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

DISCUSSION PAPER

Third Eastern Caribbean Civil Aviation Technical Group Meeting (E/CAR/CATG/3)
Basseterre, Saint Kitts and Nevis, 19 to 21 October 2016

Agenda Item 3:   **Air Navigation Matters**
       3.2   **Follow-up on the implementation of the NAM/CAR Regional Performance Based Air Navigation Plan (RPBANIP) and the *Port-of-Spain* Declaration Air Navigation Targets in the Eastern Caribbean:**
              3.2.1   Progress reports of the AIM, AGA, ATM, CNS, MET and SAR Committees

PROGRESS REPORT OF THE CNS COMMITTEE

(Presented by the CNS Committee Rapporteur)

EXECUTIVE SUMMARY
This Working Paper presents an update on the activities carried out by the CNS Committee since the E/CAR/CATG/02 Meeting .

Action:	a) Review the information contained in this working paper; b) Identify any new tasks or progress on the tasks of the CNS Committee; and c) Agree to any other actions as deemed appropriate.
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency
References:	• CATG/02

1.   Introduction

1.1   The ad hoc group of the CNS Committee comprising Antigua, Barbados, France, Trinidad and Tobago and ECCAA, met during the meeting of the E/CAR/CATG/3 and reviewed the following documents:

       a)   E/CAR/CATG/2 Conclusions related to CNS
       b)   ANI/WG/3 Conclusions related to CNS
       c)   E/CAR/CATG/03 WP/09, WP/10, WP/15, WP/19 and WP/21

2. **Discussion**

2.1 Before proceeding to an update on the action items, the Committee reviewed and revised the Terms of Reference as presented in **Appendix A.**

2.2. **Appendix B** to this paper shows the updated Work Programme and Appendix C presents the updated status of CNS related Conclusions/Decision from the E/CAR/CATG/2, ANI/WG, NACC/WG.

2.3 The following achievements are noted:

ADS-B/MLAT

1. Barbados:
   - A WAM (Wide Area Multilateration) /ADS-B System making use of seven (7) sensors distributed around the island in conjunction with a Ground Surveillance Tracking System employing five (5) sensors in the environs of the Grantley Adams International Airport is currently at the advanced stages of installation with an expected installation completion date of December 2016. MLAT data will be eventually shared with Trinidad and Tobago for transmission through the MRT to the E/CAR.

2. ECCAA:
   - Feasibility studies are underway in the OECS States toward the implementation of MLAT.
   - There are plans to implement ADS-B in Antigua, St. Lucia and Grenada.

3. France
   - MLAT simulations carried out in Martinique and French Guyana led to the conclusion that MLAT was not an efficient solution to cover all the airspace for Approach.
   - Two (2) ADS-B stations are ordered and will be installed in Martinique and Guadeloupe in 2017.
   - Five (5) ADS-B stations are to be implemented in French Guyana in 2017.

4. Trinidad and Tobago
   - One (1) DO 260A ADS-B receiver is implemented.
   - The implementation of a combination of ADS-B/MLAT to provide surveillance in the South sector and ADS-B in the continental airspace of the Piarco FIR is planned for fiscal year 2016-2017.

5. San Juan:
   - Trials have been successfully completed and ADS-B is fully implemented.

ADS-C and CPDLC

    1.   Trinidad and Tobago:
- ADS-C and CPDLC services from ARINC were implemented on July 7, 2016.

NOTE: ADS-C is not planned nor required in FWI and the E/CAR States.

GNSS Augmentation

    1.   Trinidad and Tobago:
- SACCSA (SISTEMA DE AUMENTACIÓN PARA EL CARIBE, CENTRO Y SUDAMÉRICA- Augmentation System for the Caribbean, Central and South America) Project RLA/03/902 has ended. No follow up with an implementation phase is planned.

NETWORKS

    1.   MEVA-E/CAR Interconnection:
- The new dedicated MEVA circuit for the radar exchange between San Juan and Sint Maarten, and the voice circuits to Anguilla, Antigua and St. Kitts is installed. The configuration of the E/CAR/AFS router in San Juan, wiring, interconnection and testing for the voice circuits were successfully completed on December 2, 2015. This E/CAR AFS and MEVA interconnection permits more robust connectivity between Sint Maarten and Anguilla, Antigua and St. Kitts.
- The exchange of RADAR between St. Maarten and Trinidad through an interconnection of the E/CAR Network to the MEVA III Network at the ZSU CERAP is on-going.

