



ICAO

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

**Tenth Eastern Caribbean Network Technical Group
(E/CAR/NTG/10)
and Eighth Eastern Caribbean Radar Data Sharing
Ad hoc Group (E/CAR/RD/8)
Meetings**

Final Report

Online, 06 - 07 September 2021

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HISTORICAL

ii.1 Place and Date of the Meeting

The Tenth Eastern Caribbean Network Technical Group (E/CAR/NTG/10) and Eight Eastern Caribbean Radar Data Sharing Ad hoc Group (E/CAR/RD/8) meetings were held online from 06 to 07 September 2021.

ii.2 Opening Ceremony

Mr. Cintron, ICAO NACC Regional Director, provided the opening remarks. He invited all participants to work together and ensure to make things happen. As leaders of these important Groups of the Eastern Caribbean States, it is important to take into account that aviation is about not just bringing connectivity, but also bringing about social economic changes to improve the lives of the citizens, economy and have social benefits for all.

Mr. Cintron indicated that technical meetings provide the resources that our region need to improve aviation in a regional way and invited all participants to achieve good results to ensure their States' benefits.

Mrs. Veronica Ramdath, CNS Officer of Trinidad and Tobago Civil Aviation, and Rapporteur of the ECAR/NTG and E/CAR/RD Ad hoc Group welcomed all the participants and emphasized that despite being a subregion that has suffered a lot, not only from hurricanes, volcanic eruptions and the COVID-19 pandemic, it is strong and resilient . She invited everyone to have an active and productive meeting.

ii.3 Officers of the Meeting

The E/CAR/NTG/10 and E/CAR/RD/8 meetings were chaired as plenary by Ms. Veronica Ramdath as the E/CAR/NTG Rapporteur and Mrs. Mayda Ávila, Regional Officer, Communications, Navigation and Surveillance of the NACC Regional Office of ICAO, acted as Secretary of the Meeting.

ii.4 Working Languages

The working language of the meetings was English and the working papers, information papers, presentations and report of the meetings were available to participants in said language.

ii.5 Schedule and Working Arrangements

It was agreed that the working hours for the sessions of the meetings would be from 09:00 to 12:00 hours daily with adequate breaks.

ii.6 Agenda

Agenda Item 1: Approval of the Agenda, Working Method and Schedule of the Meetings

Agenda Item 2: Review of Valid Conclusions from E/CAR/NTG/9 and E/CAR/RD/7 Meetings

2.1 Review of Valid Conclusions from E/CAR/NTG/9 & E/CAR/RD7 Meetings

Agenda Item 3: Operation and Performance of the E/CAR Aeronautical Fixed Services (AFS) Network

3.1 Network Performance and general aspects

3.2 E/CAR Network interconnections

3.3 Improvements to the ATS Voice Link (MEVA) status and interconnection

3.4 South American Digital Network (REDDIG) status and PIARCO interconnection

Agenda Item 4: Surveillance Sharing Activities

4.1 Surveillance/Automatic Dependent Surveillance – Broadcast (ADS B)/Multilateration (MLAT) Developments/Updates

4.2 E/CAR Surveillance data coverage status (Radar Data Display and E/CAR needs

Agenda Item 5: Update of E/CAR/NTG and E/CAR/RD Terms of Reference and Work Programme

Agenda Item 6: Other Business

6.1 Unmanned aircraft systems (UAS) and Remote piloted aircraft system (RPAS) operations

6.2 Cyber security

ii.7 Attendance

The Meeting was attended by 10 States/Territories and 1 International Organizations with total participation of 30 delegates as indicated in the list of participants.

ii.8 Draft Conclusions and Decisions

The Meeting recorded its activities as Draft Conclusions and Decisions as follows:

DRAFT

CONCLUSIONS: Activities requiring endorsement by the Directors of Civil Aviation of the Eastern Caribbean (E/CAR/DCA).

DECISIONS: Internal activities of the Eastern Caribbean Network Technical Group (E/CAR/NTG) and the E/CAR Surveillance Sharing Ad hoc Group (E/CAR/RD).

Number	Draft Conclusions	Page
ECARNTG10– ECARRD8/01	REVIEW OF THE CAR/SAM REGIONAL AIR NAVIGATION PLAN (ANP) TO ENSURE UPDATED INFORMATION ON INFRASTRUCTURE	2-1
ECARNTG10– ECARRD8/02	EVALUATION OF NEEDS FOR BACKUP COMMUNICATION FOR EASTERN CARIBBEAN STATES	3-4
ECARNTG10– ECARRD8/03	REGIONAL AVIATION CAPACITY AND INFRASTRUCTURE INTEGRATION	4-4
ECARNTG10– ECARRD8/04	SUPPORT TO DOMINICA, SAINT KITTS AND NEVIS AND SAINT VINCENT AND THE GRENADINES IN THEIR SURVEILLANCE INFRASTRUCTURE	4-4
ECARNTG10– ECARRD8/05	REVISION OF E/CAR ATFM LETTER OF AGREEMENT FOR RADAR DATA SHARING	4-5
ECARNTG10– ECARRD8/06	ANTIGUA PLANNING FOR RADAR DATA	4-5
ECARNTG10– ECARRD8/07	SURVEILLANCE DATA REQUIREMENTS FOR ANGUILLA AND MONTSERRAT	4-6
ECARNTG10– ECARRD8/08	INCREASE THE RELIABILITY OF THE E/CAR THE NETWORK AND ITS NODES	6-4
ECARNTG10– ECARRD8/07	CYBER SECURITY VULNERABILITY ASSESSMENT	6-4

An executive summary of these conclusions/decisions is presented in **Appendix A** to this report.

ii.9 List of Working and Information Papers and Presentations

Refer to the Meeting web page:

<https://www.icao.int/NACC/Pages/meetings-2021-ecartng10.aspx>

WORKING PAPERS

Number	Agenda Item	Title	Date	Prepared and Presented by
WP/01	1	Approval of Meeting Agenda, Work Method and Schedule		Rapporteur
WP/02	2.1	Review of Valid Conclusions from E/CAR/NTG/9 & E/CAR/RD7 Meetings		Rapporteur
WP/06	2.1	Review of Valid Conclusions from E/CAR/NTG/9 & E/CAR/RD7 Meetings		Secretariat

WORKING PAPERS

Number	Agenda Item	Title	Date	Prepared and Presented by
WP/03	3.1	Operation and Performance of the E/CAR Aeronautical Fixed Services (AFS) Network		France
WP/04	3.1	Operation and Performance of the E/CAR Aeronautical Fixed Services (AFS) Network		ECCAA
WP/03	3.2	Network interconnections		France
WP/07	3.3	Improvements to the ATS Voice Link (MEVA) status and interconnection		MEVA/TMG Coordinator
WP/05	3.4	South American Digital Network (REDDIG) status and PIARCO interconnection		United States
WP/08	4.1	Surveillance/Automatic Dependent Surveillance – Broadcast (ADS B)/Multilateration (MLAT) Developments/Updates		Trinidad and Tobago
WP/10	4.1	Surveillance/Automatic Dependent Surveillance – Broadcast (ADS B)/Multilateration (MLAT) Developments/Updates		France
WP/09	4.2	E/CAR Surveillance data coverage status (Radar Data Display and E/CAR needs)		Rapporteur
WP/11	5	Update of E/CAR/NTG and E/CAR/RD Terms of Reference and Work Programme		Rapporteur
WP/12	6.1	Unmanned aircraft systems (UAS) and Remote piloted aircraft system (RPAS) operations		Secretariat
WP/13	6.2	Cyber security		Secretariat

INFORMATION PAPERS

Number	Agenda Item	Title	Date	Prepared and Presented by
IP/01	--	List of Working, Information Papers and Presentations		Secretariat

PRESENTATIONS

Number	Agenda Item	Title	Presented by
1	3.1	Network Performance analysis and general aspects	Trinidad and Tobago/TSTT

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3. Shenneth Phillips

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5. hadley bourne
6. Richard Odle

ECCAA

7. Trevor Davis

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8. Michel Humbert

GRENADA

9. Desmond Baptiste

MONTSERRAT

10. Kenrick Hackett

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11. Kurt Louard
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Agenda Item 1 Approval of the Agenda, Working Method and Schedule of the Meetings

1.1 Under WP/01, the E/CAR/NTG Rapporteur invited the Meeting to approve the provisional agenda and schedule and referred to IP/01 with the list of associated documentation. The Meeting approved the agenda as presented in the historical section of this report and did not make changes to the schedule.

