan;
8. Implementation of the issuance and distribution of OPMET by 100% of AFI States; and

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6F**

**MET/SG Report for the Preparation of the MET related AFI Regional
Air Navigation Implementation Action Plan**

9. At least 75% operation of current HF VOLMET in Brazzaville and Antananarivo and at least 50% of concerned AFI States implemented VHF ATIS.

3.3.2 Module B1-AMET is *The Enhanced Operational Decisions through Integrated Meteorological Information (Planning and Near-term Service)* module which enables the reliable identification of solutions when forecast or observed meteorological conditions impact aerodromes or airspace. Full ATM-Meteorology integration is needed to ensure that: meteorological information is included in the logic of a decision process and the impact of the meteorological conditions (the constraints) are automatically calculated and taken into account. The decision time-horizons range from minutes, to several hours or days ahead of the ATM operation (this includes optimum flight profile planning and tactical in-flight avoidance of hazardous meteorological conditions) to typically enable near-term and planning (>20 minutes) type of decision making. This module also promotes the establishment of standards for global exchange of the information. This module builds, in particular, upon module B0-105, which detailed a sub-set of all available meteorological information that can be used to support enhanced operational efficiency and safety. Therefore, AFI Regional Priorities and targets for B1-AMET will include:

1. Full automation of ground-based meteorological systems in support of operations in the terminal area will provide OPMET information (such as automated low-level wind shear alerts) and automated runway wake vortex reports;
2. Full enhanced WAFS, IAVW and the ICAO tropical cyclone warning system to improve the accuracy, timeliness and usefulness of the forecasts issued will be required to facilitate the optimization of the use of airspace
3. Full implementation of data link related communications with aircraft including VOLMET (D-VOLMET); D-ATIS, etc.; and
4. Full implementation of automated Exchange and monitoring of OPMET information through AFI Meteorological Bulletin Exchange (AMBEX), from the automated systems also assists in the timely provision of forecasts and warnings of hazardous meteorological phenomena.

4. Determination of implementation and benefit indicators/metrics

4.1 Metrics to determine the success of the module are proposed in the Manual on Global Performance of the Air Navigation System (Doc 9883) and in the AN-CF/12 report.

4.2 Based on Doc 9883 and priorities and targets determined above, the AFI ASBU B0-AMET implementation and benefit indicators/metrics are determined in the Table below:

Key Performance Area (KPA)	implementation and benefit indicators/metrics
Capacity	Optimized usage of airspace capacity, thus achieving arrival and departure rates. Metric: ACC and big AFI aerodrome throughput.
Cost effectiveness	Optimized usage of airspace capacity, thus achieving arrival and departure rates. Metric: ACC and aerodrome throughput
Efficiency	Harmonized arriving air traffic (en-route to terminal area to aerodrome) and harmonized departing air traffic (aerodrome to terminal area to en-route) will translate to reduced

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6F**

**MET/SG Report for the Preparation of the MET related AFI Regional
Air Navigation Implementation Action Plan**

	arrival and departure holding times and thus reduced fuel burn. Metric: Fuel consumption and flight time punctuality
Environment	Reduced fuel burn through optimized departure and arrival profiling/scheduling. Metric: Fuel burn and emissions
Flexibility	Supports pre-tactical and tactical arrival and departure sequencing and thus dynamic air traffic scheduling. Metric: ACC and aerodrome throughput.
Global interoperability	Gate-to-gate seamless operations through common access to, and use of, the available WAFS, IAVW and tropical cyclone watch forecast information. Metric: ACC throughput.
Participation by the ATM community	Common understanding of operational constraints, capabilities and needs, based on expected (forecast) meteorological conditions. Metric: Collaborative decision making at the aerodrome and during all phases of flight.
Safety	Increased situational awareness and improved consistent and collaborative decision-making. Metric: Incident occurrences

5. Identification of implementation challenges

5.1 Meteorological challenges in routine operations often arise as a result of adverse and rapidly changing meteorological conditions. The proposed dynamic integration of ATM and meteorological (MET) information is expected to provide timely meteorological information to enable real-time identification, increased predictability and deployment of operationally effective ATM solutions to accommodate changing conditions, as well as facilitate tactical avoidance of hazardous meteorological conditions. Increasing use of airborne capabilities to detect and report meteorological parameters, and enhanced cockpit displays of meteorological information to enhance situational awareness, are additional elements of the strategy.