    2.   AFISNET:
- The AFISNET satellite node that was donated by ASECNA (Agency for Air Navigation Safety in Africa and Madagascar) towards the improvement in Air Navigation Services between the FIRs of Piarco and Dakar was commissioned on September 16, 2015.

2.4   France has started drafting a notice to airspace users regarding the availability of ADS-B service and advising of the requirement for ADS-B on-board equipage by a date to be specified. To be in line with the Piarco FIR, France is requesting from Trinidad and Tobago, similar information on ADS-B usage, equipage and mandate for service. In this regard the following conclusion was formulated:

Conclusion
CNS/COMM/1   **ADS-B SERVICE IN THE PIARCO FIR**

That,

The ATM Committee confer with Trinidad and Tobago, in collaboration with the E/CAR States, in keeping with the ICAO RPBANIP targets, and advise the CNS Committee of the availability of ADS-B capability in the Piarco FIR as follows:

a)   Service availability date, phases of applicability and flight level limitations, etc.; and

b)   Mandated date for aircraft equipage to operate in the Piarco FIR

2.5   In order to come up with some guidance and recommendation for the E/CAR States regarding the implementation of D-ATIS, ECCAA has offered to conduct a survey of all aircraft flying within the Piarco FIR that are equipped with on-board D-ATIS. The following conclusion was formulated:

Conclusion
CNS/COMM/2   **D-ATIS ON-BOARD EQUIPAGE FOR AIRCRAFT TRANSITING THE PIARCO FIR**

That,

a)   ECCAA conduct a survey of D-ATIS aircraft equipage of all aircraft flying within the Piarco FIR; and

b)   Report the findings of the survey to the Coordinator of the CNS Committee by March 31, 2017

3.   Suggested Actions:

3.1   The Meeting is invited to:

a)   take note of the achievements of the CNS Committee;

b)   review and approve the Terms of Reference;

c)   comment on the Work Programme; and

d)   propose any other action or task as deemed necessary.

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APPENDIX A
EASTERN CARIBBEAN CIVIL AVIATION TECHNICAL GROUP
COMMUNICATION, NAVIGATION AND SURVEILLANCE COMMITTEE (CNS/COMM)

1.   **Background**

    a)   The Eastern Caribbean CNS Committee was originally established by the Eastern Caribbean Working Group (E/CAR/WG) which has now been renamed the Eastern Caribbean Civil Aviation Technical Group. The CATG was established in October 2012 by the Directors of Civil Aviation of the Eastern Caribbean at their 24th Meeting (E/CAR/DCA/24) through Conclusion 24/7 - New NAM/CAR Air Navigation Implementation Working Group, item (b) to continue the performance-based work programme for the implementation and improvement in all air navigation fields in the Eastern Caribbean.

    b)   The CNS Committee should periodically update the terms of reference, the scope of the tasks of the Committee and the work programme which establishes the list of items to be analyzed in accordance with the scope defined in the terms of reference.

2.   **Terms of Reference**

    a)   Review and complete the planning of the CNS systems, in accordance with the CAR/SAM RPBANIP, on the results of the inter-regional planning and co-ordination and on ICAO SARPs and technical guidelines, and user expectations (Aviation System Block Upgrades (ASBU) Block 0 Modules) related with the coordinated implementation and harmonization of CNS/ATM systems.

    b)   Follow up and actively support POS Declaration targets fulfillment.

    c)   Facilitate operational improvement initiatives through action plans and implementation strategies and associated technologies to improve safety, increase operational and economic efficiency and/or capacity of regional CNS systems.

    d)   Share information on implementation initiatives for enhancing interoperability of air traffic systems through CNS improvements.

3.   **Work Programme**

3.1   See the attached work programme.

4.   **Working Methods**

    a)   The CNS Committee of the E/CAR/CATG work programme should present their activities in terms of objectives, responsible and deliverables. Further details can be provided in the form of Work Breakdown Schedule (WBS);

b) The CNS/COMM will avoid duplication of work within the E/CAR/NTG and maintain close coordination among the existing entities (like the Air Navigation Implementation Technical Group: ANI/WG) to optimize the use of available resources and experience;

c) The CNS/COMM may designate, as necessary, ad-hoc groups to work on specific topics and activities; all tasks and activities should be clearly defined by time and deliverables;

d) The CNS/COMM shall co-ordinate and advance its works as follows to maximize efficiency and reduce costs:
  • conduct work via electronic written correspondence
  • conduct work via phone and teleconference calls
  • hold meetings when necessary

e) The CNS COMM will report and coordinate the progress of assigned tasks to the E/CAR/CATG.

