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**WORLD
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Meteorology (MET) Divisional Meeting
(2014)

Commission for Aeronautical Meteorology
Fifteenth Session

Montréal, 7 to 18 July 2014

REPORT ON AGENDA ITEM 1

*(All Agenda Items considered conjointly with the
Fifteenth Session of the Commission for Aeronautical Meteorology
of the World Meteorological Organization)*

This report will be subject to review by the Air Navigation Commission and the Council of ICAO, and the Executive Council of WMO. The decisions of these bodies on the recommendations of the Meeting will be set forth in a Supplement to the Report of the Meeting, which will be issued in due course.

Agenda Item 1: Supporting the “One Sky” concept through the enhancement of meteorological service for international air navigation

1.1: The Global Air Navigation Plan (GANP) — a framework for global planning

1.1.1 The meeting was apprised of a new (fourth) edition of ICAO’s *Global Air Navigation Plan* (GANP) (Doc 9750) which represented a rolling fifteen-year strategy to guide complementary and sector-wide air transport improvements over the period 2013 to 2028. The meeting noted that the GANP, together with a companion new edition of ICAO’s *Global Aviation Safety Plan* (GASP) (Doc 10004), had been approved by the ICAO Council and endorsed by the 38th Session of the ICAO Assembly in 2013.

1.1.2 The meeting noted that the GANP explored, inter alia, the need for more integrated aviation planning at both the regional and State level, and addressed required solutions by introducing a consensus-driven aviation system block upgrade (ASBU) methodology. The meeting further noted that the GANP identified issues to be addressed in the near term alongside financial aspects of aviation system modernization, and the increasing importance of collaboration and partnership as aviation recognizes and addresses the multi-disciplinary challenges that lay ahead.

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1.2: Realizing the “One Sky” concept through the GANP framework and Aviation System Block Upgrade (ASBU) methodology

1.2.1 Acknowledging that the Organization had been directed by the 37th Session of the ICAO Assembly in 2010 to increase its efforts to meet the global need for airspace interoperability while maintaining its focus on safety, the meeting noted that, under the concept of “One Sky” for international air navigation, the Organization had initiated the referred aviation system block upgrade (ASBU) methodology in order to develop a set of air traffic management (ATM) solutions or upgrades, take advantage of existing equipage, establish a transition plan, and enable global interoperability. The meeting noted that, in essence, the ASBUs provided a systems engineering modernization strategy for international air navigation, comprising a series of modules across four performance improvement areas¹ and four blocks². The meeting was apprised that each block represented the target availability timeline for a group of operational improvements, both technological and procedural, intended to realize a fully harmonized global air navigation system.

1.2.2 The meeting recalled that ICAO’s Twelfth Air Navigation Conference (AN-Conf/12) in 2012 had, through the formulation of Recommendation 4/7, invited the Meteorology Divisional Meeting (2014) to develop initial provisions in ICAO Annex 3 — *Meteorological Service for International Air Navigation*/WMO Technical Regulations [C.3.1] relating to the ASBU modules concerning meteorological information, to work on defining the meteorological information exchange model as an enabler for system wide information management (SWIM), and to develop a long-term strategy to support their further development and full implementation. The meeting appreciated that such aspects would be addressed through subsequent agenda items.

¹ Airport operations, globally interoperable systems and data, optimum capacity and flexible flights, and efficient flight paths.

² Block 0 (2013-2018), Block 1 (2018-2023), Block 2 (2023-2028) and Block 3 (2028 onward).

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1.3: The meteorological (MET) component of the ASBU methodology

1.3.1 The meeting noted that aeronautical meteorology (MET) was a thread running through the aviation system block upgrade (ASBU) performance improvement area titled “Globally Interoperable Systems and Data” and that, through future system-wide information management (SWIM), MET information would be a key enabler to the realization of a globally harmonized, interoperable air traffic management system.

1.3.2 The meeting was informed of the principle content of the three MET-specific ASBU modules within the current ASBU methodology, namely module B0-AMET in Block 0 (“Block zero”) (2013-2018), module B1-AMET in Block 1 (2018-2023) and module B3-AMET in Block 3 (2028 onwards), as well as those non-MET-specific ASBU modules across all four performance improvement areas where MET service would be of relevance.

1.3.3 The meeting emphasized that there was a need to ensure that the MET-specific ASBU modules were understood in the context of their relationships and interdependencies with the other modules and including those related to SWIM which are shown in the appendix. This need had arisen in part due to the function of MET as an enabler to a number of operational improvement areas. The meeting formulated the following recommendation accordingly:

Recommendation 1/1 — Updating the GANP and ASBU methodology to reflect ASBU MET module dependencies with other modules

That ICAO be invited to:

- a) improve the understanding and management of critical (inter-) dependencies between the operational performance improvement areas, the system-wide information management (SWIM)-related modules and the MET modules described in the *Global Air Navigation Plan* (GANP) (Doc 9750) and aviation system block upgrade (ASBU) methodology;
- b) ensure that MET module-related activities be based on the identification of MET information requirements from non-MET-specific modules; and
- c) reflect this core principle in the next update of the GANP and ASBU methodology on the basis of the initial dependencies provided in the appendix.

