

INTERNATIONAL CIVIL AVIATION ORGANIZATION

**Fifth Meeting of the APIRG Infrastructure and Information Management Sub-Group  
(IIM/SG5)**

*(Virtual, 26-29 July 2022)*

**Agenda Item 3.1: Status of implementation of applicable ASBU elements**

**WP3.1D4 Alignment of the MET 3 project with the GANP 6th edition**

*(Presented by Dr Rendani Nndanganeni)*

<b>SUMMARY</b>
<p>This working paper outlines the aspects that needed to be aligned in MET 3 Project to coincide with the changes introduced by the 6<sup>th</sup> Edition of the Global Air Navigation Plan (GANP)</p> <p>Action by the meeting in paragraph 3</p>
<p><b>REFERENCE(S):</b></p> <ul style="list-style-type: none"> <li>▪ Global air navigation plan (Doc 9750)</li> <li>▪ Global Air Traffic Management Operational Concept (Doc 9854)</li> </ul>
<p>This working document relates to ICAO Strategic Objectives: <b>Safety and capacity and efficiency</b> <b>KPIS and concerned ASBU B1 Modules: AMET-B1/1, AMET-B1/2, AMET-B2/1</b></p>

**1. INTRODUCTION**

- 1.1 During the APIRG Information and Infrastructure Subgroup meeting (IIM/SG4) held virtually, from 31st August to 3 September 2021, the impact of the Global Air Navigation Plan Sixth Edition (GANP 6th Ed.) ICAO Document 9750 was highlighted to the meeting to consider in terms of the current IIMSG projects as well as ASBU reporting for States going forward.
- 1.2 Based on the above, a review and revision is required by IIM SG Project Teams of project documents as well as for States to align their National ASBU plans to the GANP 6<sup>th</sup> edition. The meeting therefore developed the following decisions:

**Draft Decision 4/15 Alignment of the Regional Air Navigation Plan with the 6th Edition of the GANP**

**That;**

**In order to ensure consistency between the AFI Regional air navigation plan and the GANP:**

- a) **The Secretariat to conduct a specific workshop to update States on the provisions of the sixth edition of the GANP;**
- b) **The IIM/SG Projects teams to identify the applicable modules of ASBU Block 1 for the AFI region, and submit with the related prioritization to the secretariat by 31 December 2021; and**
- c) **The IIM/SG secretariat to coordinate with the AAO/SG secretariat to develop a draft revised Regional Air Navigation implementation Plan for integration in the eANP**

**Volume III.**

**Draft Decision 4/16 Alignment of IIM Projects ASBU references to the GANP**

**That;**

**In order to incorporate changes introduced by the 6th Edition of the GANP and its impact on the regional and national Plans, IIM PTCs to align project references to the sixth Edition of the GANP Groups, Threads and Modules by 31 December 2021.**

- 1.3 The 6th Edition of the GANP is available in electronic format from the ICAO GANP portal accessible through <https://www4.icao.int/ganpportal/>

**2. DISCUSSIONS**

- 2.1 The MET 3 project was established to address the requirements of Space Weather as defined in ICAO Annex 3 for the AFI Region.
- 2.2 Project documents that have been created include Terms of Reference (ToR) and Project deliverables and task list. On the review of the MET Project 3 ToR, it was established that no changes would be required on the ToR as it did not contain any references to the ASBU modules.
- 2.3 The MET Project 3 Project deliverables and task list however does include references to ASBU modules within the Project Deliverable table under the Relationship with the performance - based regional plan column. The references included are AMET.
- 2.4 The changes brought about by the 6<sup>th</sup> Edition GANP include changes to module references and revised threads. All the module grouping activities such as AMET-B0 and AMET-B1 has been subcategorised and re-structured into elements as per below tables:

GANP 5 <sup>th</sup> Edition Module		GANP 6 <sup>th</sup> Edition Module	
Module	Description	Module	Description
B0-AMET	<b>Meteorological information supporting enhanced operational efficiency and safety</b> - 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.	AMET-B0/1	<b>Meteorological observations products</b> - Meteorological observations in support of flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning.
		AMET-B0/2	<b>Meteorological forecast and warning products</b> - Meteorological forecasts, advisories and warnings in support of flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning.
		AMET-B0/3	<b>Climatological and historical meteorological Products</b> - Climatological products in support of the design and planning of infrastructure, flight routes and airspace management. Historical meteorological observations, forecasts, advisories and warnings in support of incident and accident investigations

Module	Description	Module	Description
		AMET-B0/4	<b>Dissemination of meteorological products</b> - Dissemination of meteorological products in support of flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning.

Module	Description	Module	Description
B1-AMET	<b>Enhanced operational decisions through integrated meteorological information (planning and near-term service)</b> - Meteorological information supporting automated decision process or aids, involving meteorological information, meteorological information translation, ATM impact conversion and ATM decision support.	AMET-B1/1	<b>Meteorological observations information</b> - Meteorological observations information in support of automated decision processes or aids and performance-based requirements, involving meteorological information, meteorological information translation, ATM impact conversion and ATM decision support.
		AMET-B1/2	<b>Meteorological forecast and warning information</b> - Meteorological forecast and warning information for automated support for decision processes or aids and performance-based requirements, involving meteorological information, meteorological information translation, ATM impact conversion and ATM decision processes.
		AMET-B1/3	<b>Climatological and historical meteorological information</b> - Climatological information in support of the design and planning of infrastructure, flight routes and airspace management. Historical meteorological observations, forecasts, advisories and warnings in support of incident and accident investigations.
		AMET-B1/4	<b>Dissemination of meteorological information</b> - Dissemination of meteorological information in support of automated decision process or aids, involving meteorological information, meteorological information translation, ATM impact conversion and ATM decision support.

2.5 The B3-AMET module has been subcategorized and re-structured into elements as per below tables:

GANP 5 <sup>th</sup> Edition Module		GANP 5 <sup>th</sup> Edition Module	
Module	Description	Module	Description
B3-AMET	Enhanced operational decisions through integrated meteorological information (near-term and immediate service) - Meteorological information supporting both air and ground automated decision support aids for implementing immediate weather mitigation strategies.	AMET-B2/1	<b>Meteorological observations information</b> - Integrated meteorological observations in support of enhanced ATM and airport decision-making processes, particularly in the near-term.
		AMET-B2/2	<b>Meteorological forecast and warning information</b> - Integrated meteorological forecast and warning information in support of enhanced operational ground and air decision-making processes, particularly in the near-term.
		AMET-B2/3	<b>Climatological and historical meteorological information</b> - Climatological products (historical and forecast) in support of the design and planning of infrastructure, flight routes and airspace management. Historical meteorological observations, forecasts, advisories and warnings in support of incident and accident investigations.

Module	Description	Module	Description
B3-AMET	Enhanced operational decisions through integrated meteorological information (near-term and immediate service) - Meteorological information supporting both air and ground automated decision support aids for implementing immediate weather mitigation strategies.	AMET-B2/4	<b>Meteorological information service in SWIM</b> - Integrated meteorological information service in the SWIM environment in support of enhanced operational ground and air decision-making processes, particularly in the planning phase and near-term.
		AMET-B3/1	<b>Meteorological observations information</b> - Integrated high resolution meteorological observation information in support of enhanced operational ground and air decision-making processes, for all flight phases and corresponding air traffic control operations, allowing gate-to-gate seamless operations
		AMET-B3/2	<b>Meteorological forecast and warning information</b> - integrated high resolution meteorological forecast and warning information in support of enhanced operational ground and air decision-making processes, for all flight phases and corresponding air traffic control operations, allowing gate-to-gate seamless operations.
		AMET-B3/3	<b>Climatological and historical meteorological information</b> - Climatological products in support of the design and planning of infrastructure, flight routes and airspace management. Historical meteorological observations, forecasts, advisories and warnings in support of incident and accident investigations.

