



International Civil Aviation Organization

SIP/2012/ASBU/Dakar-WP/21C

# **Aviation System Block Upgrades**

## **Module N° B0-105/PIA2**

Meteorological information supporting enhanced  
operational efficiency and safety

Workshop on preparations for ANConf/12 – ASBU methodology  
(Dakar, 16-20 July 2012)

# Module N° B0-105

## Meteorological information supporting enhanced operational efficiency and safety



<b>Summary</b>	<ul style="list-style-type: none"> <li>• <b>Aerodrome warnings to give concise information of meteorological conditions</b></li> <li>• <b>Enroute forecasts provided by world area forecast centres (WAFC),</b></li> <li>• <b>Volcanic ash advisory centres (VAAC) and tropical cyclone advisory centres (TCAC)</b></li> </ul>
<b>Main Performance Impact</b>	KPA(Capacity); KPA (Environment); KPA (Safety); KPA (Efficiency);
<b>Operating Environment/ Phases of Flight</b>	Single word entries explaining operating environment(s), i.e airport surface, etc. and/or phases of flight, i.e. approach, en-route, etc. All phases of flight.
<b>Applicability Considerations</b>	Specifics on operating environment and/or types of airspace where Module is applicable Applicable to traffic flow planning, and to all aircraft operations in all domains and flight phases, regardless of level of aircraft equipment.
<b>Global Concept Component(s)</b>	AOM - Airspace Operations and Management DCB - Demand and Capacity Balancing AO - Aerodrome Operations
<b>Global Plan Initiatives (GPI)</b>	GPI-19 Meteorological Systems GPI-6 Air Traffic Flow Management GPI-16 Decision Support Systems and Alerting Systems
<b>Pre-Requisites</b>	None. Meteorological information and supporting distribution systems are in existence today.
<b>Global Readiness Checklist</b>	Status (ready now or estimated date).
	Standards Readiness Ready now
	Avionics Availability Ready now
	Ground System Availability Ready now
	Procedures Available Ready now
	Operations Approvals Ready now

# Module N° B0-105: Baseline

- No Specific other that change brought by the Module
- **Not included in this Module but mapped to this Module**
  - **OPMET and**
  - **QMS for MET**

# Module N° B0-105: Change Brought by the Module



- The global availability of meteorological information provided by designated Centres within the WAFS, IAVW and the tropical cyclone watch on the ICAO AFS enhances pre-tactical and/or tactical decision making for aircraft surveillance, air traffic flow management and flexible/dynamic aircraft routing.
  - *Element 1: WAFS.*
  - *Element 2: IAVW*
  - *Element 3: Tropical cyclone watch*
  - *Element 4: Aerodrome warnings*
  - *Element 5: Wind shear warnings and alerts*

# Module N° B0-105 – Intended Performance Operational Improvement



<b>KPAs</b>	<b>Specific improvement provided.</b>
<b>KPA-02: Capacity</b>	Optimized usage of airspace capacity, thus achieving arrival and departure rates.  Metric: ACC and aerodrome throughput.
<b>KPA-04: Efficiency</b>	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.
<b>KPA-05: Environment</b>	Reduced fuel burn through optimized departure and arrival profiling/scheduling.  Metric: CO2 emissions.
<b>KPA-10: Safety</b>	Increased situational awareness and improved consistent and collaborative decision making.  Metric: Incident occurrences.

# Module N° B0-105: Necessary Procedures (Air & Ground)



- No new procedures necessary.
- Supporting guidance material is contained in a number of ICAO manuals, including but not limited to: *Manual of Aeronautical Meteorological Practice* (Doc 8896); *Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services* (Doc 9377); *Handbook on the International Airways Volcano Watch – Operational Procedures and Contact List* (Doc 9766); and *Manual on Low Level Wind Shear* (Doc 9817). In addition, the *Manual on volcanic ash, radioactive material and toxic chemical clouds* (Doc 9691) provides extensive guidance on, *inter alia*, the observation/detection and forecasting of volcanic ash in the atmosphere and the effect of volcanic ash on aircraft.

# Module N° B0-105: Necessary System Capabilities



- **Avionics**
  - No new or additional avionics requirements
- **Ground Systems**
  - ANSPs, Airport operators and Airspace users may want to implement functionalities allowing them to display in plain text the different messages provided by the different Met organisations.
  - For Block 0 airspace users may use their AOC data link connection to the aircraft to send the information where appropriate.

# Module N° B0-105: Training and Qualification Requirements



- Description of required training and qualification requirements: Where they exist or are under development, references to these must be provided. For training and qualification requirements to be developed, the requirement must be clearly stated
- No new or additional training and qualification requirements are brought about by this module

# Module N° B0-105: Regulatory/Standardization needs and Approval Plan (Air & Ground)



- No new or additional regulatory/standardization needs and approval plan(s) are brought about by this module.
- Provisions relating to the WAFS, the IAVW and the tropical cyclone watch, as well as aerodrome warnings, wind shear warnings and alerts, already exist within ICAO Annex 3, regional air navigation plans, and supporting guidance

# Module N° B0-105: Reference Documents

- **Standards**

- ICAO and Industry Standards (ie; MOPS, MASPS, SPRs).
- ICAO and World Meteorological Organization (WMO) international standards for meteorological information (including, content, format, quantity, quality, timeliness and availability).

- **Procedures**

- Documented procedures by States and ANSPs. [To be developed]

- **Guidance Material**

- ICAO Manuals, Guidance Material and Circulars. Also any similar industry documents
- ICAO Doc 7192, Training Manual - Part F1 – *Meteorology for Air Traffic Controllers and Pilots*;
- ICAO Doc 8896, *Manual of Aeronautical Meteorological Practice*;
- ICAO Doc 9161, *Manual on Air Navigation Services Economics*;
- ICAO Doc 9377, *Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services*;
- ICAO Doc 9691, *Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds*;
- ICAO Doc 9766, – *Handbook on the International Airways Volcano Watch – Operational Procedures and Contact List*;
- ICAO Doc 9817, *Manual on Low Level Wind Shear*;
- ICAO Doc 9855, *Guidelines on the Use of the Public Internet for Aeronautical Applications*
- *SADIS User Guide*;
- Agreement on the Sharing of Costs of the Satellite Distribution System for Information relating to Air Navigation.

# Module N° B0-105: Implementation

## - Benefits and Elements



### Meteorological information supporting enhanced operational efficiency and safety

#### Benefits - Main Key Performance Areas (KPA)

KPAs	Access	Capacity	Efficiency	Environment	Safety
Applicable	N	Y	Y	Y	N

#### Elements

- OPMET; QMS for MET not included in this Module
- WAFS-IAVW-TCW
- Aerodrome warning
- Wind shear warning and alerts

To be reflected in ANRF

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