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Agenda Item 2 Review of Valid Conclusions from E/CAR/NTG/9 and E/CAR/RD/7 Meetings

2.1 Follow-up on previous E/CAR/NTG and E/CAR/RD's Conclusions and Decisions

2.1.1 Under WP/02, the conclusions and decisions formulated by the E/CAR/NTG/9 and E/CAR/RD/7 Meetings were examined.

2.1.2 The status and follow-up comments for each conclusion/decision are based on information and discussion at the meeting. The status for each conclusion/decision is designated as valid, completed or superseded. The follow-up to the E/CAR/NTG and E/CAR/RD valid conclusions/decisions is presented in **Appendix B** to the report.

2.1.3 After reviewing the valid Decisions and Conclusions of previous E/CAR meetings, the Meeting agreed to make the following Conclusion:

CONCLUSION	
E/CAR/NTG/10 – E/CAR/RD/8 - 01 REVIEW OF THE CAR/SAM REGIONAL AIR NAVIGATION PLAN (ANP) TO ENSURE UPDATED INFORMATION ON INFRASTRUCTURE	
What: That, in order to review and update the electronic Air Navigation Plan Volumes I and II, Eastern Caribbean States/Territories, in coordination with the ICAO NACC Regional Office, review the e-ANP CAR/SAM Volume I and Volume II to ensure updated information on CNS infrastructure and services indicated in these documents by 15 March 2022.	Expected impact: <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Operational/Technical
Why: In order to review and update the electronic Air Navigation Plan Volumes I and II, Eastern Caribbean States/ Territories, in coordination with the ICAO NACC Regional Office	
When: 15 March 2022	Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed
Who: <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input type="checkbox"/> Other:	Eastern Caribbean States and Territories

2.2 Follow-up on the decisions and conclusions taken in the last Regional Meetings of Civil Aviation Directors that affect activities of Air Navigation Services on Eastern Caribbean States

2.2.1 Under WP/06, a summary on the conclusions and recommendations decisions and conclusions taken in the last Regional Meetings of Civil Aviation Directors that affect activities of Air Navigation Services on Eastern Caribbean States was presented. The status and follow-up comments of each conclusion/decision from the Ninth North American, Central American and Caribbean Directors of

Civil Aviation Meetings is the result of a review carried out by the Secretariat, based on the information available at the time of preparing this working paper. These conclusions are:

Number	Conclusion/Decision	Responsible for action	Deadline
CONCLUSION NACC/DCA/09/09	IMPLEMENTATION OF ICAO GLOBAL PLANS	STATES	
<p>That, in order to support the alignment of the States and Regional Plans with the new global Plans (GASP and GANP), ensuring the annual budget and resources needed for this implementation, ICAO inform States, once the Global new plans are approved, the list of items critical to be considered from the Plans for States to plan the necessary budgets and National Plan's adjustments</p>			
CONCLUSION NACC/DCA/09/11	SUPPORT TO SSP IMPLEMENTATION	STATES	AUGUST 2019
<p>What: That, in order to facilitate and ensure a systematic implementation of the SSP in the NAM and CAR Regions, the NACC States: a) provide the sufficient resources and facilitate the coordination among stakeholders; and b) empower the development and implementation of a SSP culture.</p>			
CONCLUSION NACC/DCA/9/18	E/CAR/CATG/WG AND E/CAR/NTG PERFORMANCE REVIEW	E/CAR CATWG and E/CAR/NTG	NEXT DCA MEETING
<p>That, in order to optimize the resources and efforts in the implementation and to ensure that activities are result-oriented and of benefit of States, a) the E/CAR/CATG based on its current work programme and progress achieved, review and present to the NACC/DCA/10 meeting a proposal to optimize the resources and elevate the efficiency of the group, and b) the E/CAR/NTG analyse options to follow-up on its activities such as maximizing coordination by electronic means and/or consider conducting face-to-face meetings every two year.</p> <p>Why: To optimize the resources and efforts in the implementation and to ensure that activities are result oriented and of benefit to States.</p>			

2.2.2 According with the reply to Conclusion NACC/DCA/9/18, this meeting indicated that the conclusion would be analysed through the Eastern Caribbean Civil Aviation Technical Group (CATG), where all the working groups are present.

Agenda Item 3 Operation and Performance of the E/CAR Aeronautical Fixed Services (AFS) Network

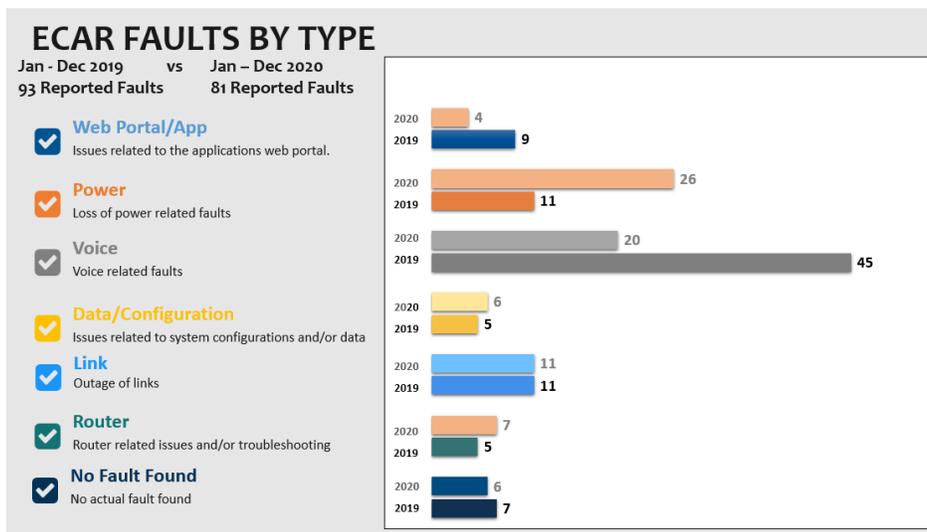
3.1 Network Performance and General Aspects

3.1.1 Under WP/03, France noted that the E/CAR/AFS network was globally compliant with operational requirements. The State appreciates the access to the E/CAR network by different kinds of links: copper cable and optical fibre. They provide better redundancy. This new architecture significantly reduces the loss of connections to the E/CAR network. Guadeloupe and Martinique have two routers (one main, one spare) each fully equipped. Only the main is connected to the network and can be monitored by Telecommunications Services of Trinidad and Tobago (TSTT). Due to COVID-19 restrictions, the periodic maintenance on the E/CAR router (check system and align configuration) were not carried out this year.

3.1.2 In July 2021, TTCAA replaced the AISS software from Spatia to CRONOS. The notice was too short to allow the change to be properly taken into account by the site (information, documentation, technical requirements, etc...). Nevertheless, the few faults observed (i.e.: emergency menu was absent) when commissioning CRONOS were quickly corrected by TTCAA.

