International Civil Aviation Organization
North American, Central American and Caribbean Office

WORKING PAPER

NACC/WG/4 — WP/12
14/03/14

Fourth North American, Central American and Caribbean Working Group Meeting (NACC/WG/4)

Ottawa, Canada, 24 to 28 March 2014

Agenda Item 3: **Follow-up on the NAM/CAR Regional Performance-Based Air Navigation Implementation Plan (NAM/CAR RPBANIP) Progress**
3.3 ANI/WG and other regional group progress reports

MET PROGRESS AND IMPROVEMENTS IN THE REGION

(Presented by Secretariat)

EXECUTIVE SUMMARY

This paper addresses the status of the NAM/CAR Regional Performance Objectives (RPO) corresponding to Air Navigation (MET) Targets from the Regional Performance Based Air Navigation Implementation Plan (RPBANIP), with the progress achieved through the different MET events. It also introduces the concept of the emerging system-wide information management (SWIM) environment intended to enable the realization of a globally interoperable air traffic management (ATM) system in the future, focusing on the integration of aeronautical meteorological (MET) information into SWIM, through the application of digital information exchange consistent with other information domains within SWIM.

Action:	Action by the meeting is in section 4
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency
References:	• ICAO´s *Global Air Navigation Plan* Doc 9750 • ICAO Annex 3- *Meteorological Service for International Air Navigation* • First NAM/CAR Air Navigation Implementation Working Group (NAM/CAR ANI/WG/1) • Report of the Sixteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS), Punta Cana, Dominican Republic, 28 March-1 April 2011

1. Introduction

1.1 A key enabler identified to meet the emerging information needs of the air traffic management (ATM) system, and consequently established as a module in the Aviation System Block Upgrade (ASBU) methodology contained in ICAO's *Global Air Navigation Plan* (GANP) (Doc 9750), is the system-wide information management (SWIM). Information management solutions within the future SWIM environment will be defined at the overall system level, rather than individually at each major subsystem (data domain/process/function) and interface level as is the current norm.

1.2 To support the evolution of the ATM system and the required implementation of the ASBU, it is essential that the evolution of aeronautical meteorological information exchange and the associated provisions should be considered an integral component of SWIM.

2. MET progress and improvements

MET related NAM/CAR RPBANIP Air Navigation Targets

2.1 Under the performance based approach, the NAM/CAR Regional Performance Based Air Navigation Implementation Plan (RPBANIP), established since 2008, includes the agreement of performance metrics and indicators to track and present the operational metrics.

2.2 The NAM/CAR Air Navigation Implementation Working Group (NAM/CAR ANI/WG) was established and the RPANIP was brought up to date to align all the Regional Performance Objectives (RPO) with the ICAO ASBU methodology. The RPOs illustrate the necessary implementation activities to support the air navigation regional priorities. Specifically amongst the meteorological elements we mention the following:

- World area forecast system (WAFS)
- International airways volcano watch (IAVW)
- Tropical cyclone watch (TCW)
- Aerodrome warning
- Wind shear warning and alerts
- Information concerning en-route weather phenomena which may affect the safety of aircraft operations (SIGMET)

2.3 Following this priorities of the MET RPO, ICAO has been conducting and organization events and meetings to facilitate the States involvement for the implementation of the different tasks and serving as link and coordination with the World Meteorological Organization (WMO) for a joint effort in achieving the operational benefits foreseen in the RPBANIP. Such activities are detailed in the following paragraphs.

RASG-PA VOLARIS Seminar on Volcanic Ash

2.4 Volcanic ash is a hazard for flight operations. Encounters with volcanic ash can, and in some instances have, resulted in flight safety issues such as: engine failures and malfunctions; subsequent failure of electrical, pneumatical and hydraulic systems, sensors blocking, resulting inter alia in erroneous airspeed indications, communication problems.

2.5 In order to support efforts of the CAR States in improving communications links between volcano observatories, air navigation and meteorological authorities there is a need for the State volcano observatories, air navigation and meteorological authorities to be sensitized on volcanic ash information to be disseminated in an efficient and timely manner. Due to the need to improve products issued by volcano observatories in support of the IAVW and considering that volcanic ash has been, and continues to be, a significant risk to safety and efficiency of international air navigation, a safety seminar of the Regional aviation Safety Group-Pan America (RASG-PA) – *The impact of volcanic activity in Aviation,* was held conjointly with Volaris Airlines last August 2013 in Mexico City. This event was supported by different specialists from the ICAO NACC Regional Office, stakeholders and academic institutions.

