INTERNATIONAL CIVIL AVIATION ORGANIZATION

WESTERN AND CENTRAL AFRICA OFFICE

Second Meeting of the Central Atlantic FIR Satellite Network (CAFSAT) Management Committee (CNMC/2)
(Dakar, Senegal, 06-08 November 2012

Agenda Item 4: interconnection and interoperability of CAFSAT with its neighboring networks (AFISNET, REDDIG, MEVA)

CAFSAT in ICAO Aviation System Block Upgrades (ASBU) context

(**Presented by the secretariat**)

SUMMARY

The purpose of this paper is to provide the meeting with a general understanding of ICAO ASBU concept and discuss the place and the role of CAFISAT in the implementation of ASBU Modules.

Reference: Working papers and report on AN-Conf/12

Related ICAO Strategic Objectives: **A:** ***Safety*****; B:** ***Air Navigation Capacity and Efficiency***

Related ASBU Bloc 0 Modules, Performance Improvement Aerias and Applications:
B0-FRTO/PIA3-*PBN En Route Trajectories;*
B0-FICE/PIA2-*AIDC,*
B0-DATM/PIA2-*AIM,*
B0-TBO/PIA4-*Datalink*
B0-AMET/PIA2-*MET*

Action by the meeting see paragraph 3

1. Introduction

The 37th Session of the International Civil Aviation Organization (ICAO) Assembly (2010) directed the Organization to increase its efforts to meet the global needs for airspace interoperability while maintaining its focus on safety. ICAO therefore introduced the "**A**viation **S**ystem **B**lock **U**pgrades -**ASBU**" initiative as a programmatic framework that:

- develops a set of air traffic management (ATM) solutions or upgrades;
- takes advantage of current equipage;
- establishes a transition plan and;
- enables global interoperability.

Modernization is an enormously complex task but the Industry needs the benefits that these initiatives will bring as traffic levels continue to rise. It is clear that to safely and efficiently accommodate the increase in air traffic demand, as well as to respond to the diverse needs of operators, the environment and other issues, a renovation of ATM systems is needed to provide the greatest operational and performance benefits.

2. Discussion

2.1 *Overview of Block Upgrades*

Modules are organized into ***flexible and scalable building blocks*** that can be introduced and implemented in a State or a region depending on need and level of readiness, while recognizing that **all the modules are not required in all airspaces**.

The concept of the block upgrades originates from **existing near-term implementation plans and initiatives** providing benefits in many regions of the world. The block upgrades are largely **based on operational concepts** extracted from the United States' Next Generation Air Transportation System (NextGen), Europe's Single European Sky ATM Research (SESAR) and Japan's Collaborative Actions for Renovation of Air Traffic Systems (CARATS) programmes.

Also included was the feedback from States with evolving modernization programmes received at the recent Global Air Navigation Industry Symposium.

The block upgrades are also aligned with the ICAO *Global Air Traffic Management Operational Concept* (Doc 9854). The intent is to apply key capabilities and performance improvements drawn from these programmes across other regional and local environments with the same level of performance and associated benefits on a global scale.

The block upgrades describe ways to apply the concepts defined in the ICAO *Global Air Navigation Plan* (Doc 9750) with the goal of achieving regional performance improvements. They will include the **development of technology roadmaps** to ensure that standards are mature and to facilitate **synchronized implementation between air and ground systems and between regions.** The ultimate goal is to **achieve global interoperability**. Safety demands this level of interoperability and harmonization which must be achieved at a **reasonable cost** with **commensurate benefits**.

Leveraging upon existing technologies, block upgrades are organized in **five-year time increments starting in 2013 continuing through 2028 and beyond**. Such a structured approach provides a basis for sound investment strategies and will generate commitment from States, equipment manufacturers, operators and service providers.

The development of block upgrades will be realized by a shift in focus from top-down planning to more bottom-up and pragmatic implementation in the regions. The ASBU initiative will influence ICAO's work programme in the coming years, specifically in the area of standards development and associated performance improvements.

