International Civil Aviation Organization
CAR/SAM Regional Planning and Implementation Group (GREPECAS)
Seventeenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/17)
(Cochabamba, Bolivia), 21 to 25 July 2014)

Agenda Item 3: **Air Navigation Activities at Global, Intra-Regional, and Inter-Regional Level**

3.3 Inter-regional air navigation activities

COLLABORATIVE ACTIVITIES IN THE CAR/SAM REGION

(Presented by United States of America)

SUMMARY

This paper provides an update on FAA activities pertaining to MEVA, NAM ICD, AMHS, ATFM, ADS-B, and PBN in the CAR/SAM region. Also included are some of the activities in the NAM/CAR.

ACTION

Review the information and progress updates noted in this paper and apply them as required in the GREPECAS Actions in the ICAO Report of the Meeting.

Strategic Objectives

- Safety
- Air Navigation Capacity and Efficiency
- xx

References

- NACC/WG/4 IP/33
- NACC/WG/4 WP/27
- NACC/WG/4 WP/29
- PPRC/2 IP/07

1. Introduction

1.1 The United States of America's Federal Aviation Administration (FAA) is currently engaged in and supporting several programs in the Americas region which includes the work under ICAO GREPECAS. This paper will provide information and progress of work efforts pertaining to Air Traffic Services (ATS) Message Handling System (AMHS), Mejoras a los Enlaces de Voz ATS (MEVA), North America (NAM) Interface Control Document (ICD), Air Traffic Flow Management (ATFM), Automatic Dependence Surveillance – Broadcast (ADS-B), and Performance Based Navigation (PBN). The FAA is currently the Leader (rapporteur) of two of the GREPECAS Task Forces: AMHS and ATFM.

2. MEVA Network

2.1 In 2011, the Central Caribbean States/Organizations members of the MEVA Network identified the need to review the MEVA architecture and services to ensure that the network will support emerging requirements in a cost effective manner. A Request for Information (RFI) was released to the industry in 2012 to explore solutions currently offered by the telecommunication industry that would meet the present and future requirements of the MEVA community. The MEVA Members analyzed the responses to the RFI, and agreed on the architecture for the MEVA III Network.

2.2 In 2013, the MEVA Technical Management Group (TMG) created a Task Force entrusted with drafting the MEVA III RFP. This document was finalized and agreed upon by the TMG, and in June 2013, the MEVA III RFP was released to the industry through the ICAO Technical Cooperation Bureau (TCB) Office. The Task Force was also entrusted with reviewing and grading the proposals received in response to the RFP, and to recommend to the TMG a Service Provider for the MEVA III Network. The MEVA III Service Provider was chosen by the TMG Members in October 2013. Each MEVA Member will sign individual contracts with the MEVA III Service Provider.

2.3 The current MEVA Members are representatives from Civil Aviation Authorities of the Governments of Aruba, the Commonwealth of the Bahamas, the Cayman Islands, Cuba, the Dominican Republic, Haiti, Jamaica, Netherlands Antilles, Panamá, the United States of America, the organization of COCESNA and the nodes are located at the following locations:

- Miami, FL
- Caracas, Venezuela
- Freeport, Bahamas
- Georgetown, Cayman Islands
- Panama City, Panama
- Havana, Cuba
- Port-au-Prince, Haiti
- Kingston, Jamaica
- Santo Domingo, Dominican Republic
- Atlanta, GA
- Nassau, Bahamas
- COCESNA (Tegucigalpa, Honduras)
- San Juan, Puerto Rico
- Phillipsburg, St. Maarten
- Curacao, Netherland Antilles
- Oranjestad, Aruba
- Bogota, Colombia

2.4 Through the years the technological requirements placed on the MEVA Network have increased in terms of bandwidth, protocol, and number of nodes. Despite these increases, the MEVA Members have successfully managed to reduce the cost to each Member while increasing the overall availability of the Network.