2.6 Due to the need to present the latest development in this field, the NACC Regional Office will organize conjointly with Volaris Airlines another seminar on this subject and has scheduled it between 2 and 6 June 2014 in Mexico City.

Back-up MWOs in the CAR/SAM States

2.7 With regard to GREPECAS Conclusion 16/12, Back-up Meteorological Watch Offices (MWOs) in the CAR/SAM States, in order to improve the implementation of an MWO in case it is temporarily not functioning, another could assume its obligations. The NACC and SAM Regional Office have compiled a list of back-up MWOs which were included in the *CAR/SAM Regional SIGMET Guide*.

2.8 In order to comply with this mandate the United States acting as the back-up MWO for four Caribbean States, namely: Cuba, Dominican Republic, Jamaica and Trinidad and Tobago, with the assistance of ICAO NACC Regional Office coordinated with the concerned MWOs conducted several tests with the purpose to have the correct headers in place to supply SIGMETs during a MWO failure. The tests were carried out from October through November 2013 and the results were considered satisfactory.

Availability of tropical cyclone advisories in graphical format by TCAC Miami

2.9 Due to the importance of timely, accurate tropical cyclone advisory information issued for the international civil aviation community by the Tropical Cyclone Advisory Centre (TCAC) Miami for the Atlantic Ocean, Caribbean Sea, Gulf of Mexico and Eastern Pacific Ocean, such advisories are used by operators, airlines and States (including for the preparation of TC SIGMET) to foster safety and efficiency in the Region.

2.10 To ensure that tropical cyclone advisories issued by the TCAC Miami are in full compliance with Annex 3 – *Meteorological Service for International Air Navigation,* including the availability of such information in graphical format through the migration of the format of TCAC advisories for aviation from text to graphics, ICAO has requested TCAC Miami to implement this provision as will be petitioned during the WMO 36th Session of the RA IV Hurricane Committee this April. In addition, the opportunity can be taken to socialise the TCAC (and others in the region) with ICAO activities to develop provisions that will foster MET integration into the future SWIM environment. Whilst no TC provisions were changed in the November 2013 amendment 76 of Annex 3, it is expected that Amendment 77 (2016) or 78 (2019) will enable the exchange of TC advisory information in an XML/GML digital form.

SIGMET Seminar for the purpose of improving SIGMET issuance

2.11 ICAO along with WMO Regional Association IV (RA IV) Aviation Task Team (TT) and the United States National Weather Service (US NWS) will work closely to coordinate the most immediate issue that will be to set-up a November 2014 workshop at the ICAO North American, Central American and Caribbean (NACC) Regional Office in Mexico City, Mexico. This event will be sponsored by WMO.

2.12 The workshop will comprised of the following topics, volcanic ash (VA) SIGMET preparation, issuance, use of volcanic ash advisory (VAA) and overview of the Washington Volcanic Ash Advisory Center (VAAC), effects of volcanic ash on aircraft, SIGMET formatting, World Area Forecast Centre (WAFC) products and gridded forecasts.

3. Migration of meteorological information to a "SWIM environment"

3.1 Current information exchange systems may constrain implementation of necessary operational improvements for the ATM system. Important limitations include, but are not limited to, a lack of harmonization of information (including aeronautical information, aeronautical meteorological information and flight information), proprietary interfaces and data formats, message-size limitations and a non-scalable approach to information exchange with the present infrastructure.

3.2 SWIM will complement human-to-human communication with machine-to machine communication, improve data distribution and accessibility in terms of various quality-of-service needs such as the quality of the data exchanged and timeliness.

3.3 The future ATM "SWIM environment" will shift from point-to-point data exchanges to system-wide data discovery and accessibility, thus supporting interoperability. This assumes a service orientation for information exchanges between ATM stakeholders operating within the global ATM interoperability framework, meaning an information provider (including aeronautical meteorological service providers) will publish and disclose its services for the use of information consumers.

3.4 ICAO will be working with States, in particular through the PIRGs, to help determine exactly which capabilities States should have in place based on their unique operational requirements.

4. Suggested Actions

4.1 The Meeting is invited to:

a) note the progress and achievements on MET as informed in this paper; and
b) support the implementation of the actions/tasks contained in the RPOs pertaining to MET.

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