		AMET-B3/4	<b>Meteorological information service in SWIM</b> - Integrated meteorological information service in the SWIM environment in support of enhanced operational ground and air decision-making processes, for all flight phases and corresponding air traffic control operations
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2.6 Additionally, the GANP 6<sup>th</sup> edition included AMET-B4 as listed in the table below:

Module	Description
AMET-B4/1	Meteorological observations information
AMET-B4/2	Meteorological forecast and warning information
AMET-B4/3	Climatological and historical meteorological information
AMET-B4/4	Meteorological information service in SWIM

2.7 The ASBU Modules relevant to the implementation of Space Weather are:

Module	Capability
AMET-B1/1	Commencement of change from product-centric to data-centric information. Commencement of <b>space weather</b> and sulphur dioxide (SO <sub>2</sub> ) services. Enhanced hazardous weather services. Introduction of new and enhanced space-based observations. Introduction of new observational information from both un-manned and manned aircraft (ie. observations from lidar).
AMET-B1/2	Commencement of change from product-centric to data-centric information. Commencement of <b>space weather</b> and sulphur dioxide (SO <sub>2</sub> ) services. Enhanced hazardous weather services. First steps in the provision of probabilistic information derived from ensemble prediction systems.
AMET-B1/3	(Climatological and historical meteorological Information) Enhanced climatological data.
AMET-B1/4	(Dissemination of meteorological information) - Meteorological information in ICAO Meteorological Information Exchange Model (IWXXM) form starts to replace traditional alphanumeric code (TAC) products. Human-readable products will start to be derived from the IWXXM information (rather than the other way around). The introduction of web services allows for progressive replacement of fixed line dissemination systems.
AMET-B2/1	Further development of <b>space weather</b> and radioactive material services. Further development of services for terminal areas. Implementation of a data-centric information set. Higher spatial and temporal resolution of meteorological observations. Automated user-defined observation products derived from meteorological information in ICAO Meteorological Information Exchange Model (IWXXM) form.
AMET-B2/2	Further development of <b>space weather</b> and radioactive material services. Further development of forecast and warning services for terminal areas. Phenomena-based meteorological information is no longer constrained by Flight Information Regions (FIRs). Implementation of a data-centric information set. Higher spatial and temporal resolution of meteorological forecasts and warnings. Automated user-defined forecast and warning products derived from meteorological information in ICAO Meteorological Information Exchange Model (IWXXM) form. Further development of probabilistic information derived from ensemble prediction systems.
AMET-B3/1	Further development of <b>space weather</b> information service and of observation services for terminal areas. Higher spatial and temporal resolution of meteorological observations.

AMET-B3/2	Further development of <b>space weather</b> information service and of forecast and warning services for terminal areas. Higher spatial and temporal resolution of meteorological forecasts and warnings. Further development of probabilistic forecast information. Further development towards a fully integrated meteorological forecast service fit for the purpose of all flight phases and ATC operations, in support of gate-to-gate seamless operations.
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*Note: - Access to historical data (AMET-B1/3) and dissemination of information (AMET-B1/4) are applicable to the storage and dissemination of Space Weather Information.*

- 2.8 As highlighted in the analysis above, the MET Project 3 Project deliverables and task list would need to list references to AMET-B1/1, AMET-B1/2, AMET-B1/3 and AMET-B1/4.
- 2.9 Additionally, it is proposed that the MET Project 3 Project deliverables and task list be reframed as per attachment A to this paper.

### **3. ACTIONS BY THE MEETING**

- 3.1 The meeting is invited to:
- a) Take note of the contents of the paper and the analysis conducted by MET Project 3 on the impact of the 6<sup>th</sup> Edition GANP on related project documentation and references.
  - b) Engage MET Project 3 on any aspects related to this paper.

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