2.5 The implementation of the MEVA III Network is planned to start in the summer of 2014. The new system will be a Time Division Multiple Access / Multi Frequency (TDMA/MF) satellite network providing Internet Protocol and legacy interface support. It will carry ATC voice and data services between Area Control Centers (ACC) in the Central Caribbean Region. The Network will also deliver voice and data services to select countries in South America through an interconnection between the MEVA and the REDDIG (a similar network to MEVA covering South America) networks.

3. NAM Regional Implementations

3.1 ATS Interfacility Data Communications (AIDC), North American Common Coordination Interface Control Document (NAM ICD) or similar automation, can provide the means by which automated data exchange can be harmonized between Air Traffic Service Units (ATSU).

3.2 The automation described in this document can provide the contiguous infrastructure for air traffic service within and between adjacent FIRs. The Interface Control Document for Data Communications between ATS Units in the Caribbean and South American Regions (CAR/SAM ICD) was modelled from the NAM ICD which was originally developed for operational interfaces with the United States, Canada and Mexico. The NAM ICD has since been modified to include interfaces between US's Miami ARTCC and Cuba's Havana ACC and between Mexico's Merida Area Control (ACC) and Cuba's Havana ACC. A communications and data interchange infrastructure significantly reduces the need for verbal coordination between Air Traffic Service Units (ATSUs) delivering more efficient and streamlined services. The impetus of the automation requirement stems from the increasing traffic levels transiting between FIRs as many regions upgrade their Air Traffic Control (ATC) automation systems.

3.3 Standardization of CNS/ATM technologies and procedures is critical to cross-border, regional and multi-regional interoperability. This, in turn, drives the seamless operation of regional and global systems. Such technical and operational alignment can take many forms, depending on the target technology or procedure. The U.S. and NAM ICD member States have realized automation gains that provide significant safety and efficiency benefits. In 2010 Havana ACC (MUFH) and Miami ARTCC (KZMA) agreed to pursue the NAM interface between their facilities. The interface was implemented in December 2011. By virtue of making the proper planning decisions in the KZMA – MUFH interface, Mexico and Cuba were able to connect with a like interface between Merida – MUFH only one month later, a significant accomplishment.

3.4 During Miami ARTCC and Santo Domingo Area Control Center (ACC) Operational Letter of Agreement (LOA) Meetings held in July 2011, automated flight data sharing was identified as a proposed solution for reducing the complexities of a congested border between Miami ARTCC and Santo Domingo ACC. Existing operational problems are compounded by the ever-growing number of flights per day, multiplied by two or more coordination calls between facilities required for each flight. Projected benefits were identified in replacing the existing manual flight data interface between the two facilities with an automated interface. Derived benefits are gained via: the reduction of the verbal coordination errors which are known to exist in manually translating precise flight data and control information between Miami and Santo Domingo controllers. With the Dominican Republic's acquisition of the Thales EURCAT C ATC system comes an opportunity to enhance the Caribbean region's automation infrastructure. In an initiative not unlike the Miami ARTCC and Havana ACC ADE effort, an automation activity between Santo Domingo ACC and Miami ARTCC is being planned. Automation interfaces vastly improve the capabilities of the facilities and extend the capabilities within the Caribbean and Gulf of Mexico regions.

4. ATFM

4.1. In 2012, the FAA member was selected as the Programme Lead to support, lead and implement ATFM Programme initiatives as outlined by the GREPECAS Programmes and Project Review Committee (PPRC). From the onset, the goal was to deliver an introduction to basic principles, promote collaboration, offer subject matter expertise, and establish a basic core foundation of ATFM principles to build upon for the future.