3.1.3 Under WP/04 the ECCAA provided an overview performance evaluation of the E/CAR AFS network for the past 12 months as it pertains to the OECS states including the British Overseas Territories of Anguilla and Montserrat. The ECCAA States reported that the network was reliable and outages on both the speech and data circuits were at a minimum, both in duration and frequency of occurrence. The network met its objectives in providing stable and reliable direct speech and data communications for the Air Traffic Services (ATS) units in the OECS States. The node equipment at all airports is serviceable and with the exception of two States is fully redundant. The CRONOS terminal at George F. L. Charles airport was damaged on 21 August 2021 during a lightning storm. All other CADAS and CRONOS terminals are serviceable.

3.1.4 The service provider, TSTT, presented the E/CAR AFS Network features, managed service capabilities, network performance analysis and upgrade and recommendations. The analysis of faults for the period Jan - Dec 2019 versus Jan – Dec 2020 was presented with the following results:



3.1.5 The following statistics on the number of faults and availability by Territory were presented:

STATE	Number of Faults Reported			Availability		
	2020	2019	2018	2020	2019	2018
ANGUILLA	1	1	0	99.56%	99.14%	96.00%
ANTIGUA	4	3	5	99.77%	99.96%	98.86%
BARBADOS	2	2	0	99.85%	99.96%	99.98%
DOMINICA - CANEFIELD	0	0	0	0.00%	0.00%	0.00%
DOMINICA-DOUGLAS CHARLES	10	3	0	94.52%	97.05%	69.80%
GRENADA	1	3	1	99.82%	99.49%	99.96%
MARTINIQUE	4	9	3	99.85%	99.97%	99.84%
MONTserrat	8	23	0	97.78%	95.23%	96.81%
NEVIS	4	1	0	99.43%	99.88%	99.12%
PIARCO	6	18	4	99.94%	99.97%	99.96%
SAN JUAN	19	17	3	99.59%	99.73%	93.20%
ST KITTS	3	1	0	99.29%	99.84%	99.16%
ST LUCIA - GF CHARLES	0	0	0	99.91%	99.73%	99.85%
ST LUCIA - HEWANORRA	8	4	0	95.84%	99.96%	99.69%
ST VINCENT	1	2	0	99.65%	99.75%	99.94%
TOBAGO	3	2	0	92.67%	98.51%	99.98%
GUADELOUPE	7	3	5	99.85%	99.95%	99.45%

3.1.6 The present E/CAR/AFS Network is over ten years old and needs to be upgraded to accommodate newer technologies, evolving user requirements and security protocols and to manage manufacturer's end of production and end of support of critical equipment elements. At the E/CAR/NTG/08 meeting in September 2018, TSTT presented its proposal for the upgrade of the network taking into consideration the end of sale and end of support on critical network equipment.

3.1.7 The TSTT proposal was accepted by the TTCAA. Contract was awarded in accordance with the tender rules and approval process was completed in 2019. The project initially anticipated to be completed in 2020 was delayed due to the COVID-19 pandemic. The project is now expected to be completed in 2022 pending developments in the COVID-19 situation. The new network will incorporate in its design the suggestions made by States at E/CAR/NTG meetings.

3.2 E/CAR Network interconnections

3.2.1 France noted that since the change out of their Aeronautical Fixed Telecommunication Network (AFTN) switch (March 2020) in Guadeloupe, it was noticed that many messages were being rejected by the system. The new one is less permissive than the old one. Despite testing between Guadeloupe and Trinidad and Tobago, the problem had not yet been resolved. In October 2020, a decision was taken to route the traffic via SNA-AG's private Martinique link. In this configuration, the Guadeloupe AFTN messages go through E/CAR/AFS node of Martinique. Guadeloupe has decided to wait for the switch to Aeronautical message handling system (AMHS) to return to the nominal link.

3.2.2 The Rapporteur requested information about the new system and coordinated with ICAO when the AMHS be ready with the aim of addressing AMHS training from EUROCONTROL and ensure update of the database in accordance with the regional procedure, every month.

3.3 Improvements to the ATS Voice Link (MEVA) status and interconnection

3.3.1 Under WP/07, the MEVA TMG Network Coordinator provided updated information on the development of the new regional telecommunications network, the Caribbean Air Navigation Services Network (CANSNET) that will replace the current MEVA III network. At the last meeting of the North American, Central American and Caribbean Directors of Civil Aviation Meeting (NACC/DCA/09) held in Port of Spain, Trinidad and Tobago in June 2019, it was requested through Decision NACC/DCA/09/16 that the MEVA/TMG Ad hoc Group facilitate the execution of the Project so that the new telecommunications network would be operative at the end of the current contract of the MEVA III network in March 2022. Unfortunately, due to the COVID19 pandemic and its effects worldwide, the Project was modified to accommodate existing conditions in the Region.

3.3.2 A Request for Proposal (RFI) that pursued technical information for new technologies and solutions for terrestrial and/or satellite-based telecommunication voice and data network services between ATC Centres throughout the geographical region of the Central Caribbean (C/CAR) was published by ICAO Technical Cooperation Bureau (TCB) on 01 June 2020. The RFI process did not identify any new technology that would require speeding up the CANSNET RFP process. The Project is anticipated to be implemented within the first quarter of 2024. The new Network must be able of establishing gateway connectivity to neighbouring networks of the region. Area network connectivity may consist of fibre, Very Small Aperture Terminal (VSAT) and copper terrestrial networks. The physical interconnection between networks shall be accomplished at an authorized designated demarcation or at the CAA communications facility. The new Network will also be capable of supporting additional CAR/SAM users, who may not be initial signatory members of the ICAO Agreement for the new network, whenever required by ICAO.

3.4 E/CAR Network - MEVA Network interconnection, South American Digital Network (REDDIG) status and PIARCO interconnection

3.4.1 Under WP/05 United States presented information on network connectivity between the Federal Aviation Administration (FAA), South America Red Digital (REDDIG) Multi-protocol label Switching (MPLS) network and Eastern Caribbean Network. Presently, the FAA maintains a connection between the Atlanta Network Enterprise Management Centre (NEMC) and the E/CAR network via a point of presence located in San Juan, Puerto Rico. In 2020, a connection to the REDDIG network from the FAA's National Enterprise Management Center (NEMC) located in Atlanta and Salt Lake City was implemented. The newly proposed connection will create a secondary path between Atlanta and Piarco using the REDDIG network and will represent a significant improvement in network redundancy and reliability. This additional path should provide enhanced availability of AMHS service between Atlanta and Piarco that have been susceptible to undersea cable breaks and other interruptions.

3.4.2 The Meeting highlighted the importance of having backup circuits to the existing communications. The Secretary recommended that the Eastern Caribbean subregion assess the needs for backup circuits to its existing communications in order to have better resilience and capacity to respond

to failures. That these backup communications channel needs be communicated to the MEVA/TMG for consideration in the technical specifications for the new phase of the MEVA network.

3.4.3 Due to the afore-mentioned, the Meeting agreed the following Conclusion:

CONCLUSION	
E/CAR/NTG/10-E/CAR/RD/8-02 EVALUATION OF NEEDS FOR BACKUP COMMUNICATION FOR EASTERN CARIBBEAN STATES	
<p>What:</p> <p>That, taking into account that the process of developing the technical specifications of the MEVA regional communications network is under development and that within the document all the technical requirements and communications needs of the Caribbean States will be specified, and since the communications network of the Eastern Caribbean States has interconnections with the MEVA network, E/CAR States:</p> <p>a) evaluate its back-up communication needs by December 2021.</p> <p>b) share the technical and operational information with the MEVA/TMG and coordinate their needs to be integrate in the new MEVA phase by December 2021.</p>	<p>Expected impact:</p> <p><input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Operational/Technical</p>
<p>Why:</p> <p>Communication support operational facilities. Failures of communication represent a safety issue for air traffic management, in that sense have backup circuits will be ready in case of failure of the main circuits' o for contingency activities.</p>	
<p>When: By December 2021.</p>	<p>Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed</p>
<p>Who: <input checked="" type="checkbox"/> States <input type="checkbox"/> ICAO <input type="checkbox"/> Other:</p>	<p>Eastern Caribbean States</p>

Agenda Item 4 Surveillance Sharing Activities

**4.1 Surveillance/Automatic Dependent Surveillance – Broadcast
(ADS-B) / Multilateration (MLAT) Developments/Updates**

4.1.1 Under WP/08 Trinidad and Tobago presented information on developments in the areas of Automatic Dependent Surveillance – Broadcast (ADS-B)/Multilateration (MLAT) in the Piarco FIR. In August 2018 the TTCAA engaged ICAO TCB for the ADS-B/WAM project for the procurement and implementation of ADS-B within the continental airspace and WAM in the South Sector of the Piarco FIR. After open tendering process and evaluation, the successful vendor, meeting the technical requirements, was recommended by ICAO.

