



INTERNATIONAL CIVIL AVIATION ORGANIZATION

WESTERN AND CENTRAL AFRICAN OFFICE

TENTH APIRG ATS/AIS/SAR/SG Meeting

(Dakar, 12- 14 May 2009)

Agenda Item 9: Review of the implementation of ICAO Requirements in the AIS/MAP field

Implementation of WGS-84 and the establishment of draft WGS-84 implementation goals in coordination with the national PBN implementation plan.

SUMMARY

This working paper reviews the difficulties faced by States in implementing the WGS-84 and steps to be taken to ensure complete implementation of the WGS-84 in the AFI Region

1. Introduction .

1.1 The current and future developments in satellite technology, will to a large extent, reduce the dependence of civil aviation on ground based navigation aids, as well as to permit improvements in overall efficiency of the Air Navigation Systems. In this regard to the implementation of World Geodetic System of 1984 (WGS-84), an earth centred reference model to be used by Global Navigation Satellite Systems (GNSS) was encouraged within the AFI Region.

1.2 The implementation of GNSS is dependent on States providing geographical coordinates based on the same geodetic datum, i.e: WGS-84, in conformity with provisions contained in Annexes 4,11,14 and 15 to the Convention on International Civil Aviation. It is therefore essential that all ICAO Contracting States be fully compliant with WGS-84 provisions.

1.3 To this effect, a regional survey to review the status of implementation of WGS-84 throughout the AFI Region was conducted, as described in the following paragraphs.

2. Discussion

2.1 The Special AFI RAN/8 Meeting recalled that APIRG and AFI States had been working towards WGS-84 implementation for many years and that a large part of the work had been completed by most States. However, considerable work still remains.

2.2 Additionally, the WGS-84 reference system requires regular updating. The AFI RAN/8 meeting recognized that implementation is now most urgent, as availability of geographical coordinates in the commonly agreed WGS-84 reference system is a prerequisite for States to obtain the benefits of PBN, and also an important step in preparing for the transition from Aeronautical Information Services (AIS) to Aeronautical Information Management (AIM) for which the provision of digital geographic data of appropriate quality will be essential.

2.3 In order to allow for a comprehensive analysis of the status of implementation of WGS-84 throughout the AFI Region, it is important that appropriate background information be provided to substantiate any discrepancy in the current implementation status.

2.4 In order to keep pace on the subject, the Secretariat prepared a regional status report at Appendix A for consideration and review by the 10th ATS/AIS/SAR meeting, and in anticipation of its further submission to the APIRG/17 Meeting,.

3. Action required

3.1 The meeting is invited to :

- a) review and update the regional status report at Appendix A
- b) take note of the AIS/MAP Performance objectives under Appendix-B for elimination of identified deficiencies and draft Conclusions to this effect.
- b) take note of the questionnaires at Appendix-C and D urge States to respond.

**STATUS OF IMPLEMENTATION OF WGS-84 IN THE AFI REGION
AS OF 24 FEBRUARY 2009**

**ETAT DE MISE EN OEUVRE DU WGS-84 DANS LA REGION AFI
AU 24 FÉVRIER 2009**

STATE ETAT	Implemented in FULL <i>Mise en oeuvre complète</i>	Implemented in PART <i>Mise en oeuvre partielle</i>	Under way (Completion 2009) <i>En cours (Finition 2009)</i>	Planned date to Start <i>Date prévue de démarrage</i>	No known plan (or no reply) <i>Pas de renseignements</i>
Algeria		!			
Angola		!			
Benin	!				
Botswana		!			
Burkina Faso	!				
Burundi	!				
Cameroon	!				
Cape Verde	!				
Central African Republic	!				
Chad	!				
Comoros	!				
Congo Brazzaville	!				
Côte d'Ivoire	!				
Congo DR of		!			
Djibouti		!			
Egypt	!				
Equatorial Guinea	!				
Eritrea		!			
Ethiopia		!			
Gabon	!				
Gambia	!				
Ghana		!			
Guinea Conakry		!			
Guinea-Bissau		!			
Kenya		!			
Liberia		!			
Libyan Arab Jamahiriya		!			
Madagascar	!				
Malawi		!			
Mali	!				
Mauritania	!				
Mauritius		!			
Morocco	!				
Mozambique		!			

STATE ETAT	Implemented in FULL <i>Mise en oeuvre complète</i>	Implemented in PART <i>Mise en oeuvre partielle</i>	Under way (Completion 2009) <i>En cours (Finition 2009)</i>	Planned date to Start <i>Date prévue de démarrage</i>	No known plan (or no reply) <i>Pas de renseignements</i>
Namibia		!			
Niger	!				
Nigeria		!			
Sao Tome & Principe	!				
Senegal	!				
Seychelles		!			
Sierra Leone		!			
Somalia					!
South Africa	!				
Sudan		!			
Swaziland		!			
Togo	!				
Tunisia	!				
Uganda		!			
United Republic of Tanzania		!			
Zambia		!			
Zimbabwe		!			