5. **Membership**

5.1 See attached Membership List. ICAO will act as technical adviser to the CNS/COMM.

6. **Rapporteur**

6.1 Ms. Veronica Ramdath (Trinidad and Tobago)

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CNS/COMM WORK PROGRAMME

TASK NUMBER	TASK DESCRIPTION	PRIORITY	STATUS
CNS/1	**General Matters**		
CNS/1/1	Review, identify, evaluate and recommend solutions with the necessary priority assignment on the deficiencies of the CNS systems.	A	Permanent
CNS1/2	Examine the CNS systems in the adjacent regions, with the aim of contributing to a coordinated and harmonious interconnection development.	B	Permanent
CNS/1/3	Support ICAO initiatives and measures for the protection of the radio frequency spectrum management.	A	Permanent
CNS/2	**Communication**		
CNS/2/1	Continue the guidance and follow-up to the development of communication networks and develop regional guidelines for the inter-operability between the communication networks of the CAR and SAM Regions and neighboring areas.	B	Permanent
CNS/2/2	Coordinate and implement the transition for inter network ATN service (AMHS).	A	Valid
CNS/2/3	In keeping with the AIDC Implementation plan, coordinate the implementation of the ground-ground applications such as AIDC.	B	Valid
CNS/2/4	Monitor the performance of the HF service in the Oceanic portion of the Piarco FIR and implement improvements in conjunction with contracted service provider as required.	A	Permanent
CNS/2/5	Monitor the performance of the VHF service and implement improvements as necessary.	A	Permanent
CNS/3	**Navigation**		
CNS/3/1	Study and analyze the regional implementation alternatives of a GBAS system, taking into account the evolution	C	Valid

	of GNSS and GNSS augmentation systems.		
CNS/3/2	Review and update the NDB deactivation plan accordingly based on individual States' situations.	B	Valid
CNS/3/3	Evaluate the required nav. infrastructure to satisfy PBN based nav. requirements, identifying improvements and deficiencies.	B	Valid
CNS/4	**Surveillance**		
CNS/4/1	Promote Surveillance Data Sharing implementation in the Region.	A	Permanent
CNS/4/2	Evaluation of surveillance infrastructure to satisfy navigation requirements for PBN	B	Valid
CNS/4/3	Promote the surveillance coverage in the continental airspace of the Piarco FIR (ADS-B, RADAR, MLAT)	A	Valid
CNS/4/4	In order to support and guide implementation of ADS-B in the CAR Region and to achieve regional milestone date of December 2018 for the implementation of ADS-B OUT, the Regional ADS-B CONOPS document initial version be adopted as a guide to planning and implementation of ADS-B service to the States/ANSPs in the region.	A	Valid
CNS/4/5	In order to support and guide implementation of ADS-B in the CAR Region and to achieve regional milestone date of December 2018 for the implementation of ADS-B OUT, Technical Specification (RTCA D0260B) document be adopted as a guide for the acquisition and implementation of ADS-B service.	A	Valid
CNS/4/6	Monitor and evaluate the progress and results of ADS-C/ CPDLC.	A	Valid
CNS/4/7	Support the implementation of CPDLC and ADS-C. The States involved in this implementation shall adopt as references the CPDLC Implementation Considerations and a CPDLC/ADS-C IMPLEMENTATION Action Plan respectively.	A	Valid

CNS/5	ATM Automation		
CNS/5/1	Support functional levels for the implementation of ATM automation.	C	Valid

A   High priority tasks, on which work should be speeded up.

B   Medium priority tasks, on which work should commence as soon as possible, but without detriment to Priority A tasks.

C   Tasks of lesser priority, on which work should commence as time and resources allow, but without detriment to Priority A and B tasks.