1.3.4 The meeting was cognizant that, at present, there was no MET-specific module in the Block 2 timeframe (i.e. B2-AMET in 2023-2028) since the implementation of B1-AMET (2018-2023), was expected to extend for a period beyond 2023. In this regard, the meeting noted that additional

requirements could be expected in the MET domain for meteorological information and aspects of data collection and exchange. The meeting formulated the following recommendation accordingly:

Recommendation 1/2 — Inclusion of a MET-specific module related to Block 2 of the ASBU methodology

That ICAO:

- a) identify the required MET capabilities to support Block 2 related operational improvements of the aviation system block upgrade (ASBU) methodology contained in the *Global Air Navigation Plan* (GANP) (Doc 9750), especially considering the introduction of airborne participation in collaborative air traffic management processes and the benefits of expanding meteorological observations by aircraft; and
- b) consider including as part of the next update of the GANP and ASBU methodology the introduction of a MET-specific module related to Block 2.

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1.4: The need for a restructuring of Annex 3/Technical Regulations [C.3.1] and the development of a new PANS-MET to underpin the “One Sky” concept

1.4.1 The meeting was apprised that the 38th Session of the ICAO Assembly, through the formulation of Resolution A38-11, had recommended that the ICAO Council should, inter alia, promote the development and upkeep of broad system-level, functional and performance requirements, and should continue seeking the most appropriate means of development, translation, processing and dissemination of technical specifications. With this in mind, the meeting noted that a number of Standards and Recommended Practices (SARPs) in Part I and a majority of SARPs in Part II of the current eighteenth edition (2013) of Annex 3/Technical Regulation [C.3.1] could, from a performance-based perspective, be considered as a technical means of fulfilling a functional need and its stated performance requirement. By recognizing that such SARPs were, essentially, a means of compliance, the meeting considered whether a suitable future placeholder for such provisions could be a (new) Procedures for Air Navigation Services — Meteorology (PANS-MET).

1.4.2 In this regard, the meeting concurred that since aeronautical meteorological service was an integral component of the “system of systems” that constituted the present and future civil aviation environment, there was a need to ensure that the evolution of the aeronautical meteorological service provisions contained in Annex 3/Technical Regulation [C.3.1], other Annexes to the *Convention on International Civil Aviation*, and procedures and guidance, were in the spirit of A38-11 and consistent with, inter alia, the rolling fifteen-year strategy contained in the *Global Air Navigation Plan* (Doc 9750). The meeting formulated the following Recommendation accordingly:

Recommendation 1/3 — Evolution of aeronautical meteorological service provisions

That, as a means to foster the implementation of the “One Sky” concept for international air navigation, ICAO, in close coordination with WMO, ensure that the evolution of aeronautical meteorological service provisions (including the provision of meteorological information) is in the spirit of Resolution A38-11 of the 38th Session of the ICAO Assembly and consistent with, inter alia, the rolling fifteen-year strategy for complementary and sector-wide air transport improvements contained in the *Global Air Navigation Plan* (Doc 9750).

1.4.3 The meeting noted that it would consider the potential scope of a restructured Annex 3/Technical Regulations [C.3.1] and a new PANS-MET under Agenda Item 5.

APPENDIX**NON-MET SPECIFIC ASBU MODULES WHERE
AERONAUTICAL MET SERVICE WILL BE OF RELEVANCE**

<i>Performance improvement area</i>	<i>Module reference</i>	<i>Module scope</i>
Airport operations	B0-ACDM	Improved Airport Operations through Airport-CDM
	B0-APTA	Optimization of Approach Procedures including Vertical Guidance
	B0-WAKE	Increased Runway Throughput through Optimized Wake Turbulence Separation
	B1-WAKE	Increased Runway Throughput through Dynamic Wake Turbulence Separation
	B2-WAKE	Advanced Wake Turbulence Separation (Time-based)
Globally interoperable systems and data	B1-DATM	Service Improvement through Integration of all Digital ATM Information
	B1-FICE	Increased Interoperability, Efficiency and Capacity through Flight and Flow Information for a Collaborative Environment Step-1 (FF-ICE/1) application before Departure
	B1-SWIM	Performance Improvement through the Application of System-Wide Information Management (SWIM)
	B2-FICE	Improved Coordination through multi-centre Ground-Ground Integration (FF-ICE/1 and Flight Object, SWIM)
	B2-SWIM	Enabling Airborne Participation in collaborative ATM through SWIM
	B3-FICE	Improved Operational Performance through the introduction of Full FF-ICE
Optimum capacity and flexible flights — through global collaborative ATM	B0-FRTO	Improved Operations through Enhanced En-Route Trajectories
	B1-FRTO	Improved Operations through Optimized ATS Routing
	B1-NOPS	Enhanced Flow Performance through Network Operational Planning
	B3-FRTO	Traffic Complexity Management
	B3-NOPS	Traffic Complexity Management

<i>Performance improvement area</i>	<i>Module reference</i>	<i>Module scope</i>
Efficient flight path — through trajectory-based operations	B0-CDO	Improved Flexibility and Efficiency in Descent Profiles (CDO)
	B0-CCO	Improved Flexibility and Efficiency in Departure Profiles — Continuous Climb Operations (CCO)
	B1-CDO	Improved Flexibility and Efficiency in Descent Profiles (CDOs) using VNAV
	B1-TBO	Improved Traffic Synchronization and Initial Trajectory-Based Operation
	B2-CDO	Improved Flexibility and Efficiency in Descent Profiles (CDOs) using VNAV, required speed and time at arrival
	B3-TBO	Full 4D Trajectory-based Operations

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