4.1.2 Due to the Covid-19 pandemic, the contract, although negotiated, has been on hold. The project initially envisaged to be completed in 2019 is now rescheduled to start in the first quarter of 2022 and be completed in phases by the first quarter 2023. This schedule is tentative pending any developments in Covid-19 that may adversely affect travel related matters.

4.1.3 WP/10, France presented an update on the modernization of the FWI ATM system and its consequences. France plans the modernization of the overseas ATM systems. These heterogeneous systems (IRMA and SIGMA) will be replaced by a single system. The new system will be realized by the Canadian company ADACEL. Guadeloupe will be in operation in 2022 and Martinique in 2023. New features will include:

- Electronic flight strips.
- Automatic coordination: between Martinique and Guadeloupe and opportunity to do AIDC with other ANSP.

4.1.4 A second MRT DACOTA installed in Guadeloupe is expected to be in operation in 2022.

4.1.5 Barbados informed that it has completed the ADS-B and MLAT ground system implementation, and surveillance data has been integrated to the air traffic system. It is necessary for technical staff to receive training according to the new technologies with the aim of providing maintenance, configuration and monitoring of the performance of the ADS-B and MLAT data. Barbados currently has ADS B/MLAT capability through recent upgrades via installations of surveillance antennae and the use of the Leonardo Selex MLAT-ATM system. Ongoing assessment and development of the following areas have been done as follows:

- a) Operational procedures –
 - Controller and pilot actions and phraseology
 - Separation criteria and requirements
 - Contingency and emergency

- b) Determining minimum airspace requirements for aircraft
- c) Planning for Controller familiarization and training.

4.1.5 Barbados having completed the ground system implementation of the ADS-B and MLAT station and its interaction and validation in the air traffic operational environment, will have the MLAT ground stations interrogate aircraft transponders and receive/process transponder replies to determine aircraft position, as well as ADS-squitter transmissions. Barbados continues to undertake the necessary tasks in order to progress in the implementation of ADS B/MLAT usage and operation.

4.2 E/CAR Surveillance data coverage status (Radar Data Display and E/CAR needs)

4.2.1 The RD group identified that some States' requirements for the next three (3) years is to have situational awareness with the implementation of full radar service five (5) to ten (10) years in the future. The following updates were provided by States:

Antigua and Barbuda

4.2.1.1 As reported at the last meeting, the Ministry of Public Utilities, Civil Aviation, Transportation, and Energy made a request in August of 2019 to the ECCAA, to review a proposal for GECL Espanola S.A, for the provision of an ATM System and Surveillance sensor to be used by V.C. Bird Air Traffic Services (ATS). A team from ECCAA CNS Unit and V.C. Bird Air Traffic Services evaluated the GECL proposal and a report was submitted to the Ministry for consideration.

4.2.1.2 In December 2019, a team comprising the Chief of ATS, the ATS Operations Officer and the Manager of CNS from ECCAA travelled to Spain where they had a closer examination of the system after which it was decided that the system as proposed was suitable for the operations at V.C. Bird. A contract was signed between the Ministry of Public Utilities, Civil Aviation, Transport and Energy and GECL in April 2021.

4.2.1.3 Plans are progressing towards implementation with the following timelines, barring any unforeseen circumstances. The Factory Acceptance is planned for September. Controller and technician training in Spain is planned for the first half of 2022. Installation is anticipated to begin in January 2022.

Saint Lucia

4.2.1.4 Saint Lucia Air and Sea Ports Authority (SLASPA) have embarked on 3 major projects that will result in a significant improvement in the provision of Air Navigation Services. From an infrastructural perspective, under the new Hewanorra International Airport (HIA) Redevelopment project, a long awaited Control Tower and/or with a Technical Block will be constructed. Canadian firm AeroNav has been awarded the contract to provide Control Tower Cab (CT 480 model), console and ATC equipment. The SLASPA in January 2021 signed a contract with ADACEL for the provision of an AURORA ATM System for both the

George FL Charles Airport and the Hewanorra International Airport. The system Suite will include a Surveillance Training Simulator System (STSS) to be housed in the HIA technical Building. The ECCAA-CNS department has been Instrumental in the provision of technical support and guidance on these two projects.

4.2.1.5 Saint Lucia is also a beneficiary to a World Bank project dubbed “Caribbean Regional Air Transport Connectivity Project” (CATCOP) aimed at promoting resiliency of airport infrastructure. Components of this project include the improvement of air traffic safety and efficiency, as well as strengthen resilience for air traffic navigation during primarily bad weather through the modernization of air navigation systems. This includes a) installation of an instrument landing system (ILS) at HIA; b) installation of Automatic Dependent Surveillance - Broadcast (ADS-B), at both airports, including one or more ground stations, a receiver antenna, air traffic control tower monitors, and on-board transmitters for Saint Lucia-based aircraft; and c) relevant technical assistance, including preparation of ILS procedure design and specifications, designing of ADS-B receiver antenna siting, and upgrading of Hewanorra International Airport (UVF) aeronautical charts.

24.2.1.6 The following are some updates on these three major projects:

- Foundation for the new Control Tower has already commenced as the intention is to first complete the Control Tower in the project.
- Technical evaluation exercise of ADACEL’s AURORA ATM System.
- Weekly workshops (15 to date) between ADACEL team and ATS operational staff compiling operational data for design of the ATM system.
- Technical evaluation exercise reference Control Tower Cab, console and ATC equipment and layout.
- SLASPA has Introduced ADACEL to AERONAV, as the two projects are linked and would require close collaboration.
- CATCOP- Project Manager is in place, short listing of Air Navigation and Airport Infrastructure Specialist is currently on going

4.2.1.7 Given the multiplicity of projects the respective completion dates are going to span over the next 12 to 30 months.

Grenada

4.2.1.8 The China Harbour Engineering Company (CHEC) project is in its initial phase of preparatory work with the runway resurfacing scheduled to take place during the first half of 2022. The project has been modified from its initial conceptualisation: no turning bay will be constructed. Some work will be done to the main terminal building with two (2) air bridges to be affixed to positions 4 and 5; a new administration block will be constructed separately from the terminal, close to the tower and a new

roadway will be constructed to divert the public traffic north of the terminal. This will become the main road and a toll system will be instituted to gain direct entry to the airport.

4.2.1.8 The Runway End Safety Area (RESA) at upgrade both 10/28 will be conducted under the World Bank project. Also, under the World Bank project will be the installation of ADS-B, implementation of ILS, ATIS and PAPI projects. Regarding the CNS project, GECI was selected to provide an ATM system and a simulator. Their system will have billing capabilities etc. Only recently, Terms of references have been finalised for the World Bank and GECI projects.

