

**INTERNATIONAL CIVIL AVIATION ORGANIZATION
THIRD MEETING OF THE AFI REGION AIM IMPLEMENTATION TASK FORCE**

(Dakar, Senegal, 15 – 17 October 2014)

Agenda Item 4: Review of the Draft Amendment of the AFI Basic FASID to reflect the transition from AIS to AIM.

**PROPOSED AMENDMENT TO AFI ANP/FASID DOC 7474 VOL. III, ON NEW
AIM TABLES TO BE INTRODUCED IN THE E-ANP**

(Presented by the Secretariat)

SUMMARY

This WP Presents the Proposed Amendment to the AFI e-ANP/FASID Doc. 7474 Vol.III with major changes in comparison to the previous versions and include the following :

- a) The opportunity has been taken to change the title of this Part from AIS to AIM to reflect the future direction on the provision of aeronautical information in the context of the Global ATM Operational Concept and associated System Wide Information Management.
- b) The key elements that States should provide in the provision of aeronautical information are detailed.
- c) An overview of the Transition to AIM is provided.
- d) The requirement for States to develop national plans for transition to AIM is reflected. Details are to be shown in the AFI e – ANP/FASID.

Further action to be taken:

e - ANP/FASID Tables at **Attachment-A** are to be reviewed/endorsed by the Meeting and are to be populated and included in a Proposal for inclusion in Vol.III.

1. INTRODUCTION

Regional AIS/AIM Planning

1.1 The part of the African Region Basic Air Navigation Plan (AFI-ANP) contains basic planning principles, operational requirements, planning criteria and implementation guidelines related to Aeronautical Information Services and Charts (AIS/MAP) considered being the minimum necessary for effective planning of AIS and MAP facilities and services in the AFI Region. It contains also the developing transition path to achieve AFI Region Aeronautical Information Management (AIM) based on the *ATM Operational Concept (Doc 9854)* and the *Global Air Navigation Plan (Doc 9750)*.

1.2 The dynamic material constituted by the AIS/AIM facilities and services required for international air navigation is contained in the AFI ANP Volume III

2. DISCUSSION : GENERAL PROCEDURES/REQUIREMENTS

AFI Region Responsibilities

2.1 The ICAO AFI Regional Offices in Dakar and Nairobi will, through the APIRG process endorsed proposals for inclusion of the dynamic material constituted by the AIS/AIM facilities and services required for international air navigation to be contained in the AFI ANP Volume III

State Responsibilities

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

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

2.4 An example of multi-State cooperation is the European AIS Database (EAD) Service, which has been established by EUROCONTROL Member States in order to provide a reference, centralized facility for access to the high quality aeronautical information published by the Participating States. Details concerning the operation of EAD are contained in **Doc 7030** and the **EUR ANP Volume 2 – FASID**.

2.5 Concomitant with the (EAD), APIRG/17 endorsed the AFI-CAD Business Plan (*APIRG/17 Appendix 3.6I refers*). In its review, the Air Navigation Commission on 8 March 2011 (ANC 186-6 refers) noted that the transition in the AFI Region will benefit if a robust communication infrastructure exist. The Commission further called upon the Secretariat to support/monitor the transition of AIS to AIM through regional mechanism. The concept of the AFI-CAD when implemented, will offer all AIM related tasks including even the classic AIM services to reduce the ANSPs efforts and timeliness needed by the States on their way to the AIS/AIM Transition process.

2.6 Each Contracting State should take all necessary measures to ensure that the aeronautical information/data it provides relating to its own territory, as well as areas in which the State is responsible for providing air traffic services outside its territory, is adequate, of required quality and timely. This should include arrangements for the timely provision of required information/data to the aeronautical information service by each of the State services associated with aircraft operations.

2.7 International NOTAM Offices (NOF) and their areas of responsibility should be established so as to ensure maximum efficiency in the provision of AIS and in the dissemination of aeronautical information.

2.8 The designated International NOTAM Offices for the AFI Region are listed in the **AFI ANP Volume 2 - FASID Table AIM-1**.