The block upgrades will be formalized at the Twelfth Air Navigation Conference from 19 t0 30 November 2012 and will form the basis of the new or revised Global Air Navigation Plan (GANP).

2.2- Roles and Responsibilities of Stake holders

Stakeholders, including service providers, regulators, airspace users and manufacturers, will face increased levels of interaction as new, modernized ATM operations are implemented. The highly integrated nature of capabilities covered by the block upgrades requires a significant level of coordination and cooperation among all stakeholders. **Working together is essential for achieving global harmonization and interoperability.**

The block upgrades will enable the development and delivery of necessary Standards and Recommended Practices (SARPs) to States and Industry by ICAO in a prompt and timely manner to facilitate regulatory and technological improvement and to ensure operational benefits worldwide through the standards roundtable process, which involves ICAO, States and Industry, and various technological roadmaps.

This will allow regional regulations to be identified, the development of adequate action plans and, if needed, investment in new facilities and/or infrastructure.

Stakeholders worldwide must prepare the ATM system for the future. The block upgrades initiative should constitute the basis for future ATM modernization plans. Where plans are already in place, they should be aligned with objectives defined in the block upgrades.

For the Industry, the ASBU initiative forms the basis for planning future development and delivering products to the market at the proper target time.

For service providers or operators such as SAT members, block upgrades should serve as a planning tool for resource management, capital investment, training, as well as for potential reorganization.

The 12 Air Navigation Conference (AN-Conf/12 adopted the ICAO Aviation System Block Upgrades (ASBU) methodology aiming ton guiding the air navigation performance planning process through the revised Global Air Navigation Plan(GANP). The new GANP provides technologies roadmaps such as CNS, AIM and Avionics, whilst assessing regulatory needs, defining operational improvements, developing business cases, determining performance metrics and evaluating fuel savings and corresponding environmental benefits through the ICAO Fuel Savings Estimation Tool (IFSET).

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2.3 Outcome of the Conference, stakes and challenges on CAFSAT future development

The current ongoing regional and national air navigation planning is consistent with 18 Modules of ASBU Block 0.

As a part of transition to ASBU methodology, the AFI, EUR and SAM Air Navigation Plans and the National Air Navigation Plans will need to be modified as necessary.

Some of the Modules presented are of great interest to CAFSAT community in particular:

a) **Modules B0 25 -Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration:** The proper implementation of this Module implies a harmonized process of renovation of CAFSAT network and his interoperation with the neighboring VSAT networks (AFISNET, REDDIG). Therefore the CAFSAT Technical evaluation and re-engineering should take into consideration the requirements of this new concept.

b) **Module B0 30-Service Improvement through Digital Aeronautical Information Management:** The successful implementation of this module in the SAT region will rely on the robustness of CAFSAT components and service to support AIM requirements and;

c) **Module B0 40-Improved Safety and Efficiency through the initial application of Data Link En-Route:** The efficient implementation of this module within SAT area will face technical challenge in terms of migrating the current voice based ground/air links towards data link operations. This will require a tight coordination between the Air Navigation Services Providers and the Airlines for the airspace management and the radio links, supported by regulatory measures and consolidated procedures.

Since CNMC/1 SAT members have been seeking the best way to conduct the evaluation and re-engineering of the network (**See WP/07A**).

The ASBU concept will make inescapable this re-engineering process and CAFSAT stake holders should clearly identify the stakes on the modernization of the network and come out of the challenges on the network future development.

3. Action by the meeting

The meeting is invited to:

a) Take note of the information given above

b) Encourage concerned Sates/Organizations to implement the recommendation of the AN-Con/12;

c) Take into account the ASBU concept and methodology to better conduct the CAFSAT modernization exercise

d) Pursue their collaboration when modernizing their respective networks components in order to build a harmonized CAFSAT network provided with the capability to support the forthcoming CNS applications.