4.2.1.9 In consideration of the updates provided by States, the Meeting formulated the following Conclusions:

<p>CONCLUSION E/CAR/NTG/10 - E/CAR/RD/8/03 REGIONAL AVIATION CAPACITY AND INFRASTRUCTURE INTEGRATION</p>	
<p>What: That, in order to promote the aviation development of the Eastern Caribbean States and to integrate the regional aviation capacity and infrastructure, the E/CAR States and Territories update:</p> <p>a) the CNS capacity of their air aviation system; and b) their air navigation plan in accordance with the new requirements of the Global Air Navigation Plan (GANP) by 15 March 2022.</p>	<p>Expected impact:</p> <p><input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Operational/Technical</p>
<p>Why: In order to promote the aviation development of the Eastern Caribbean States</p>	
<p>When: 15 March 2022</p>	<p>Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed</p>
<p>Who: <input checked="" type="checkbox"/> States <input type="checkbox"/> ICAO <input type="checkbox"/> Other:</p>	<p>Eastern Caribbean States</p>

CONCLUSION E/CAR/NTG/10 - E/CAR/RD/8/04 SUPPORT TO DOMINICA, SAINT KITTS AND NEVIS AND SAINT VINCENT AND THE GRENADINES IN THEIR SURVEILLANCE INFRASTRUCTURE	
What: <p>That, Dominica, Saint Kitts and Nevis, and Saint Vincent and the Grenadines within their procurement processes to define ATM surveillance user and technical requirements to further the procurement and implementation of situational awareness by 31 January 2023.</p>	Expected impact: <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Operational/Technical
Why: In order to promote the aviation development of the Eastern Caribbean States	
When: 31 January 2023	Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed
Who: <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input type="checkbox"/> Other:	Eastern Caribbean States

DRAFT CONCLUSION E/CAR/NTG/10 - E/CAR/RD/8/05 REVISION OF E/CAR ATFM LETTER OF AGREEMENT FOR RADAR DATA SHARING	
What: <p>That, in order to formalize the radar data sharing activities and foster the regional E/CAR ATFM initiative, Barbados review its existing LOAs by 31 January 2022 to include the authorization to Trinidad and Tobago to exchange the Multi Radar Tracker (MRT), including any surveillance type feeds with Eastern Caribbean and Caribbean States under the intent of the E/CAR/RD project with the FAA as part of the ATFM initiative.</p>	Expected impact: <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Operational/Technical
Why: In order to formalize the radar data sharing activities and foster the regional E/CAR ATFM initiative	
When: 31 January 2022	Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed
Who: <input checked="" type="checkbox"/> States <input type="checkbox"/> ICAO <input type="checkbox"/> Other:	Barbados, Trinidad and Tobago

CONCLUSION E/CAR/NTG/10 - E/CAR/RD/8/06 ANTIGUA PLANNING FOR RADAR DATA	
What: That, in order to ensure the appropriate planning and coordination for testing and integrating the radar data from the Antigua Radar into the E/CAR MRT data, that Antigua and Barbuda share the planning details (timelines and actions), technical information (radar data format, circuit speed, etc.) for the new radar in Antigua by 30 June 2022.	Expected impact: <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Operational/Technical
Why: In order to ensure the appropriate planning and coordination for testing and integrating the radar data from the Antigua Radar into the E/CAR MRT data	
When: 30 June 2022	Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed
Who: <input checked="" type="checkbox"/> States <input type="checkbox"/> ICAO <input type="checkbox"/> Other:	Antigua and Barbuda, ECCAA

CONCLUSION E/CAR/NTG/10 - E/CAR/RD/8/07 SURVEILLANCE DATA REQUIREMENTS FOR ANGUILLA AND MONTSERRAT	
What: That, a) ICAO send a reminder letter by 31 December 2021 to the authorities in Anguilla and Montserrat regarding their surveillance requirements in terms of situational awareness and their plans to move forward with this implementation before 2023; and b) ECCAA provide the NTG Rapporteur by 31 December 2021 the contact details of the local persons in Anguilla and Montserrat to engage discussions on the situational awareness.	Expected impact: <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Operational/Technical
Why: In order to promote the aviation development of the Eastern Caribbean States	
When: 31 December 2021	Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed
Who: <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input type="checkbox"/> Other:	ICAO, Anguilla and Montserrat

Agenda Item 5 Update of E/CAR/NTG and E/CAR/RD Terms of Reference and Work Programme

5.1 Under WP/13 the meeting reviewed and updated the ToRs. Pending the fluidity of the present global pandemic situation, the NTG and RD will review the duration of the meetings to match them with the one of the E/CAR/CATG meeting for 2022. Meanwhile the E/CAR/NTG and CNS Committee Rapporteur will continue to hold periodic teleconferences hosted by the E/CAR AFS Network provider, Telecommunications Services of Trinidad and Tobago (TSTT) with the support of the ICAO NACC Regional Office.

5.2 At the E/CAR/NTG/9 and E/CAR/RD/7 meetings the terms of reference were reviewed. The Meeting agreed that, for the activities related to the analysis and monitoring of the status of the current E/CAR AFS Network, the E/CAR/NTG be required to make recommendations on measures to improve the reliability of the E/CAR AFS Network for the immediate/near term. The updated work programme and ToRs aligned to the RPBANIP and ASBU methodology is presented in **Appendix C** to this report.

5.3 The E/CAR/RD is an Ad hoc Group of the E/CAR CNS Committee and as such the CNS Committee shall amend the tasks assigned to the Radar Data Sharing now relating them as Surveillance data activities in line with the Regional Performance-Based Air Navigation Implementation Plan (RPBANIP) and ASBU methodology.

Agenda Item 6 Other Business

6.1 Unmanned aircraft systems (UAS) and Remote piloted aircraft system (RPAS) operations

6.1.1 Under WP/12 the Secretariat presented information about unmanned aircraft, their operation, and the impact on air traffic control operations. Circular 328 AN/190 provides information on UAS unmanned aircraft systems, since civil aviation has so far been based on the notion that a pilot directs the aircraft from inside itself and, very often, with passengers on board. Withdrawing the pilot from the aircraft raises important technical and operational problems.

6.1.2 UAS are increasingly used around the world to support emergency and rescue missions, urban fires, wildfires, floods, earthquakes, operations with UA help firefighters, police, paramedics/doctors and during the COVID-19 pandemic its applications have been seen in many other activities, from socialization, sanitation, shipment of supplies and medicines, etc.

6.1.3 ICAO has developed a series of documentation to support States in the process of developing their regulations, procedures, among others, for the integration of these operations in their airspace. This documentation supports States in the establishment of harmonization in the development of their regulation, establishment of security for the integration of unmanned aircraft operations and, above all, establishes in terms of their documentation how States must take this issue and According to ICAO documentation integrate the requirements and regulations for its operations. ICAO recommends to States the analysis of operations in their airspace, the development of a national regulation that regulates their operations, and adequately trained personnel to carry out surveillance functions.

6.1.4 The following activities were carried-out by the NACC Regional Office:

6.1.4.1 ICAO coordinated and jointly developed with Brazil, Canada, Honduras and United States the first NAM/CAR/SAM regional event to present the documentation and tools developed by ICAO, the experience of the States in the implementation of the UA regulation and the lessons learned by States during an event in 2020.

<https://www.icao.int/NACC/Pages/meetings-2020-uas.aspx>

6.1.4.2 United States through the Federal Aviation Administration (FAA) included the participation of several CAR States and Regional Specialists from the NACC Regional Office in the FAA Symposium on Unmanned Aircraft Systems, which has developed several editions

6.1.4.3 In April 2021, the ICAO DRONE 2021 Enabling Symposium was held. The event featured a wealth of information from States, industry and ICAO.

<https://www.icao.int/meetings/DRONEENABLE4/Pages/default.aspx>

6.1.4.4 Through an agreement with the Autonomous University of Honduras (UNAH), three scholarships were provided to CAR States to obtain the Remotely Piloted Aircraft Diploma.

6.1.4.5 Through the ICAO TV platform (<https://www.icao.tv/>) a series of webinars that cover all the areas in which ICAO has been working to support the States can be found.

6.1.4.6 ICAO, through Global Aviation Training (GAT), has available a series of trainings focused on all areas of operation of remotely piloted aircraft.

