



ICAO

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

DISCUSSION PAPER

E/CAR/CATG/2 — DP/02  
16/07/15

**Second Eastern Caribbean Civil Aviation Technical Group (E/CAR/CATG/2) Meeting**  
Miami, United States, 15 to 17 July 2015

**Agenda Item 4: Air Navigation Matters**

**4.2 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:**

- **Progress reports of the AIM, AGA, ATM, CNS, MET and SAR Committees**

**PROGRESS REPORT OF THE CNS COMMITTEE**

(Presented by CNS Committee Rapporteur)

<b>EXECUTIVE SUMMARY</b>	
This Working Paper presents an update on the activities carried out by the CNS Committee since the E/CAR/CATG/01 Meeting	
<i>Strategic Objectives:</i>	<ul style="list-style-type: none"><li>• Safety</li><li>• Air Navigation Capacity and Efficiency</li><li>• Environmental Protection</li></ul>
<i>References:</i>	<ul style="list-style-type: none"><li>• First Eastern Caribbean Civil Aviation Technical Group Meeting (E/CAR/CATG/1) (Martinique, French Antilles, France, 19 - 21 June 2013)</li></ul>

**1. Introduction**

1.1 The CNS Committee comprises of members from Antigua and Barbuda, Barbados, France, Trinidad and Tobago, United Kingdom, United States and ECCAA. The Committee is open to new members.

1.2 The Committee met yesterday and today (July 15-16, 2015) and reviewed the following documents:

- E/CAR/CATG/1 Conclusions
- ANI/WG/2 Conclusions
- NACC/WG/4 Conclusions
- E/CAR/CATG WP/9, WP/14, WP/18, WP/21 and IP/6

## 2. Discussion

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

2.2 **Appendix B** to this paper shows the Work Programme.

2.3 The following are the achievements of the Committee since the E/CAR/CATG/01 meeting on the CNS Committee activities:

### ADS-B/MLAT

#### 1. Barbados:

- A contract was awarded to Selex ES for five (5) MLAT sensors for the airport and seven (7) Wide Area Multilateration (WMLAT) sensors to improve the NW sector of Barbados Terminal Control Area (TMA)). MLAT data may be eventually shared with the E/CAR surveillance data pool. The project has a target date of Q4 2015. To date Initial software customization issues have been addressed with Barbados Air traffic Control and Selex. The project is currently approaching the Factory Training and testing stage expected in early August. It is expected that the operator Training phase can occur in December 2015.

#### 2. ECCAA:

- Feasibility studies are underway in the OECS States toward the implementation of MLAT.

#### 3. France

- MLAT Simulations carried out in Martinique and French Guyana led to the conclusion MLAT was not an efficient solution to cover all the airspace for Approach.
- ADS-B – French Guyana - 2 receivers for trials in 2015, 5 receivers for control in 2016/2017. 1 receiver in Martinique in 2016 for trials and work on Conops.

#### 4. Trinidad and Tobago

- Trinidad and Tobago acquired a DO 260A ADS-B receiver with the ATM System upgrade. The receiver and the associated antenna are installed. Initial trials were conducted and the data collected and analysed.
- Discussions have been initiated with a vendor for an ADS-B trial with a receiver at one (1) of the VHF high sites in addition to the one (1) at Piarco. One of the projects planned for realization this year is 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.

### ADS-C and CPDLC

#### 1. Trinidad and Tobago:

- Trials are underway for FANS1/A (ADS-C and CPDLC) services from ARINC.

2. San Juan:

- Trials have been successfully completed and ADS-C is fully implemented.

**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 to analyze the technical, institutional and financial viability of implementing Satellite Based Augmentation Systems (SBAS)/Global Navigation Satellite Systems (GNSS) system in the CCAR/SAM regions has come to a close. The research has shown positive results. The next stage could be the implementation of the system.

**AMHS**

- The AMSS-TT system is currently functioning in AFTN mode. Cutover of the CADAS-ATS in the Eastern Caribbean States to AMHS has been revised to be completed by the third quarter of 2015.
- The Technical Letter of Agreement for the Interconnection of AMHS Systems with the FAA has been completed. Testing with the FAA began in February 2014. Cutover date has been revised to the third quarter of 2015. The transition to AMHS will be seamless to the network. The work that is required involves only configuration changes to the AMHS equipment.