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APPENDIX B

ID	TASK NAME	DELIVERABLE	RESPONSIBLE	REFERENCE	COMMENTS	STATUS	
				COMMUNICATION			
1	Adoption of "equipment modernization/DATIS Service implementation plan for int'l airports" compliance to ATM requirements	DATIS Modernization and Implementation Plan	States/ Territories coordinated by WG		E/CAR States are invited to inform on the implementation of ATIS (DATIS) Services, also the identification of this ATM requirements for defined airports shall be determined. *(via data link to the aircraft- VDL mode 2/4 or ACARS) System connects the AFTN and automatically creates the message-no manual intervention by ATC*	1. Trinidad and Tobago- automated voice 2. Antigua- automated voice 3. Barbados –automated voice 4. Dominica-No ATIS 5. Grenada-To be provided by 09/2017 – automated voice 6. Guadeloupe-recorded by ATC. No plans to change this. 7. Nevis-No ATIS 8. Martinique- recorded by ATC. No plans to change this. 9. Montserrat-No ATIS 10. St. Kitts-No ATIS 11. St. Lucia (both airports)- automated voice 12. St. Vincent-To be activated with Argyle airport 13. San Juan - ATCT ATIS Freq, is 125.80 Main Transmitter located at the San Juan RTR.	Valid
2	Coordination among E/CAR ANSP and National spectrum Authorities for the protection of the VHF band	E/CAR States collect data on RF interference with aviation VHF frequencies and also advise CNS COMM on any new frequencies implemented	States/ Territories coordinated by WG				Valid

ID	TASK NAME	DELIVERABLE	RESPONSIBLE	REFERENCE	COMMENTS		STATUS
				NAVIGATION			
1	Evaluation of required nav. infrastructure to satisfy PBN based nav. requirements, identifying improvements and deficiencies	Analysis of required navigation infrastructure for example: DME-DME coverage for selected ATS routes for RNAV 5; and Identification of deficiencies; and corresponding corrective Action plan	States/ Territories coordinated by WG	Reference to CNS table 3	For the development of this task, operational PBN navigation specifications need to be defined. The E/CAR/WG, under the ATM, shall define these requirements and the priority of this implementation.		Valid
2	Plans on GNSS systems (GBAS) and trial conduction	GNSS trial plan	States/ Territories coordinated by WG	Navigation Infrastructure alternatives for PBN	Based on GREPECAS references (http://www.mexico.icao.int /CNS.html), the E/CAR states shall plan or agree on future trials for GBAS and SBAS evaluation.	SACCSA Project RLA/03/902 has ended. States to advise on GNSS initiatives (GBAS) ECCAA and France has no plans to implement GBAS at this time	Valid
				SURVEILLANCE			
1	Evaluation of surveillance infrastructure to satisfy navigation requirements for PBN	Analysis of surveillance infrastructure	States/ Territories coordinated by WG		For the development of this task, operational PBN navigation specifications need to be defined. The E/CAR/WG, under the ATM, shall define these requirements and the priority of this implementation.		Valid

ID	TASK NAME	DELIVERABLE	RESPONSIBLE	REFERENCE	COMMENTS	STATUS	
2	Implementation of 24 bits Address registry	24 bits Aircraft Address registry	States/ Territories coordinated by WG		The involved parties are expected to inform their advances in the development and implementation of their national registry of 24-bit aircraft addresses in accordance to Annex 10, Vol III Chap 9 and GREPECAS guidance (http://www.mexico.icao.int /CNS.html).	Trinidad and Tobago – completed OECS - completed Martinique and Guadeloupe - completed Barbados -completed	Completed
3	ADS-B, ADS-C and MLAT trials	Trials on ADS-B, MLAT and ADS-C	States/ Territories coordinated by WG		E/CAR States shall informed their national plans for conducting trials on ADS-B, ADS-C, MLAT and E/CAR/WG shall consolidate a plan for these trials to benefit of its results.	**Barbados** - ADS-B/MLAT installation to be completed by Dec 2016 _____ **ECCAA** advised that they are conducting feasibility studies in the OECS States toward the implementation of ADS-B/MLAT There are plans to implement ADS-B in Antigua, St. Lucia, Grenada Time: TBD _____ **France** – Two (2) ADS-B stations should be ordered and installed in Martinique and Guadeloupe for trials in 2017 ADS-B – 5 ADS-B stations to be implemented in 2017 for French Guyana	Valid