6.1.4.7 Finally, ICAO will hold a UAS/RPAS event in the first days of next October; ensure your participation.

6.1.5 ICAO recommended to States to establish the appropriate and necessary regulatory mechanisms to establish the safe operation of UAs and their incorporation into their airspace; establish adequate training profiles for personnel to facilitate monitoring and surveillance activities of operations of this type and establish adequate improvement mechanisms to integrate best practices and adapt procedures to new emerging technologies.

6.2 Cybersecurity

6.2.1 In WP/13 the Secretariat presented information on cyber security that must be taken into account as an integral part of air navigation activities. Technology and cyber-systems have become essential for modern society, we depend even more on technology, which provide greater efficiency to all activities that are carried out day to day. Along with the benefit of cyber technologies, insecurities arise that affect all systems and infrastructures. Cyber-threat and cyber-attack have a transnational component and effect, as global systems are interconnected. Furthermore, the complexity of the action has implications for various actors at the national, regional and international levels. The Aviation Cybersecurity Strategy developed by ICAO indicates that the civil aviation sector is increasingly dependent on the availability of information and communication technology systems, as well as the integrity and confidentiality of data. The threat of potential cyber incidents to civil aviation is constantly evolving, with perpetrators acting maliciously to disrupt operations and steal information for political, financial and other reasons.

6.2.2 ICAO, through Resolution A40-10: Addressing Cybersecurity in Civil Aviation, of Assembly 40, developed in 2019, established the necessary recommendations for the issue of cybersecurity to be established as an integral part of aviation operations. The cybersecurity strategy based on seven important pillars for the implementation of cybersecurity:



6.2.3 The ICAO NACC Regional Office, through the cybersecurity initiative for air traffic services in collaboration with Industry and Organizations, as recommended by ICAO Resolution A40-10, has developed in collaboration with CANSO and AIRBUS the Project for the CAR region that aims to support the States in the establishment of their first *Cybersecurity Policy Manual*. The project has successfully developed the following activities:

- a) Basic cybersecurity workshop: covering general cybersecurity guidelines, ICAO documentation and best practices.
<https://www.icao.int/NACC/Pages/meetings-2020-aci.aspx>
- b) Workshop on the template for Cybersecurity Manual for air navigation, which includes a document developed within this initiative, by ICAO/NACC, CANSO and AIRBUS that provides recommendations so that States can begin to work on their Manual of Policies of Cybersecurity.
<https://www.icao.int/NACC/Pages/meetings-2021-canso02.aspx>
- c) Third stage under development, where within the initiative the States are directly supported in the development of their cybersecurity policy manual according to their aviation system, their ATM/CNS infrastructure and to their operations.

6.2.4 Cyber-attacks have been increasing in recent years, aviation did not think that it could be a target of this type of threats, but the use of cutting-edge technology, regional and global interconnectivity, as well as other interests make our sector vulnerable to this threat.

6.2.5 Due to the aforementioned, the Meeting agreed the following conclusions:

CONCLUSION	
E/CAR/NTG/10 - E/CAR/RD/8/08 INCREASE THE RELIABILITY OF THE E/CAR NETWORK AND ITS NODES	
<p>What:</p> <p>That, due to the increased number of cyberattacks on aeronautical systems like the E/CAR Network, and in order to increase the reliability of the E/CAR network and its nodes, Eastern Caribbean States/ Territories:</p> <p>a) join the activities and action plan led by the ICAO NACC Regional Office on cybersecurity assessment in the E/CAR States; and</p> <p>b) designate a point of contact to coordinate the different State activities for this action Plan by 31 December 2021.</p>	<p>Expected impact:</p> <p><input type="checkbox"/> Political / Global</p> <p><input checked="" type="checkbox"/> Inter-regional</p> <p><input type="checkbox"/> Economic</p> <p><input type="checkbox"/> Environmental</p> <p><input checked="" type="checkbox"/> Operational/Technical</p>
<p>Why:</p> <p>In order to increase the reliability of the E/CAR network and its nodes</p>	
<p>When: 31 December 2021</p>	<p>Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed</p>
<p>Who: <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input type="checkbox"/> Other:</p>	<p>Eastern Caribbean States and Territories</p>

CONCLUSION	
E/CAR/NTG/10 - E/CAR/RD/8/09 CYBER SECURITY VULNERABILITY ASSESSMENT	
<p>What:</p> <p>That, due to the increased number of cyber-attacks on systems, in order to increase the reliability of the nodes and the network, ECCAA, Barbados, France, Trinidad and Tobago and United States conduct a cyber-security vulnerability assessment on the E/CAR AFS Network by the E/CAR/NTG/11 Meeting.</p>	<p>Expected impact:</p> <p><input type="checkbox"/> Political / Global</p> <p><input checked="" type="checkbox"/> Inter-regional</p> <p><input type="checkbox"/> Economic</p> <p><input type="checkbox"/> Environmental</p> <p><input checked="" type="checkbox"/> Operational/Technical</p>
<p>Why:</p> <p>In order to increase the reliability of the E/CAR network and its nodes</p>	
<p>When: 01 September 2022</p>	<p>Status: <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed</p>
<p>Who: <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input type="checkbox"/> Other:</p>	<p>Eastern Caribbean States and Territories</p>

**APPENDIX A
EXECUTIVE LIST OF CONCLUSIONS/DECISIONS**

Number	Conclusion/Decision	Responsible for action	Deadline
E/CAR/NTG/10– E/CAR/RD/8- 01	REVIEW OF THE CAR/SAM REGIONAL AIR NAVIGATION PLAN (ANP) TO ENSURE UPDATED INFORMATION ON INFRASTRUCTURE		
	That, in order to review and update the electronic Air Navigation Plan Volumes I and II, Eastern Caribbean States/Territories, in coordination with the ICAO NACC Regional Office, review the e-ANP CAR/SAM Volume I and Volume II to ensure updated information on CNS infrastructure and services indicated in these documents by 15 March 2022.	Eastern Caribbean States and Territories	15 March 2022
E/CAR/NTG/10– E/CAR/RD/8-02	EVALUATION OF NEEDS FOR BACKUP COMMUNICATION FOR EASTERN CARIBBEAN STATES		
	That, taking into account that the process of developing the technical specifications of the MEVA regional communications network is under development and that within the document all the technical requirements and communications needs of the Caribbean States will be specified, and since the communications network of the Eastern Caribbean States has interconnections with the MEVA network, E/CAR States: a) evaluate its back-up communication needs by December 2021. b) share the technical and operational information with the MEVA/TMG and coordinate their needs to be integrate in the new MEVA phase by December 2021.	Eastern Caribbean States	By December 2021.

Number	Conclusion/Decision	Responsible for action	Deadline
E/CAR/NTG/10- E/CAR/RD/8/03	REGIONAL AVIATION CAPACITY AND INFRASTRUCTURE INTEGRATION		
	<p>That, in order to promote the aviation development of the Eastern Caribbean States and to integrate the regional aviation capacity and infrastructure, the E/CAR States and Territories update:</p> <ul style="list-style-type: none"> a) the CNS capacity of their air aviation system; and b) their air navigation plan in accordance with the new requirements of the Global Air Navigation Plan (GANP) by 15 March 2022. 	15 March 2022	Eastern Caribbean States
E/CAR/NTG/10- E/CAR/RD/8/04	SUPPORT TO DOMINICA, SAINT KITTS AND NEVIS AND SAINT VINCENT AND THE GRENADINES IN THEIR SURVEILLANCE INFRASTRUCTURE		
	<p>That, Dominica, Saint Kitts and Nevis, and Saint Vincent and the Grenadines within their procurement processes to define ATM surveillance user and technical requirements to further the procurement and implementation of situational awareness by 31 January 2023.</p>	31 January 2023	Eastern Caribbean States
E/CAR/NTG/10- E/CAR/RD/8/05	REVISION OF E/CAR ATFM LETTER OF AGREEMENT FOR RADAR DATA SHARING		
	<p>That, in order to formalize the radar data sharing activities and foster the regional E/CAR ATFM initiative, Barbados review its existing LOAs by 31 January 2022 to include the authorization to Trinidad and Tobago to exchange the Multi Radar Tracker (MRT), including any surveillance type feeds with Eastern Caribbean and Caribbean States under the intent of the E/CAR/RD project with the FAA as part of the ATFM initiative.</p>	31 January 2022	Barbados, Trinidad and Tobago