5.2 In this regard, challenges in the implementation challenges of ASBU B0-AMET in the AFI region include:

- ✓ Establishment of QMS for MET for the provision of timely, reliable and accurate meteorological information to aviation users in an efficient manner;
- ✓ Implementation of aerodrome warnings, wind shear warnings/alerts and water thickness observation on the runway to support runway safety;
- ✓ Full implementation of the AMBEX scheme for exchange of OPMET information worldwide;
- ✓ Implementation of SIGMET by all AFI MWOs;
- ✓ Full implementation of SADIS by all MET providers;
- ✓ Enhanced training of MET personnel;
- ✓ Implementation of volcano observatories where required to support the AFI volcanic ash contingency plan;
- ✓ Operation of current HF VOLMET and VHF ATIS; and

6. Alignment with the ASBU

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6F**

**MET/SG Report for the Preparation of the MET related AFI Regional
Air Navigation Implementation Action Plan**

6.1 Under ASBU Block0 modules in the AFI Region, MET information contributes to Performance Improvement Area (PIA) 1, modules B0-75/SURF and B0-80/ACDM, and PIA 3 module B0-10/FRTO.

6.2 From the challenges listed in para. 5.2 above, the following items are classified as being of high priority in implementing ASBU B0-AMET in the AFI region:

- 1) Full implementation of WAFS and IAVW by all MET providers as well as tropical cyclone warning system by the concerned States;
- 2) Implementation of aerodrome warnings, wind shear warnings/alerts and water thickness observation on the runway to support runway safety;
- 3) Implementation of SIGMET by all AFI MWOs;
- 4) Issuance of other OPMET (METAR, SPECI, TAF) and full implementation of the AMBEX scheme for exchange of OPMET information worldwide;
- 5) Establishment of QMS for MET for the provision of timely, reliable and accurate meteorological information to aviation users in an efficient manner;
- 6) Training of MET personnel; and
- 7) Operation of current HF VOLMET and VHF ATIS.

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6G**

Future Work Programme

	Task	Source	Recent Progress Next milestone and its deadline	Final Result (completion)
1	Establish and maintain detailed lists, State by State of the specific deficiencies of facilities for the provision of atmospheric measurements pertaining to surface wind, pressure, visibility/runway visual range, cloud base, temperature and dew point temperature considered critical for flight safety.	APIRG/13 Con. 13/96	- State by state MET deficiencies have been established and included in APIRG/18 Report	Deficiencies on MET parameters measurements established and compiled
2	Monitor the exchange of OPMET information through the AMBEX scheme in the AFI Region and between the AFI and ASIA/PACIFIC and EUR Regions	-APIRG/8 Con. 8/43 c) -APIRG/17 Concl. 17/75 -APIRG/17 Concl. 17/78 - APIRG/18 Concl. 18/48	- Continuing task - OPMET monitoring by AFI RODBs every quarter - Next 4 monitorings in 2014	Exchange of OPMET information through AMBEX and SADIS, improved
3	Plan for the introduction of efficient inter-regional OPMET exchanges in coordination with the CNS Sub-group as required	AFI/7	A Core Team of experts established to fully review the AMBEX and report to MTF/6	Efficient inter-regional OPMET exchanges
4	Monitor the degree of implementation of very small aperture terminals (VSATs) for the reception of WAFS products	AFI/7 Rec. 14/12	A large number of AFI States have implemented SADIS2G VSATs with others using the SADIS FTP Service	Information on the implementation of SADIS VSAT and FTP established and compiled
5	Monitor the implementation of regional procedures for the issuance of volcanic ash and tropical cyclone advisories	AFI/7 Rec. 7/3 and 7/4	- Yearly SIGMET Tests conducted with AFI VAAC, TCAC and SA GIB using regional AFI SIGMET Test procedures established in AFI SIGMET Guide - Continuing task - SIGMET Tests conducted yearly: Next test scheduled for Nov. 2013	Regional procedures for the issuance of volcanic ash and tropical cyclone advisories Implemented