						Trinidad and Tobago ADS-B: 1 receiver implemented ——————————————— **San Juan** – ADS-B fully implemented	
4	ADS-C/ CPDLC evaluation and trial Plans	Plan on ADS-C and CPDLC	States/ Territories coordinated by WG			**Trinidad and Tobago** - ADS-C /CPDLC implemented July 7, 2016 ——————————————— **San Juan –** Information to be provided **France** - ADS-C is not planed nor required in FWI. ADS-C / CPDLC is in use in French Guyana since May 2011	Valid
5	Mode S radar implementation and update to Regional Plan on Surveillance Systems	Information on Mode S Radar implementation and updates to Regional Plan	States/ Territories coordinated by WG	Reference to CNS table 4A	E/CAR States shall inform on their plans for Mode S implementation. This information and other surveillance systems implementation shall be used to update the regional Plan on Surveillance System (CNS table 4A available on http://www.mexico.icao.int/ CNS.html.)	Trinidad and Tobago – Mode S Barbados – No Mode S-no intention of renewing radar Antigua – No Mode S. Planned Dec 2017 San Juan – No Mode S France – No Mode S. Planned in 2020 and 2021	Valid

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APPENDIX C

CONCLUSION	TEXT	FOLLOW-UP	REMARKS	STATUS
DECISION E/CAR/CATG/2/11	**REVIEW OF AIR NAVIGATION TARGETS AND DATA COLLECTION** That, in order to measure and monitor the progress achieved in the E/CAR area related to air navigation matters, the E/CAR/CATG Rapporteurs review the air navigation targets as detailed in the preliminary analysis done by the ANI/WG/2 Meeting and collect the data in the revised ANRFs by **15 October 2015**.	Task has been delayed due to reviewed of corresponding action plans and progress reported by Committees. New target date is for NACC/WG Meeting (2017)	Antigua-done T&T-done France-done Barbados-No (Dec 2016) SLU-No (Dec 2016) Grenada-No	Valid
E/CAR/DCA/26/10	**APPROVAL OF E/CAR RADAR DATA SHARING IMPLEMENTATION PLAN- PHASE II** That, considering the achievement of the Phase I of the E/CAR Radar Data Sharing and an appropriate time for the States to become familiarized with the Phase I Radar display:			
	a) ECCAA, as representative of the participating OECS States in the Radar Data Sharing activities**,** <u>confirm</u> <u>its commitment for Phase II</u> providing the necessary users´ requirements by **31 January 2016**; and		A radar questionnaire was distributed and comments were analyzed at the E/CAR/NTG/7-RD/5 Meeting	Superseded
	b) the E/CAR/DCA approve the E/CAR Radar Data Sharing Phase II Implementation Plan as presented in the Appendix of WP/12			Completed

CONCLUSION	TEXT	FOLLOW-UP	REMARKS	STATUS
ANI/WG/3/3	**PROTECTION AND RECOGNITION OF C BAND SPECTRUM USAGE** That, in order to take the technical and regulatory actions to support existing and future operation of the fixed satellite service earth stations within the band 3 400 – 4 200 MHz, as an aid to the safe operation of aircraft and reliable distribution of meteorological information in States, NAM/CAR States take the appropriate measures in order to ensure the protection of the satellite C-band operated by the National and Regional VSAT networks through:			Valid
	a) registration of the aeronautical VSAT frequencies in the States register held by the national authorities of regulation of telecommunication; and		Trinidad and Tobago has registered VSAT frequencies for REDDIG and AFISNET with the national spectrum authority (TATT)	Completed
	b) follow-up with the concerned authorities in the States to further register the frequencies in the ITU Master International Frequency Register (MIFR) by February 2017.		Trinidad and Tobago is in communication with TATT for follow up to the registration with ITU	Valid
ANI/WG/3/6	**AMHS IMPLEMENTATION PROCESS IN THE CAR REGION** That, to streamline the AMHS operational use, the CAR States/Territories a) update accordingly the CAR Region Implementation Matrix by December 2016;		AIM Committee	

CONCLUSION	TEXT	FOLLOW-UP	REMARKS	STATUS
	b) take advantage of the ATS Data Link Implementation Application Workshop scheduled for 18 to -21 April 2016 in St Maarten to exchange information and progress on the implementation; and			Completed
C-3/6	c) carry on the additional task of testing the transmission of XML data through AMHS system, coordinating these activities with the AMHS TF; informing the NACC/WG and GREPECAS Meetings		This activity will be coordinated with the work of GREPECAS Programme D CAR ATN Infrastructure in the CAR Region and its ground-ground and ground-air applications	Valid
CONCLUSION NACC/WG 4/10	**ADS-B OUT IMPLEMENTATION IN THE NAM/CAR REGIONS** That all States/Territories in the NAM/CAR Regions adopt/include the ADS-B implementation date of **31 December 2018** in their implementation plans to finalize operational implementation of ADS-B OUT.			Valid

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