4.2 A series of Go-To-Meeting (GTM) Webinars was established with the purpose of providing an introduction to the application of ATFM methodologies. A secondary goal was to develop team dynamics amongst the regional participants so as to learn and benefit from each other's diverse experiences. The following subjects were addressed:

a. Introduction to using the Go-To-Meeting software
b. Macro overview of ATFM principles
c. Introduction to Collaborative Decision Making (CDM) process
d. Operations Teleconference- Format and Procedures (The Value of Information Sharing)
e. Introduction and benefits of Data Sharing
f. Airport/Sector Capacity Calculations (Future projection)
g. Flexible Use Airspace (FUA) (Future projection)

4.3 In support of Programme Objective B-1 (*Improve the Balance between Demand and Capacity*), several practice operational teleconferences were initiated to apply learned knowledge, build confidence and familiarity, and refine skill sets. After several practice sessions, an active live operational teleconference was conducted, with several ANSPs from the CAR Region participating. The frequency of this operational teleconference was adjusted seasonally to correspond with traditional regional demand. From October – April, the teleconference was conducted three times per week (Friday, Saturday and Sunday morning). This was scaled back to once per week during the non-peak season (May – September) to correspond with the reduction of aircraft demand, forecasted constraints and consideration of facility personnel schedules. The operational teleconference proved to be quite successful during seasonal weather events such as tropical storms which commonly impact the Caribbean region affecting all segments of the aviation community in general.

4.4 The "*Flexible Use of the Airspace*" programme objective was incorporated into the curriculum and was scheduled to be delivered to CAR and SAM ANSPs. The original intent was to build forward momentum amongst ANSPs and afterwards provide more advance concepts with regard to FUA in order for the overall syllabus to be complimentary with one another. Due to a lack of interest, active participation, and overall support, this programme objective was postponed for the future.

4.5 As with any new outreach initiative, time, resources and availability are essential to achieving tangible results. Proper evaluation of personnel, corporate knowledge of subjects and active interest is critical when attempting to reach a diverse audience. Availability and time required for ANSPs to devote resources was evident as the participation in these outreach initiatives steadily declined over time. Challenges such as scheduling, allocating personnel to join, and a lack of interest made this outreach initiative difficult to achieve within the time frame established. The future appears to be quite promising and offers plenty of opportunity for achieving tangible results in the areas of collaboration, flow management concepts, system efficiency, and harmonization amongst stakeholders. Best practices, conceptual understanding of systemic applications and working closely with adjacent ANSPs will be critical elements in obtaining realistic results.

4.6 A similar effort is underway in the NAM/CAR region and progress was reported out at the Fourth North American, Central American and Caribbean Working Group Meeting (NAAC/WG/4) that was held in Ottawa, Canada, from 24 to 28 March 2014. This effort also used the Webinar approach. Some of the details are included below.

4.7 The NAM/CAR ATFM Task Force's Work Programme provides specific initiatives for the development of a regional concept of ATFM implementation in NAM/CAR Region. This is consistent with ICAO Doc. 9971 (Manual on Collaborative Air Traffic Flow Management) and other related global documents, and it takes into consideration the execution of a simple, basic, and incremental

approach of promoting, sharing and implementing a regional, interoperable ATFM framework. The task force consists of five regional states representing North and Central America along with the Caribbean Region: Canada, Dominican Republic, El Salvador, Trinidad and Tobago, and the United States. Of these TF members, the composition includes ANSPs and a member of the Civil Air Navigation Services Organization (CANSO).

4.8 The focus for CY-14 will be to share best practices, address demand and capacity balancing methodology, and develop a regional pre-tactical web conference for all ANSPs and stakeholders to participate and share information.

5. ADS-B

5.1 The FAA recently supported the ICAO/FAA Workshop on ADS-B and Multilateration Implementation (ADS-B/IMP) and the ADS-B Task Force Follow-up Meeting that was held in Mexico City, Mexico, May 19 – 23, 2014.

5.2 The role of the FAA was to educate the NAM/CAR representatives on the concepts of ADS-B and Multilateration. The topics in the material included a detailed explanation of different avionics systems, ADS-B Out systems, ADS-B In applications, ground infrastructure(s), and safety. The desired outcome of the workshop was to provide each State representative with an understanding of what should be considered when determining the appropriate ground infrastructure required to support the individual countries airspace.