Number	Conclusion/Decision	Responsible for action	Deadline
E/CAR/NTG/10-E/CAR/RD/8/06	<p>ANTIGUA PLANNING FOR RADAR DATA</p> <p>That, in order to ensure the appropriate planning and coordination for testing and integrating the radar data from the Antigua Radar into the E/CAR MRT data, that Antigua and Barbuda share the planning details (timelines and actions), technical information (radar data format, circuit speed, etc.) for the new radar in Antigua by 30 June 2022.</p>	Antigua and Barbuda, ECCAA	30 June 2022
E/CAR/NTG/10-E/CAR/RD/8/07	<p>SURVEILLANCE DATA REQUIREMENTS FOR ANGUILLA AND MONTSERRAT</p> <p>That,</p> <p>a) ICAO send a reminder letter to the authorities in Anguilla and Montserrat regarding their surveillance requirements in terms of situational awareness and their plans to move forward with this implementation before 2023.</p> <p>b) ECCAA to provide the NTG Rapporteur the contact details of the local person in Anguilla and Montserrat to engage discussions on the situational awareness.</p>	ICAO, Anguilla and Montserrat	31 December 2021
E/CAR/NTG/10-E/CAR/RD/8/08	<p>INCREASE THE RELIABILITY OF THE E/CAR THE NETWORK AND ITS NODES</p> <p>That, due to the increased number of cyberattacks on aeronautical systems like the E/CAR Network, and in order to increase the reliability of the E/CAR network and its nodes, Eastern Caribbean States/Territories:</p> <p>a) join the activities and action plan led by the ICAO NACC Regional Office on cybersecurity assessment in the E/CAR States; and</p> <p>b) designate a point of contact to coordinate the different State activities for this action Plan by 31 December 2021.</p>	Eastern Caribbean States and Territories	31 December 2021

Number	Conclusion/Decision	Responsible for action	Deadline
E/CAR/NTG/10- E/CAR/RD/8/09	CYBER SECURITY VULNERABILITY ASSESSMENT		
	That, due to the increased number of cyber-attacks on systems, in order to increase the reliability of the nodes and the network, ECCAA, Barbados, France, Trinidad and Tobago and United States conduct a cyber-security vulnerability assessment on the E/CAR AFS Network by the E/CAR/NTG/11 Meeting.	Eastern Caribbean States and Territories	1 September 2022

APPENDIX B

FOLLOW UP TO CONCLUSIONS AND DECISIONS - NINTH EASTERN CARIBBEAN NETWORK TECHNICAL GROUP AND SEVENTH EASTERN CARIBBEAN RADAR DATA SHARING ADHOC GROUP MEETING (E/CAR/NTG/9 & E/CAR/RD/7)

Conclusion/Decision	Description	Status
<p>CONCLUSION E/CAR/NTG/9 & E/CAR/RD/7/01 REGIONAL AVIATION CAPACITY AND INFRASTRUCTURE INTEGRATION</p>	<p>That, in order to promote the aviation development of the Eastern Caribbean States it is necessary to integrate the regional aviation capacity and infrastructure, the E/CAR States and Territories update:</p> <p style="padding-left: 40px;">a) the CNS capacity of their air aviation system; and b) or create their air navigation plan according to the new requirements of the Global Air Navigation Plan (GANP) by 15 December 2020.</p>	<p>Superseded</p>
<p>CONCLUSION E/CAR/NTG/9 & E/CAR/RD/7/02 INCREASE THE RELIABILITY OF THE NODES AND THE NETWORK</p>	<p>That, due to the increased number of cyberattacks on aeronautical systems like the E/CAR Network, and in order to increase the reliability of the E/CAR network and its nodes, Eastern Caribbean States/ Territories:</p> <p style="padding-left: 40px;">a) join the activities and action plan led by the ICAO NACC Regional Office for cybersecurity assessment in the E/CAR States; and b) designate a point of contact to coordinate the different State activities for this action Plan by 30 September 2020.</p>	<p>Superseded</p>
<p>CONCLUSION E/CAR/NTG/9 & E/CAR/RD/7/03 REVIEW OF THE DIGITAL REGIONAL AIR NAVIGATION PLAN (E-ANP) CAR/SAM TO ENSURE</p>	<p>That, in order to review and update the electronic Air Navigation Plan Volumes I and II, Eastern Caribbean States/ Territories, in coordination with the ICAO NACC Regional Office, review the eANP CAR/SAM Volume I and Volume II to ensure updated information on CNS</p>	<p>Superseded</p>

Conclusion/Decision	Description	Status
UPDATED INFORMATION ON INFRASTRUCTURE	infrastructure and services indicated in these documents by 30 December 2020.	
CONCLUSION E/CAR/NTG/8 – E/CAR/RD/6/01 UPDATE SURVEILLANCE INFRASTRUCTURE OF EASTERN CARIBBEAN	That, Bearing in mind that it is necessary for States to provide information on the technical characteristics of their surveillance infra-structure, the States agreed to: <ol style="list-style-type: none"> 1) Integrate all the technical information and capacity of your surveillance systems (Provider, Model, Protocols, etc.), according to Table A of Appendix A. 2) Promote with this information the activities of radar data sharing among the States that its technical capacity allows it. 3) Integrate into your development plans the necessary requirements for new projects to come, integrate these capabilities. 	Completed
CONCLUSION E/CAR/NTG/8 – E/CAR/RD/6/2 SUPPORT EASTERN CARIBBEAN STATES IN THE DEVELOPMENT OF THEIR IMPLEMENTATION PLANS	That, The Eastern Caribbean States require the support of the States for the development of aviation projects that support air traffic control activities. Developing the second phase of the radar presentation project is a necessity, since this will promote the operational safety of the region and improve situational awareness. States were agreed that: <ol style="list-style-type: none"> a) It is necessary that ICAO support the Second phase of the radar data implementation project. b) Trinidad and Tobago support this project in all possible ways, since it promotes safety in the PIARCO region. c) In that sense, ICAO will provide an approach between the different Eastern Caribbean states, before March 2019. 	Superseded

Conclusion/Decision	Description	Status
DECISION E/CAR/NTG/7-RD/5/3 CYBER SECURITY VULNERABILITY ASSESSMENT	That, Due to the increased number of cyber-attacks on systems, in order to increase the reliability of the nodes and the network, ECCAA, Barbados, Trinidad and Tobago, United States and France conduct a cyber-security vulnerability assessment on the E/CAR AFS Network by the E/CAR/NTG/8 Meeting.	Superseded
CONCLUSION E/CAR/NTG/7-RD/5/4 REVISION OF LETTERS OF AGREEMENT	That, In order to formalize the radar data sharing activities and foster the regional E/CAR ATFM initiative, France and Barbados review their existing LOAs to include the authorization to Trinidad and Tobago to exchange the Multi Radar Tracker (MRT), including any surveillance type feeds with Eastern Caribbean and Caribbean States under the intent of the E/CAR/RD project; and the FAA as part of the ATFM initiative.	Superseded
CONCLUSION E/CAR/NTG/7-RD/5/7 ANTIGUA RADAR DATA	That, in order to ensure the appropriate planning and coordination for testing and integrating the radar data from the Antigua Radar into the E/CAR MRT data, that ECCAA/ Antigua to provide by <u>30 December 2016</u> the details planning (timelines and actions), technical information (radar data format, circuit speed, etc.) from the radar in Antigua.	Superseded
CONCLUSION E/CAR/NTG/7-RD/5/9 ADS-B OUT IMPLEMENTATION IN THE E/CAR REGION	That, in order to prepare the E/CAR Region and take advantage of the operational benefits of ADS-B out: <ul style="list-style-type: none"> a) France, Barbados and Trinidad and Tobago to provide the E/CAR/NTG and ICAO their theoretical surveillance coverages (by flight levels 100, 150, 200 and 250) from their planned ADS-B Stations by 30 December 2016; b) E/CAR States and Territories inform the NTG and ICAO by 30 December 2016 of new plans for ADS-B implementation activities; c) E/CAR/NTG Rapporteur coordinate with the ANI/WG ADS-B TF Rapporteur for aligning the different E/CAR ADS-B activities with the regional 	Completed