**NETWORKS**

MEVA-E/CAR Interconnection:

- The new dedicated MEVA circuit required for the radar exchange between San Juan and Sint Maarten, and the voice circuits to Anguilla, Antigua and St. Kitts is already installed. The interconnectivity would allow Sint Maarten to share their radar with Trinidad and Tobago as part of the radar feeds that will support the Radar Data Server project to be implemented for the E/CAR States/Territories. To complete the voice circuits implementation in the MEVA III- ECAR AFS Network interconnection:
  - a) Trinidad and Tobago to install the replacement routers in Anguilla by July 2015;
  - b) United States to complete the wiring between the MEVA III and E/CAR AFS Node by 14 August after the routers in Anguilla are replaced; and
  - c) For the testing, United States, Comsoft, TSTT, Trinidad and Tobago, Sint Maarten, Anguilla, St. Kitts and Antigua to coordinate the corresponding actions.

AFISNET:

- ASECNA (L'Agence pour la Sécurité de la Navigation aérienne en Afrique et à Madagascar - Agency for Aerial Navigation Safety in Africa and Madagascar) made a proposal to Trinidad and Tobago and French Guiana for the deployment of AFISNET (African and Indian Ocean Satellite Network) VSAT stations to link the FIRs of Piarco and Cayenne to Dakar. To accelerate and simplify the coordination of such project, ASECNA proposed to defray the cost of providing and installing the VSAT stations, maintenance and related costs particularly the space segment.
- Installation started on July 1, 2015 with commissioning tentatively in August 2015.

**Radar Sharing with E/CAR:**

- The installations of the IRMA computers have been completed for St. Vincent (January 27, 2015), Antigua (March 19, 2015), Grenada (April 17, 2015), Montserrat (May 18, 2015), Dominica (June 12, 2015), Barbados (June 18, 2015), St. Kitts (June 25, 2015) and Nevis (June 25, 2015). Anguilla will be scheduled after the routers are replaced.

3. **Suggested Action**

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**

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.

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**

See the attached project file.

**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**

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

**6. Rapporteur**

Ms. Veronica Ramdath (Trinidad and Tobago)

**CNS Committee Membership** Rapporteur: Veronica Ramdath, Trinidad and Tobago  
 Antigua and Barbuda, Barbados, France, Trinidad and Tobago, United Kingdom, United States and ECCAA.

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<b>TASK NUMBER</b>	<b>TASK DESCRIPTION</b>	<b>PRIORITY</b>	<b>STATUS</b>
<b>CNS/1</b>	<b>General Matters</b>		
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	Suggest measures for the protection of the radio frequency spectrum management.	A	Permanent
<b>CNS/2</b>	<b>Communication</b>		
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 neighbouring areas.	B	
CNS/2/2	Coordinate and implement the transition for inter network ATN service (AMHS).	A	
CNS/2/3	In keeping with the AIDC Implementation plan, coordinate the implementation of the ground-ground applications such as AIDC.	B	
CNS/2/4	Promote the planning of successful AIDC implementation the CAR States/Territories update the status of their FPL System and the stop the use of converters.	B	
CNS/2/4	HF – 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	
CNS/2/5	VHF - Monitor the performance of the VHF service and implement improvements as necessary.	A	
<b>CNS/3</b>	<b>Navigation</b>		
CNS/3/1	Study and analyze the regional implementation alternatives of a SBAS/GBAS system, taking into account the evolution of GNSS and GNSS augmentation systems.	C	
CNS/3/2	Provide assistance to States in the implementation for the deactivation of NDB stations.	B	
CNS/3/3	Review and update the NDB deactivation plan accordingly based on individual States' situations.	B	
CNS/3/4	Evaluate the required nav. infrastructure to satisfy PBN based nav. requirements, identifying improvements and deficiencies.	B	
<b>CNS/4</b>	<b>Surveillance</b>		

CNS/4/1	Promote Surveillance Data Sharing implementation in the Region.	A	
CNS/4/2	Evaluation of surveillance infrastructure to satisfy navigation requirements for PBN	B	
CNS/4/3	Promote the surveillance coverage in the continental airspace of the Piarco FIR (ADS-B, RADAR, MLAT)	A	
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	
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 document be adopted as a guide for the acquisition and implementation of ADS-B service.	A	
CNS/4/6	Monitor and evaluate the progress and results of ADS-C/CPDLC.	A	
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	
<b>CNS/5</b>	<b>ATM Automation</b>		
CNS/5/1	Develop functional levels for the implementation of ATM automation.	C	

### Priority

- 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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**WORK PROGRAMME**

