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North American, Central American and Caribbean Office

INFORMATION PAPER

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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**
3.5.4 ANI/WG and other regional group progress reports

STATUS OF UNITED STATES IMPLEMENTATION OF THE AVIATION SYSTEM BLOCK UPGRADES (ASBU) BLOCK 0 MODULES

(Presented by the United States)

EXECUTIVE SUMMARY

This information paper presents information on the United States' implementation status of the ICAO Aviation System Block Upgrades (ASBUs) in support of the Global Air Navigation Plan (GANP).

Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency • Environmental Protection
References:	• ICAO Doc 9750-AN/963, 4th Edition, 2013, *Global Air Navigation Plan 2013-2028* • ICAO *Working Document for the Aviation System Block Upgrades, the Framework for Global Harmonization* (28 March 2013) • ICAO SIP/ASBU/MEXICO/2013-WP/21, *Summary Table of Aviation System Block Upgrades (ASBU) Block 0 Modules* • ICAO SIP/2012/ASBU/Dakar-WP32A, *SAMPLE TEMPLATE, AIR NAVIGATION REPORT FORM (ANRF)*

1. Introduction

1.1 In order to coordinate the modernization of the global air navigation system, it is important to have a harmonized plan for aviation regulators, operators and industry to follow. The planning, development, training and implementation of a globally harmonized system are contingent on a framework that includes scalable plans and provides operational, economic, and safety benefits.

1.2 The Global Air Navigation Plan (GANP) and the Aviation System Block Upgrades (ASBUs) concept and documents were developed to provide the framework and strategic direction for global and harmonized aviation system. Both the GANP and ASBUs were endorsed and approved through the 12th Air Navigation Conference and the 38th Assembly. The GANP and ASBUs provide the strategic direction and define measurable operational improvements for the next 15 years and include key

civil aviation policy principles to assist ICAO Regions, sub-regions and States with the preparation and implementation of their air navigation plans. The objective of the GANP is to increase and modernize the capacity and efficiency of the global civil aviation system through a harmonized approach, while maintaining or improving safety.

1.3 With these plans now in place, Regions and Member States are addressing the steps toward implementation. The GANP provides the framework for States and Regions to conduct a more thorough review of work programs and priorities. The GANP and ASBUs will assist regulators, operators, and industry in developing the positive business cases and allow for a scalable and customized approach, while the ASBUs specifically outline the air/ground equipment, timelines, standards and procedures necessary for their implementation.

2. GANP and ASBUs

2.1 The framework contained in the GANP outlines a logical architecture for air traffic management to utilize in ensuring that global aviation systems are harmonized and prioritized. The architecture is built around Performance Based Navigation (PBN) and is also closely tied to the following documents: ICAO Doc 9854- *Global Air Traffic Management Operation Concept*; Doc 9882- *Manual on Air Traffic Management System Requirements*; and ICAO Doc 9883- *Manual on Global Performance of the Air Navigation System*.

2.2 The GANP will provide greater flexibility on how Member States and Regions may move forward with implementing new systems and technologies. The individual or regional programs require active collaboration through the Planning and Implementation Regional Groups (PIRGs) for implementation as shown through the work efforts of the North American and Caribbean/South American Regions.

2.3 The ASBUs serve as the "tool box" for implementing the GANP. This concept and approach enables each State to decide what technologies and systems they will need, and thus ensure that they will be interoperable and harmonized within their region. The ASBUs and modules are not mandatory, but are based on the needs and requirements of a State or Region. They should be deployed, if and when, a State or Region can benefit from a particular module or upgrade. Some States and Regions may only choose to deploy a minimal number of modules, while other States and Regions may choose to deploy full Blocks. The United States will implement a majority of the modules in its air navigation system; however, it will not deploy all modules, to every area, within its air navigation system.

2.4 There are 18 ASBU Block 0 modules. Each module has one or more Elements to be implemented based on the *Working Document for the Aviation System Block Upgrades, the Framework for Global Harmonization*.

2.5 ASBU Block 0 consists of modules containing technologies and capabilities which have already been developed or can be implemented in 2013. The reference documents such as standards, procedures, guidance materials, and approval documents, for the implementation of Block 0 modules are available. Based on the milestone framework established under the overall Block Upgrades strategy, ICAO Member States are encouraged to implement those Block 0 modules applicable to their specific operational needs. ASBUs consist of 55 modules of capabilities that have been identified and put into one of the four Performance Improvement Areas (PIAs). The Blocks show dates indicating the timeframe that reference documents have been developed and available.

3. Information on US ASBU Block 0 Implementation Status

3.1 This Information Paper provides information on the status of implementation of the ASBUs by the United States at this time. The FAA has implemented all of the modules in Block 0. Based on the needs and requirements in our National Airspace System (NAS), the FAA has implemented some modules and capabilities across the NAS, and some modules and capabilities have been implemented at select locations.