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6G**

Future Work Programme

	Task	Source	Recent Progress Next milestone and its deadline	Final Result (completion)
6	Review on a continuing basis the contents of Tables MET 1A and 1B and Tables MET 2A to ensure their validity in light of operational requirements and develop proposals to update them if necessary.	AFI/7	- Continuing task - Tables MET 1A and 2A have been amended from SADISOPSG/19 proposals	The validity of contents of Tables MET 1A, 1B and and Table MET 2A.are to ensured
7	Review the meteorological procedures in the introductory text to Part VI of Meteorology of the Basic AFI Regional Plan/FASID, as well as Meteorological related issues in other sections of the Plan and relevant regional supplementary Meteorology procedures (SUPPs) in the Doc 7030, in the light of procedures employed in other regions and develop amendment proposals as appropriate, coordinating where necessary with other APIRG Sub-Groups.	APIRG/12	The MET section of the AFI Regional Air Navigation Plan (R-ANP) will be amended in accordance with the new e-ANP template under review by ICAO.	Maintain up to date procedures to improve safety and efficiency of air navigation.
8	Monitor developments in the CNS/ATM Systems with regard to meteorological requirements in the AFI Region and in coordination with AFI ATM Sub-Group.	APIRG/14 Con. 14/43	• APIRG/18 established the Task Force (TF). • The ATM/MET TF amended the AFI contingency plan on volcanic ash during its first meeting in Nairobi.	Consistent provision of meteorological information as an integrated function of the ATM system with improved accuracy and timeliness and increased availability. Performance management will be an important part of the quality assurance of meteorological information. Exchange of OPMET data in digital format on bilateral arrangements
9	Monitor the implementation in the AFI region of quality assurance/performance relating to the MET field	APIRG/14 Con. 14/40	• Ten training seminars on QMS in 2008-2012 • 13 out of 54 States established QMS in December 2012 et 5/13 certified	AFI region quality assurance/performance relating to the MET field, implemented

**APIRG/19 Meeting Report
Report on Agenda Item 3
Appendix 3.6G**

Future Work Programme

	Task	Source	Recent Progress Next milestone and its deadline	Final Result (completion)
10	Monitor training and qualification of aeronautical MET personnel	APIRG/15 Dec. 15/94	• Training and qualification monitored in 15 States during 2009-2010	Information on training and qualification of aeronautical MET personnel established and compiled
11	Monitor communications means between AFI volcano observatories and the aviation community	APIRG/13 Con. 13/68	VONA (volcano observatory notice for aviation) tests to be conducted from 2014 during AFI VACP (volcanic ash contingency plan) exercises.	Efficient information on volcanic eruption distributed to the aviation community during the pre-eruption phases. Task to be transferred to the AFI ATM/MET Task Force
12	Monitor cost recovery system for aeronautical meteorological services to make sure relevant ICAO and WMO documents are used and MET service providers cooperate with airports, air navigation services and other aeronautical partners, including users, when establishing a cost recovery system	APIRG/13 Con. 14/37	A survey planned to be conducted in 2014 4 workshops on cost recovery for aeronautical meteorological services conducted before 2007 and 2 planned for 2014	Improved cost recovery system for aeronautical meteorological services agreed with aviation community for improved Met services to air navigation
13	Monitor SADIS workstations in AFI States to make sure they fulfill the software requirements outlined on the WAFSOPSG website	APIRG/17 Concl 17/74	A survey planned to be conducted in 2014	SADIS workstations' software in AFI States in compliance with the requirements outlined on the WAFSOPSG for improved provision of WAFS information to air navigation
14	Monitor the implementation of terminal area warnings and forecasts, provision of WAFS forecasts and optimization of OPMET data exchanges and training for aeronautical meteorological staff	SP RAN(2008) Rec. 6/17	A survey planned to be conducted in 2014	Improved provision of MET information from AFI aerodromes