ID	TASK NAME	DELIVERABLE	RESPONSIBLE	COMMENTS	STATUS	
<b>COMMUNICATION</b>						
1	Improve HF/AMS coverage and mitigate deficiencies	Identify deficiencies and develop corresponding action plan.	Trinidad and Tobago	1. Evaluation of the existing HF AMS coverage in the E/CAR Sub-region in accordance with operational requirements and considering users' reports: for ex. LHD reports 2. Identification of any deficiency or improvement and involved parties. 3. Development of action plan to implement improvement/solution	In May 2011 Trinidad and Tobago formalized an agreement with ARINC for the provision of HF service in the Piarco Oceanic airspace. At the ANI/WG/2 meeting (1-4 June 2015) IATA informed no new reports on HF issues.	Completed
2	Improve VHF/AMS coverage and mitigate deficiencies	Identify deficiencies and develop corresponding action plan.	States/ Territories coordinated by WG		<b>Trinidad and Tobago:</b> To mitigate against congestion on the existing ACC and Approach frequencies, Trinidad and Tobago implemented seven air/ground (VHF mobile) frequencies.	Completed
					<b>Antigua-</b> (TWR) 118.2, (APP) 119.1, 121.5 (EMG), (Ground) 121.9  There have been IATA reports on the TWR frequency regarding coverage on 118.2. An action plan to resolve deficiencies was forwarded with a target date to implement Q1 2016.	Valid
					<b>Barbados-</b> new VHF equipment installed. Area covered. No IATA reports. Frequencies: (TWR) 118.7, 121.9, 121.5, (Ground) 121.8, (App) 129.35, 128.85, 120.7, 121.2, 121.5, (ATIS) 132.725	Completed
					<b>Dominica/ Douglas Charles TWR</b> The high site was compromised resulting in its unavailability. The radios were reconfigured to operate from the TWR. New equipment was ordered for the high	Valid

ID	TASK NAME	DELIVERABLE	RESPONSIBLE	COMMENTS	STATUS	
					site. Restoration of the high site is expected to be completed in Q3 2016.	
					<b>Dominica/ Canefield</b> TWR 118.7, 121.9 and 121.5 –No issues	Completed
					<b>San Juan</b> –No VHF issues	Completed
					<b>St Vincent</b> –No issues	Completed
					<b>Grenada-</b> (APP) 119.4-coverage issues in the north east. An action plan to resolve deficiencies was forwarded with a target date to implement Q1 2016.	Valid
					<b>SLU/GC-</b> (TWR) - radio stations reported to telecoms agency NTRC, interference from Martinique on 121.9. A new frequency was acquired with new equipment. Completion date Q4 2015.	Valid
					<b>SLU-H</b> (APP) 119.8 (the request to implement a discrete radio link was made to SLASPA regarding noise from cell sites and radio stations- (TWR) 118.3, (Ground) 121.6, (EMG) 121.5. Implementation to be completed in Q4 2015)	Valid
					<b>Martinique</b> – TWR- OK APP- OK	Completed
					<b>Guadeloupe</b> -APP OK TWR – OK	Completed
					<b>Montserrat</b> – Issue at high site -a radio link was lost between high site and airport therefore reduced coverage in the south. Restoration of high site completed. Coverage checks are underway. All work to be completed in Q4 2015.	Valid

ID	TASK NAME	DELIVERABLE	RESPONSIBLE	COMMENTS	STATUS	
					<b>St Kitts</b> – Coverage problem in north with aircraft coming from St. Maarten – radio link was replaced in June 2015	Completed
					<b>Nevis-</b> Equipment needs to be replaced/no longer supported by manufacturer. Contract to be awarded in August 2015. Implementation to be completed by Q2 2016.	Valid
3	All States with International Aerodromes to implement ATIS (automated ATIS)	ATIS Implementation plan	States/ Territories coordinated by WG		<b>Trinidad and Tobago</b> automated voice	Completed
					<b>Antigua-</b> automated voice	Completed
					<b>Barbados</b> –automated voice	Completed
					<b>Dominica</b> -No ATIS	Valid
					<b>Grenada</b> -No ATIS	Valid
					<b>Guadeloupe</b> -recorded by ATC. No plans to change this.	Completed
					<b>Nevis</b> -No ATIS	Valid
					<b>Martinique-</b> recorded by ATC. No plans to change this.	Completed
					<b>Montserrat</b> -No ATIS	Valid
					<b>St. Kitts</b> -No ATIS	Valid
					<b>St. Lucia/George Charles and Hewanorra-</b> Automated ATIS procured. Implementation to be completed by Q1 2016	Valid
					<b>St. Vincent-</b> Automated ATIS planned for Argyle	Valid
					<b>San Juan-</b> Automated voice	Completed
4	Implementation of AIDC as detailed in the plan approved by the ANI/WG (WP/08 ANI/WG/2)	Technical recommendations for AIDC implementation over the AMHS	States/ Territories coordinated by WG  Trinidad and Tobago and the Piarco FIR and Guadeloupe and Martinique when both ATM systems are replaced in 2018.	For the development of this task, operational AIDC requirements need to be defined including the corresponding ATS units involved.	Telecommunication requirements will be reviewed based on PIARCO and FWI AIDC implementation.	Valid
<b>NAVIGATION</b>						