2.9 Coordination/liaison on a permanent basis should be established between AIS/AIM and other technical services responsible for planning and operating air navigation facilities and services.

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

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

2.12 Whilst Annex 4 and Annex 15 detail the SARPs for the provision of charts and AIS respectively, the following State responsibilities are highlighted:

Each Contracting State should:

- a) Arrange for the implementation of a quality management system for aeronautical information and chart services. The quality management system should include the necessary policies, processes and procedures, including those for the use of metadata, to ensure and verify that aeronautical data is traceable throughout the aeronautical information data chain from origin to distribution to the next intended user. As part of the quality management system, arrangements should be made for the signature of letters of agreement with data originators to manage the aeronautical information data chain;
- b) Ensure Human Factors are considered;
- c) Ensure adherence to the AIRAC System;
- d) Ensure that the aeronautical information/data to be exchanged with States is published as an Integrated Aeronautical Information Package (i.e. Aeronautical Information Publication (AIP), including amendment service, AIP Supplements, NOTAM, pre-flight information bulletins (PIB), Aeronautical Information Circulars (AIC), checklists and list of valid NOTAM) in accordance Table B0-DATM 3-4-3 Arrange for the provision of an electronic AIP (eAIP) in accordance with the requirements of Annex 15;
- e) Comply with WGS 84 requirements;
- f) Introduce automation enabling digital data exchange with the objective of improving the speed, accuracy, efficiency and cost-effectiveness of aeronautical information services;
- g) Ensure that pre-flight information is provided at all aerodromes/heliports normally used for international air operation, in accordance with the requirements of Annex 15, using Automated pre-flight information systems for the supply of aeronautical information/data for self-briefing, flight planning and flight information service;
- h) Arrange for the provision of post-flight information;
- i) Arrange for the provision of required electronic Terrain and Obstacle Data (eTOD), in accordance with the requirements of Annex 15; and
- j) Arrange for the production and publication of necessary aeronautical charts in accordance with Annex 4 provisions and regional agreements.

3 Action by the meeting

4.1 The meeting is invited to :

- a) Review/endorse the new format of B0-DATM Enablers/Tables to provide information to be populated and included in a Proposal for inclusion in Vol.III of AFI e- ANP/FASID :**(Table B0-DATM 3-1 to Table B0-DATM 3-4-3) in Attachment –A.**
- b) Ensure that the required data is populated in the new Regional e-ANPs is made available through GIS website at ICAO HQ as presented.

B0 – DATM: Service Improvement through Digital Aeronautical Information Management

Description and purpose

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

Applicability

Applicable at State level, to all States

Scope

The Global Air Traffic Management Operational Concept presented in ICAO Doc 9854 depends upon a System Wide Information Management (SWIM). The management, utilization and transmission of data and information are vital to the proper functioning of the ATM system and are at the core of air navigation services.

As part of SWIM, AIM is required to support evolving requirements for, inter alia, collaborative decision making (CDM), performance-based navigation (PBN), ATM system interoperability, network-centred information exchange, and to take advantage of improved aircraft capabilities.

In the short- to medium-term, the focus is on the continuing transition of the services provided by aeronautical information services (AIS) from a product-centred, paper-based and manually transacted focus to a digitally-enabled, network-centred and service-oriented aeronautical information management (AIM) focus. AIM envisages a migration to a data centric environment where aeronautical data will be provided in a digital form and in a managed way. This can be regarded as the first step of SWIM implementation, which is based on common data models and data exchange formats. The next (long-term) SWIM step implies the re-thinking of the data services in terms of a “network” perspective.

The transition to AIM requires that all aeronautical information, including that currently held in AIP be stored as **individual** digital standardized data sets to be accessed by user applications. The distribution of these data sets will both enhance the quality of output and ultimately provide a platform for new applications. This will constitute the future integrated aeronautical information package that will contain the minimum regulatory requirement to ensure the flow of information necessary for the safety, regularity and efficiency of international air navigation.