5.3 A number of significant discussions were held regarding the differences between the different versions of ADS-B. Many of the countries had not been aware that Version 2 (DO-260B) equipment existed and were flying in the airspace today. Many countries were interested in the reasons behind the U.S. rule requiring aircraft to equip with Version 2 systems. A second area of interest dealt with the different ground implementations such as Wide Area Multilateration (WAM) and the use of ADS-B on helicopters for operations in the Gulf of Mexico.

5.4 The following are some of the major outcomes of the workshop:

a) Based on feedback, the participants obtained a clearer understanding of the equipment needed when performing an analysis of their airspace.

b) ADS-B implementations are heading towards the use of Version 2 (DO-260B).

c) An avenue of communication between member states needs to be created to leverage the lessons learned.

d) Member States will be conducting ADS-B trials to help in the planning and implementation of ADS-B

6. PBN

6.1 In August 2012, FAA PBN implementation experts participated in the ICAO Workshop on PBN Airspace Redesign and GNSS Implementation for the NAM/CAR Regions and in the GREPECAS PBN Programme CAR Project A2 “Air Navigation Systems in support of PBN” Meeting in Mexico City. These two activities helped to train, support and assist Air Traffic Service providers´

specialists and GNSS related technical staff to conduct PBN airspace redesign and PBN/GNSS implementation, including consideration of GNSS infrastructure requirements.

6.1 The FAA PBN Office remains engaged in ICAO activities promoting global harmonization of PBN policies and procedures, including the Separation and Airspace Safety Panel (SASP), the Instrument Flight Procedures Panel (IFPP) and the PBN Study Group. We also continue to support ongoing and future work in the Americas Region regarding PBN planning and implementation, leading to harmonized PBN policy and procedures.

7. AMHS

7.1 A representative from the Federal Aviation Administration leads the Automatic Message Handling System (AMHS) Task Force whose responsibilities are the coordination, implementation and trials for ATN ground applications/AMHS implementation. Tasks include revision and updating of the Internet Protocol version 4 (IPv4) Address Plan.

7.2 The router plan was last reviewed during the fifth GREPECAS ATN Task Force (ATN/TF/5) Meeting. At that time, the ATN Task Force considered that changes to the ATN CAR/SAM backbone were not necessary. Since then, the implementation of AMHS has started. Several routers are operational and several regional networks of the CAR region have evolved to an IP based infrastructure. Revision to the proposed changes to the current router plan was assigned to the NAM/CAR ANI/WG (Air Navigation Implementation Working Group) AMHS Task Force. A teleconference between Task Force members from Central American Corporation for Air Navigation Services (COCESNA) and the FAA was held on 15 November 2013 to review the router portion of the NAM/CAR IPv4 Address Plan. Several possible options to remedy the deficiencies of the plan were discussed and it was agreed that the plan should be reviewed as a whole. Work continues among parties of the FAA, COCESNA, and Dominican Republic to coordinate a holistic review of the Plan

7.3 Work continues on development and implementation of the IP ATN CAR backbone network configuration, with focus on the IPv4 addressing scheme and some inconsistencies that have been identified.

7.4 A task has been included for the AMHS Task Force to periodically identify AMHS training as needed.

7.5 The following has been accomplished by the Task Force in the last year:

- Implementation Plan – updated during the last meeting held in September 2013
- CAR/SAM Router Plan – The Plan is in the review process to include new implementation of AMHS sites. Dominican Republic has been implemented and testing is in process with Cuba, St. Maarten, and Trinidad & Tobago for future implementation.

*The FAA Technical Center coordinates and conducts testing with Member States prior to transition.

8. Action

8.1 The meeting is invited to:

a) Note the information in the paper
b) Use information and progress updates, together with other papers and discussions, when forming action items regarding the GREPECAS task forces' work programmes and future work.

- END –