APPENDIX-B

AIS/MAP PERFORMANCE OBJECTIVES

ELIMINATION OF IDENTIFIED AIS/MAP DEFICIENCIES				
(implementation of WGS-84 coordinates, publication of aeronautical charts and timely publication and updating of AIS/MAP documents, i.e. NOTAMs, AIPs, AICs, etc.)				
Benefits				
Efficiency	<ul style="list-style-type: none"> improved collaborative decision-making through sharing aeronautical data information 			
Safety	<ul style="list-style-type: none"> enhance safety by timely exchange air safety data, i.e. electronically and wider distribution of such data 			
<i>Strategy</i> <i>Short term (2010)</i> <i>Medium term (2011 - 2015)</i>				
ATM OC COMPONENTS	TASKS	TIMEFRANCE START-END	RESPONSIBILITY	STATUS
AIS/MAP	<ul style="list-style-type: none"> publication of relevant aeronautical charts. 	2008 - 2009		
	<ul style="list-style-type: none"> publication of WGS-84 coordinates for en-route waypoints and use for GNSS coordinates for terminal approaches and departure procedures 	2008 - 2009		
	<ul style="list-style-type: none"> publication of AIPs, NOTAMs and AICs using standards formats. 			
	<ul style="list-style-type: none"> States concerned to develop action plan to eliminate the deficiencies 	2008 - 2009		
Linkage to GPIs	GPI/18: Aeronautical information; GPI/20: WGS-84			

**SIMPLIFIED
STATUS REPORT OF WGS-84 IMPLEMENTATION**

STATE:

Basic requirements for WGS-84	Status of Implementation of WGS-84		
	Fully Implemented YES (date)	Not implemented NO	Partly implemented – see details in Appendix B
FIR: WGS-84 co-ordinates for all FIRs are fully implemented and published:			
ENG: WGS-84 co-ordinates for all Enroute points are fully implemented and published:			
TMA CTA CTZ: WGS-84 co-ordinates for all the Terminal Area are fully implemented and published:			
APP: WGS-84 co-ordinates for all approach points to international aerodromes are fully implemented and published:			
RWY: WGS-84 co-ordinates for all runways at international aerodromes are fully implemented and published:			
AD/HEL: WGS-84 co-ordinates for all aerodrome/heliport points at international aerodromes are fully implemented and published (e.g.: aerodrome/heliport reference point, taxiway, parking position, etc):			
GUND: Geoid undulations fully implemented and published:			
QUALITY SYSTEM: WGS-84 Quality System is fully implemented:			
AIP: All above WGS-84 co-ordinates and associated information are published in the AIP:			

AIS/MAP TABLE - IMPLEMENTATION OF WGS-84 COORDINATES

TABLE EXPLANATION

1 State, Aerodrome where the WGS-84 is required with indication of the relative use of the aerodrome

- RS** - Used as international aerodrome with scheduled traffic
- RNS** - Used as international aerodrome with non scheduled traffic
- RG** - Used as international aerodrome for general aviation
- AS** - Used as alternate aerodrome with international scheduled traffic precision approach

2 Runway and identification N°

3 Runway types. Runway types as defined in annex 14, volume 1 Chapter I are :

- INST** - Instrumental
- NINST** - Non instrumental
- NPA** - Without precision approach
- PAI** - Precision approach runway, Category I
- PA2** - Precision approach runway, Category II
- PA3** - Precision approach runway, Category III

4 WGS-84 is implemented in the FIR.

5 Reporting points in ATS routes have been converted into WGS-84 coordinates.

6 Reporting points in TMA have been converted into WGS-84 coordinates.

7 Defined approach points for a runway have been converted into WGS-84 coordinates.

8 Required points on the runway have been converted into WGS-84 coordinates.

9 Required points on the aerodrome/helirstation (i.e ARP, TWY, parking lots etc.) have been converted into WGS-84 coordinates.

10 The geoïd ondulation on runway thresholds have been defined.

11 WGS-84 data conform to the quality provisions contained in appendix 7 annex 15.

12 Results of the geodetic surveys have been published in the AIP.

13 Remarks (Implementation planning).

ÉTAT DE MISE EN ŒUVRE DU WGS-84 DANS LA RÉGION AFRIQUE OCÉAN INDIEN

STATUS OF IMPLEMENTATION OF WGS-84 IN AFRICA AND INDIAN OCEAN REGION

ÉTAT/AÉRODROME/TYPE DE TRAFIC, POUR LESQUELS LE WGS-84 EST MIS EN ŒUVRE <i>STATE/AERODROME/USE/ FOR WHICH WGS-84 IS IMPLEMENTED</i>	N° Piste RWY N°	Type Use	FIR	ENR	TMA CTA CTR	APP	RWY	AD/HEL	GUND	Système Qualité Quality System	AIP	Observations Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13