The transition from AIS to AIM will have to, inter-alia:

- a) support or facilitate the **generation** and distribution of aeronautical information which serves to improve the safe and cost-effective accessibility of air traffic services in the world;
- b) provide a foundation for measuring performance and outcomes linked to the distribution of quality assured aeronautical information and a better understanding of the determinants of ATM, safety and effectiveness not related to the distribution of the information; and
- c) ensure, to the greatest extent possible, that solutions are internationally harmonized and integrated and do not unnecessarily impose multiple equipment carriage requirements for aircraft or multiple systems on the ground.

AIM requires all aeronautical information to be **stored** as datasets that can be accessed by user applications. The establishment and maintenance of an Integrated Aeronautical Information Database where datasets are integrated and used to produce current and future AIS/AIM products and services is a fundamental step in the transition to AIM.

Expected performance benefits

<u>Access/Equity :</u>	N/A
<u>Capacity :</u>	N/A
<u>Efficiency :</u>	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
<u>Environment :</u>	Reducing the time necessary to promulgate information concerning airspace status will allow for more effective airspace utilization and allow improvements in trajectory management
<u>Safety:</u>	Reduction in the number of possible inconsistencies. Module allows reducing the number of manual entries and ensures consistency among data through automatic data checking based on commonly agreed business rules.

B0-DATM Implementation Roadblocks/Issues/Challenges

- Lack of electronic Database.
- Lack of electronic access based on Internet protocol services.
- Lack of procedures to allow airlines provide digital AIS data to on-board devices, in particular electronic flight bags (EFBs).
- Lack of training for AIS/AIM personnel

(List from ASBU Document, to be reviewed/customized by the Regions)

B0-DATM Elements/KPIs/Metrics

<i>B0 – DATM: Service Improvement through Digital Aeronautical Information Management</i>		
Element	Key Performance Indicators	Supporting Metrics
1-AIXM	% of States that have implemented an AIXM-based Integrated Aeronautical Information Database (IAID)	Number of States that have implemented an AIXM-based Integrated Aeronautical Information Database (IAID)
2-eAIP	% of States that have implemented an IAID driven AIP Production (eAIP)	Number of States that have implemented an IAID driven AIP Production (eAIP)
3-QMS	% of States that have implemented QMS for AIS/AIM	Number of States that have implemented QMS for AIS/AIM
4-WGS-84	% of States that have implemented WGS-84 as horizontal reference system	Number of States that have implemented WGS-84 as horizontal reference system

	% of States that have published the WGS-84 Geoid Undulation, in accordance with Annex 4 and Annex 15 provisions	Number of States that have published the WGS-84 Geoid Undulation, in accordance with Annex 4 and Annex 15 provisions
5-eTOD	% of States that have implemented required Terrain datasets	Number of States that have implemented required Terrain datasets
	% of States that have implemented required Obstacle datasets	Number of States that have implemented required Obstacle datasets
6-Digital NOTAM*	Plan for the implementation of Digital NOTAM	

B0-DATM Enablers/Tables

In order to assist States in the planning for the transition from AIS to AIM in an expeditious manner, the following Tables, which provide more details than the standard ANRF, should be used:

- 1- **Table B0-DATM 3-1** sets out the requirements for the Provision of AIS/AIM products and services based on the Integrated Aeronautical Information Database (IAID). It reflects the transition from the current product centric AIS to data centric AIM. For the future digital environment it is important that the authoritative databases are clearly designated and such designation must be published for the users. This is achieved with the concept of the Integrated Aeronautical Information Database (IAID), a single access point for one or more authoritative databases (AIS, Terrain, Obstacles, AMDB, etc) for which the State is responsible. This Table will be used for the monitoring of the Key Performance Indicators (KPIs) related to elements Nr. 1 and 2 of the Module B0-DATM.
- 2- **Table B0-DATM 3-2** sets out the requirements for aeronautical data quality. It will be used for the monitoring of the Key Performance Indicators (KPIs) related to the element Nr. 3 of the Module B0-DATM.
- 3- **Table B0-DATM 3-3** sets out the requirements for the implementation of the World Geodetic System – 1984 (WGS-84).The requirement to use a common geodetic system remains essential to facilitate the exchange of data between different systems. The expression of all coordinates in the AIP and charts using WGS-84 is an important first step for the transition to AIM. This Table will be used for the monitoring of the Key Performance Indicators (KPIs) related to the element Nr. 4 of the Module B0-DATM.
- 4- **Table B0-DATM 3-4-1** sets out the requirements for the provision of Terrain and Obstacle data sets for Area 1 and Area 4. It will be used for the monitoring of the Key Performance Indicators (KPIs) related to the element Nr. 5 of the Module B0-DATM.