Conclusion/Decision	Description	Status
	<p>ADS-B plan and implementation by February 2017; and</p> <p>d) E/CAR/NTG-RD Rapporteur to update the surveillance plan and inform the E/CAR/NTG/8 Meeting of these progress.</p>	
<p>CONCLUSION E/CAR/NTG/7-RD/5/10 SURVEILLANCE DATA REQUIREMENTS FOR DOMINICA AND ST. VINCENT</p>	<p>That, ECCAA inform the E/CAR/NTG Rapporteur of the surveillance data requirements for Dominica and St. Vincent by November 30, 2016.</p>	<p>Completed</p>
<p>CONCLUSION E/CAR/NTG/7-RD/5/11 SURVEILLANCE DATA REQUIREMENTS FOR ANGUILLA AND MONTSERRAT</p>	<p>That,</p> <p>a) E/CAR/NTG Rapporteur send a letter to Anguilla and Montserrat requesting information on whether they wish to be part of Phase II and to confirm if their requirement will be situational awareness; and</p> <p>b) ICAO to write to ASSI regarding their commitment to part of Phase II and the agreed procurement process.</p>	<p>Superseded</p>
<p>DECISION E/CAR/NTG/7-RD/5/12 DEFINITION OF RADAR DATA DISPLAY PHASE II PROCESS</p>	<p>That, in order to update the activities and agreements for Phase II of the Radar Data Sharing, the E/CAR/NTG Rapporteur, by 30 December 2016, in coordination with the RFP ad-hoc Group inform of the Planning to be implemented for the E/CAR Radar Data Display Phase II Process.</p>	<p>Superseded</p>

APPENDIX C
EASTERN CARIBBEAN NETWORK TECHNICAL GROUP (E/CAR/NTG)
TERMS OF REFERENCE

1. Background

1.1 The Eastern Caribbean Network Technical Group (E/CAR/NTG) was established as a standing group in accordance with E/CAR/WG/31 Meeting, Conclusion 31/7, approved by the E/CAR/DCA/22 Meeting (Port of Spain, Trinidad and Tobago, 8-11 December 2009) The terms of reference of the E/CAR/NTG were approved by the E/CAR/DCA/22 Meeting, - Decision 22/6. The following main objectives are assigned:

- a) analysis and monitoring of the status of the current E/CAR AFS Network;
- b) recommend measures to improve reliability of the E/CAR AFS Network for the immediate/near term; and
- c) study, analyze and follow-up on the planning, documentation and implementation of the replacement of the existing E/CAR AFS Network.

1.2 By 2013, the E/CAR/NTG has fulfilled these objectives, with an efficient IP Network and well established stable services; however the continuous monitoring, analysis and follow-up to Network improvements and resolution of failures were considered necessary by the E/CAR AFS Network participants.

2. Terms of Reference

For the activities related to the analysis and monitoring of the status of the E/CAR AFS Network, the E/CAR/NTG is required to make recommendations on measures to improve the reliability of the E/CAR AFS Network for the immediate/ near term. These activities include:

- a) review the current status of the Network (maintenance and reporting procedures, technical personnel involved, spare parts, tools for monitoring the Network status, identify common network points of failure, etc.) and submit recommendations;
- b) ensure compliance of the Network services with ICAO SARPs, Regional Air Navigation Plans in accordance with the Global Air Navigation Plan (GANP), ICAO Aviation System Block Upgrade (ASBU) and the Basic Building Blocks (BBB).
- c) assist the TTCAA and the E/CAR States with technical coordination and solutions of problems that occurred with the implementation and operation of the AFS including the E/CAR AFS Network and to consider and make recommendations on measures to improve implementation and operation; and
- d) Study and propose to the E/CAR/DCA intra and inter-regional coordination for the E/CAR AFS Network connectivity with other regional and domestic digital communications networks of the CAR and SAM Regions.

- e) inform and advise the E/CAR AFS Network users, if a major failure or network concern that affects the entire network occurs or may occur or an event that doesn't allow achieving the Network Service Level Agreement, recommending solutions for its recovery and actions by the E/CAR AFS Network Service Provider.

3. Work Programme

See below

4. Working Methods

- a) E/CAR/NTG 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) E/CAR/NTG will avoid duplication of work within the E/CAR/CATG and maintain close coordination among the existing entities (like the North American, Central American and Caribbean Working Group Meeting (NACC/WG)) to optimize the use of available resources and experience;
- c) E/CAR/NTG 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) E/CAR/NTG should 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) E/CAR/NTG meetings shall be conducted as possible, jointly with other E/CAR Meetings like the E/CAR/CATG meetings.
- f) E/CAR/NTG will report and coordinate the progress of assigned tasks to the E/CAR/CATG as well as to the E/CAR Directors.

5. Membership

See attached Membership List. ICAO will act as technical adviser to the E/CAR/NTG.

6. Rapporteur

Ms. Veronica Ramdath (Trinidad and Tobago).

**STATE/TERRITORY MEMBERS OF THE E/CAR
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E/CAR/NTG WORK PROGRAMME

No.	Activities	Objectives	Responsible	Deliverables
1	To assist the E/CAR AFS Network Members in coordination for the solutions to problems presented in this operation, and in the implementation of services and parts.	Keep E/CAR AFS Network SLA levels	NTG	E/CAR AFS Network assistance
2	To study and implement technical/operational measures that may be agreed upon to improve the operation and implementation of E/CAR AFS Network services, and that do not impact significant cost, investments and objectives of the Network.	Satisfactory operation and service levels	NTG	Implementation of Network improvements
3	Keep E/CAR AFS Network Members aware of the status of the E/CAR AFS Network performance and conditions of operation.	E/CAR AFS NETWORK awareness	NTG	<ul style="list-style-type: none"> • Reliable E/CAR AFS Network website • Network Performance revision
4	Maintain valid and up-to-date E/CAR AFS Network Contingency Procedures, taking into consideration the contingency plans of each E/CAR AFS Network Member and of the Service Provider and in keeping with the CAR Region General Contingency Plan.	Readiness for contingencies	NTG	E/CAR AFS NETWORK Contingency Procedures
5	To assist the E/CAR AFS Network Members, in finishing the data and voice circuits implementation, according to the requirements shown in the ANP CAR/SAM (ASBU BO modules and Regional/National Priorities).	Fulfill Air Navigation requirements	Taskforces-Adhoc Groups	Data and voice circuit implementation
6	To study and propose solutions for AFS connectivity of the E/CAR AFS Network with other regional and domestic CAR/SAM networks.	Fulfill Air Navigation requirements	Taskforces-Adhoc Groups	Data and voice circuit implementation

No.	Activities	Objectives	Responsible	Deliverables
7	Keep and validate with the E/CAR AFS Network Service Provider a procedural handbook on management, operation and maintenance of the E/CAR AFS Network telecommunication circuits.	Ensure proper E/CAR AFS Network maintenance and operation	NTG	Maintenance Procedural Handbook/Manual

— END —