ID	TASK NAME	DELIVERABLE	RESPONSIBLE	COMMENTS	STATUS	
5	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.	States/ Territories coordinated by WG	For the development of this task, operational PBN navigation specifications need to be defined.		Valid
6	Navais Rationalization-maintaining certain NDB or VOR facilities used in relation to new satellite navigation	Review and update the deactivation plan accordingly based on individual States' situations.				Valid
7	Provide assistance to States in the implementation of the deactivation of NDB stations.					Valid
<b>SURVEILLANCE</b>						
8	Surveillance Data Sharing implementation	Agreements and implementation of Surveillance data sharing	Barbados, French WI, Trinidad & Tobago and Sint Maarten	The Radar Data Sharing Task Force shall provide their report on this subject.	Trinidad and Tobago is host for the surveillance data sharing server and presently receives the radar system tracks from Martinique and Guadeloupe. The project encompasses receiving surveillance inputs and presenting the merged image to the E/CAR States via the E/CAR AFS Network.	Valid
9	Evaluation of surveillance infrastructure and performance to satisfy navigation requirements for PBN	Analysis of surveillance infrastructure	States/ Territories coordinated by WG	For the development of this task, operational PBN specifications need to be defined.  The ATM, shall define these requirements and the priority of this implementation.		Valid
10	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	Trinidad and Tobago	Completed
					OECS	Completed

ID	TASK NAME	DELIVERABLE	RESPONSIBLE	COMMENTS	STATUS	
				aircraft addresses in accordance to Annex 10, Vol III Chap 9 and GREPECAS guidance ( <a href="http://www.mexico.icao.int/CNS.html">http://www.mexico.icao.int/CNS.html</a> ).	Martinique and Guadeloupe	Completed
					Barbados –To advise	Valid
11	ADS-B and/or MLAT	Trials on ADS-B, MLAT and ADS-C	States/ Territories coordinated by WG	E/CAR States shall inform their national plans for conducting trials on ADS-B, ADS-C, MLAT and the WG shall consolidate a plan for these trials to the benefit of its results.	<b>Barbados</b> A contract was awarded to Selex ES for five (5) MLAT sensors for the airport and seven (7) Wide Area Multilateration (WMLAT) sensors to improve the NW sector of Barbados Terminal Control Area (TMA)). MLAT data may be eventually shared with the E/CAR surveillance data pool. The project has a target date of Q4 2015.	Valid
					<b>ECCAA</b> advised that they are conducting feasibility studies in the OECS States toward the implementation of MLAT.	Valid
					<b>France</b> MLAT Simulations carried out in Martinique and French Guyana led to the conclusion MLAT was not an efficient solution to cover all the airspace for Approach.  ADS-B – French Guyana, 2 receivers for trials in 2015, 5 receivers for control in 2016/2017. FWI: 1 receiver in Martinique in 2016 for trials and work on Conops.	Valid
					<b>Trinidad and Tobago</b> ADS-B trials during specified periods in the Piarco terminal airspace (targets of opportunity).	Valid
12	ADS-C/ CPDLC evaluation and trial Plans	Plan on ADS-C and CPDLC	States/ Territories coordinated by WG		<b>Trinidad and Tobago</b> Trials are underway for FANS1/A (ADS-C and CPDLC) services from ARINC.	Valid
					<b>San Juan</b> – ADS-C	Completed

ID	TASK NAME	DELIVERABLE	RESPONSIBLE	COMMENTS	STATUS	
13	ICAO POSITION FOR THE INTERNATIONAL TELECOMMUNICATION UNION (ITU) WORLD RADIOCOMMUNICATION CONFERENCE (WRC-2015)	Actions to support the ANI/WG/2/2 Conclusion	States/ Territories coordinated by WG	ICAO Twelfth Air Navigation Conference Assembly Recommendation 1/12 (Development of the aeronautical frequency spectrum resource) and Assembly Resolution A38-6 (Support of the ICAO policy on radio frequency spectrum matters)	<b>France</b> is presently updating regulations on frequency protection in keeping with ITU regulations.	Valid
					<b>Trinidad and Tobago:</b> In close communication with Spectrum Agency (TATT) for representation of the ICAO Position.	Valid
					<b>ECCAA</b> ECCAA in communication with ECTEL who communicates with NTRC regarding the ICAO position.	Valid
					<b>Barbados</b> In communication with the Barbados Telecoms Unit regarding the ICAO Position.	Valid

— END —