- 5- **Table B0-DATM 3-4-2** sets out the requirements for the provision of Terrain and Obstacle data sets for Area 2. It will be used for the monitoring of the Key Performance Indicators (KPIs) related to the element Nr. 5 of the Module B0-DATM.

 - 6- **Table B0-DATM 3-4-3** sets out the requirements for the provision of Terrain and Obstacle data sets for Area 3 and implementation of Airport Mapping Databases (AMDB). It will be used for the monitoring of the Key Performance Indicators (KPIs) related to the element Nr. 5 of the Module B0-DATM.
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Table B0-DATM 3-1

Provision of AIS/AIM products and services based on the Integrated Aeronautical Information Database (IAID)

EXPLANATION OF THE TABLE

Column:

- 1 Name of the State or territory for which the provision of AIS/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
 - 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
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- 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, especially for items with a “PC”, “PI”, “NC” or “NI” status, including planned date(s) of full compliance, as appropriate.
- 11 Remarks — additional information, including detail of “PC”, “NC”, “PI” and “NI”, as appropriate.
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Table B0-DATM-3-2

Aeronautical Data Quality

EXPLANATION OF THE TABLE

Column:

- 1 Name of the State or territory.
- 2 Compliance with the requirement for implementation of QMS for Aeronautical Information Services including safety and security objectives, shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
- 3 Compliance with the requirement for the establishment of formal arrangements with approved data originators concerning aeronautical data quality, shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
- 4 Implementation of digital data exchange with originators, shown by:
 - FI – Implemented
 - PI – Partially Implemented
 - NI – Not implemented

Note 1 – Information providing detail of “PI” and “NI” should be given in the Remarks column (percentage of implementation).
- 5 Compliance with the requirement for metadata, shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
- 6 Compliance with the requirements related to aeronautical data quality monitoring (accuracy, resolution, timeliness, completeness), shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
- 7 Compliance with the requirements related to aeronautical data integrity monitoring, shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
- 8 Compliance with the requirements related to the AIRAC adherence, shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
- 9 Action Plan — short description of the State’s Action Plan with regard to aeronautical data quality requirements implementation, especially for items with a “PC”, “PI”, “NC” or “NI” status, including planned date(s) of full compliance, as appropriate.
- 10 Remarks — additional information, including detail of “PC”, “NC”, “PI” and “NI”, as appropriate.

Table B0-DATM-3-3

World Geodetic System-1984 (WGS-84)

EXPLANATION OF THE TABLE

Column:

- 1 Name of the State or territory for which implementation of WGS-84 is required.
- 2 Compliance with the requirements for implementation of WGS-84 for FIR and Enroute points, shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
- 3 Compliance with the requirements for implementation of WGS-84 for Terminal Areas (arrival, departure and instrument approach procedures), shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
- 4 Compliance with the requirements for implementation of WGS-84 for Aerodrome, shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
- 5 Compliance with the requirements for implementation of Geoid Undulation, shown by:
 - FC – Fully compliant
 - PC – Partially compliant
 - NC – Not compliant
- 6 Action Plan — short description of the State’s Action Plan with regard to WGS-84 implementation, especially for items with a “PC”, “PI”, “NC” or “NI” status, including planned date(s) of full compliance, as appropriate.
- 7 Remarks — additional information, including detail of “PC” and “NC”, as appropriate.