3.2 Tables show the list of ASBU Block 0 modules and their Elements to be implemented. The FAA has identified 47 Elements for 18 Block 0 modules. For each PIA tables, the first column shows the module acronyms. The second column describes the Elements and the last column presents the implementation status. The implementation status of "Implemented" may means "Implemented and no additional work is planned", or "Implemented and ongoing" or "Implemented and may enhance in the future."

3.2.1 Table 1 describes the PIA 1, Airport Operations. PIA 1 consists of 5 modules and 15 Elements.

PIA 1: Airport Operations		
B0 Module	**Elements**	**Status**
WAKE	1: 6-category wake vortex separation	Implemented
	2: Increasing aerodrome arrival operational capacity	Implemented
	3: Increasing aerodrome departure operational capacity	Implemented
APTA	1: APV with Baro VNAV	Implemented
	2: APV with SABA(WAAS)	Implemented
	3: APV with BVAS	Implemented
SURF	1: International aerodromes with at least one cooperative surface surveillance system such as Surface Movement Radar, Secondary Surveillance Radar Mode S, ADS-B, and Multilateration	Implemented
	2: International aerodromes with a cooperative transponder systems on vehicles	Implemented
	3: Alerting	Implemented
ACDM	1: International aerodromes with Airport CDM	Implemented
	2: Certified international aerodromes	Implemented
	3: International aerodromes with Rescue and Fire Fighting equipment as per Annex 14	Implemented
RSEQ	1: AMAN and time-based metering	Implemented
	2: Departure management	Implemented
	3: Point merge	N/A

Table 1: Implementation Status of PIA 1 - Airport Operations

3.2.2 Table 2 describes the PIA 2, Globally Interoperable Systems and Data. PIA 2 consists of 3 modules and 14 Elements.

PIA 2: Globally Interoperable Systems and Data		
B0 Module	**Elements**	**Status**
FICE	1: ATS units with AIDC	Implemented
	2: Implementation of AMHS/IPS	Implemented
DATM	1: Implementation of AIXM	Implemented
	2: Implementation of eAIP	Initiated, on-going
	3: Implementation of Digital NOTAM	Implemented
	4: Implementation of WGS-84	Planning
	5: Implementation of eTOD	Initiated, on-going
	6: Implementation of QMS for AIM	Implemented
AMET	1: WAFS	Implemented
	2: IAVW	Implemented
	3. Tropical cyclone watch	Implemented
	4. Aerodrome warnings	Implemented
	5. Wind sheer warnings and alerts	Implemented
	6. SIGMET and other operational meteorological (OPMET) information	Implemented

Table 2: Implementation Status of PIA 2 - Globally Interoperable Systems and Data

3.2.3 Table 3 describes the PIA 3, Optimum Capacity and Flexible Flights. PIA 3 consists of 7 modules and 13 Elements.

PIA 3: Optimum Capacity and Flexible Flights		
B0 Module	**Elements**	**Status**
FRTO	1: Airspace planning	Implemented
	2: Flexible use of airspace (FUA) Time segregated airspaces are available for civil operations in the State	Implemented
	3: Flexible routing	Implemented
NOPS	1: ATS units using ATFM services	Implemented
ASUR	1: International aerodromes with ADS-B implemented	Implemented
	2: Multilateration system implemented	Implemented
ASEP	1: ATSA-AIRB	Implemented
	2: ATSA-VSA	Implemented
OPFL	1: Aircraft used ITP	Implemented
ACAS	1: Aircraft with ACAS logic V7.1	Implemented
SNET	1: Short Term Conflict Alert implementation (STCA)	Implemented
	2: Area Proximity Warning (APW)/ Minimum Safe Altitude Warning (MSAW)	Implemented
	3: Medium Term Conflict Alert (MTCA)	Implemented

Table 3: Implementation Status of PIA 3 - Optimum Capacity and Flexible Flights

3.2.4 Table 4 describes the PIA 4, Efficient Flight Path. PIA 4 consists of 5 modules and 5 Elements.

PIA 4: Efficient Flight Path		
B0 Module	**Elements/Indicator**	**Status**
CDO	1: International aerodromes with CDO implemented	Implemented
	2: International aerodromes/TMAs with PBN STARs implemented	Implemented
TBO	1: Number of ADS-C/CPDLC procedures available over oceanic and remote areas	Implemented
CCO	1: International aerodromes with CCO implemented	Implemented
	2: International aerodromes with PBN SIDs implemented	Implemented

Table 4: Implementation Status of PIA 4 - Efficient Flight Path

4. Conclusion

4.1 The meeting is invited to note the information contained in this paper.

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