Table B0-DATM-3-4-1

Provision of Terrain and Obstacle data sets for Areas 1 and 4

EXPLANATION OF THE TABLE

Column

- 1 Name of the State or territory for which Terrain and Obstacle data sets for Areas 1 and 4 are required.
- 2 Compliance with requirement for the provision of Terrain data sets for Area 1, shown by:
 - FC – Fully Compliant
 - PC – Partially Compliant
 - NC – Not Compliant
- 3 Compliance with requirement for the provision of Terrain data sets for Area 4, shown by:
 - FC – Fully Compliant
 - PC – Partially Compliant
 - NC – Not Compliant
- 4 Compliance with requirement for the provision of Obstacle data sets for Area 1, shown by:
 - FC – Fully Compliant
 - PC – Partially Compliant
 - NC – Not Compliant
- 5 Compliance with requirement for the provision of Obstacle data sets for Area 4, shown by:
 - FC – Fully Compliant
 - PC – Partially Compliant
 - NC – Not Compliant
- 6 Action plan — short description of the State’s Action Plan with regard to compliance with the requirements for provision of Terrain and Obstacle data sets for Areas 1 and 4, especially for items with a “PC” or “NC” status, including planned date(s) of full compliance, as appropriate.
- 7 Remarks— additional information, including detail of “PC” and “NC”, as appropriate.

Table B0-DATM-3-4-2

Provision of Terrain and Obstacle data sets for Area 2

EXPLANATION OF THE TABLE

Column

- | | |
|---|--|
| 1 | Name of the State or territory for which Terrain and Obstacle data sets for Area 2 are required. |
| 2 | Compliance with requirement for the provision of Terrain data sets for Area 2a, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant |
| 3 | Compliance with requirement for the provision of Terrain data sets for Area 2b, shown by:
FI – Fully Implemented
PI – Partially Implemented
NI – Not implemented
N/A – Not Applicable |
| 4 | Compliance with requirement for the provision of Terrain data sets for Area 2c, shown by:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable |
| 5 | Compliance with requirement for the provision of Terrain data sets for Area 2d, shown by:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable |
| 6 | Compliance with requirement for the provision of Obstacle data sets for Area 2a, shown by:
FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant |
| 7 | Compliance with requirement for the provision of Obstacle data sets for Area 2b, shown by:
FI – Fully Implemented
PI – Partially Implemented
NI – Not implemented
N/A – Not Applicable |
| 8 | Compliance with requirement for the provision of Obstacle data sets for Area 2c, shown by:
FI – Fully Implemented |

PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable

- 9 Compliance with requirement for the provision of Obstacle data sets for Area 2d, shown by:
FI – Fully Implemented
PI – Partially Implemented
NI – Not Implemented
N/A – Not Applicable
- 10 Action plan — short description of the State’s Action Plan with regard to compliance with the requirements for provision of Terrain and Obstacle data sets for Area 2, especially for items with a “PC”, “PI”, “NC” or “NI” status.
- 11 Remarks— additional information, including detail of “PC”, “PI” and “NC”, “NI”, as appropriate.
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Table B0-DATM-3-4-3
Provision of Terrain and Obstacle data sets for Area 3 and Airport Mapping
Databases (AMDB)

EXPLANATION OF THE TABLE

Column

- 1 Name of the State or territory for which Terrain and Obstacle data sets for Area 3 and AMDB are required.
- 2 Compliance with requirement for the provision of Terrain data sets for Area 3, shown by:
 - FI – Fully Implemented
 - PI – Partially Implemented
 - NI – Not Implemented
 - N/A – Not Applicable
- 3 Compliance with requirement for the provision of Obstacle data sets for Area 3, shown by:
 - FI – Fully Implemented
 - PI – Partially Implemented
 - NI – Not Implemented
 - N/A – Not Applicable
- 4 Implementation of AMDB, shown by:
 - FI – Fully Implemented
 - PI – Partially Implemented
 - NI – Not Implemented
 - N/A – Not Applicable
- 5 Action plan — short description of the State’s Action Plan with regard to compliance with the requirements for provision of Terrain and Obstacle data sets for Area 3 and AMDB implementation, especially for items with a “PC”, “PI”, “NC” or “NI” status.
- 6 Remarks— additional information, including detail of “PI” and “NI”, as appropriate.

