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

Seventh Eastern Caribbean Network Technical Group (E/CAR/NTG/7)
and
Fifth Eastern Caribbean Radar Data Sharing Ad hoc Group (E/CAR/RD/5)

Final Report

Basseterre, Saint Kitts and Nevis, 17 to 18 October 2016

Prepared by the Secretariat

October 2016

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HISTORICAL

ii.1 Place and Date of the Meeting

The Seventh Eastern Caribbean Network Technical Group (E/CAR/NTG/7) and Fifth Eastern Caribbean Radar Data Sharing Ad hoc Group (E/CAR/RD/5) meetings were held at the Ocean Terrace Inn Hotel and Resort in Basseterre, St. Kitts and Nevis, from 17 to 18 October 2016.

ii.2 Opening Ceremony

Ms. Veronica Ramdath, E/CAR/NTG Rapporteur, welcomed the participants, noting the achievements and successes of the groups and the work to be continued on radar data sharing tasks. Mr. Julio Siu, Deputy Regional Director of the North American, Central American and Caribbean (NACC) Office of the International Civil Aviation Organization (ICAO), commented on ICAO commitment to assist States under the ICAO NACC *No Country Left Behind* (NCLB) strategy, congratulated the NTG for the implementation of the voice circuits with the MEVA Telecommunication Network and the Radar Data Sharing (RDS) Group for the full implementation of Phase I, Radar Data Displays. Mr. Siu provided opening remarks and thanked the Saint Kitts and Nevis Ministry of Foreign Affairs and Aviation for hosting these meetings, highlighting the main discussions and expected agreements to be achieved with the E/CAR Aeronautical Fixed Service (AFS) Network performance and surveillance improvements. Ms. Kaye Bass, Permanent Secretary from Saint Kitts and Nevis Ministry of Foreign Affairs and Aviation, highlighted the main air navigation, safety, and security achievements by Saint Kitts and Nevis and their commitment to work with ICAO under the ICAO NACC No Country Left Behind Strategy, and welcomed the participants and officially opened the Meetings.

ii.3 Officers of the Meeting

The E/CAR/NTG/7 and E/CAR/RD/5 Meetings were chaired by Ms. Veronica Ramdath, the E/CAR/NTG Rapporteur, and Mr. Julio Siu acted as Secretary.

ii.4 Working Languages

The working language of the Meetings was English, the documentation and report of the meeting 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 16:30 hours daily with adequate breaks. Ad hoc Groups were created during the Meetings to further work on specific items of the Agenda. A visit to the Saint Kitts Tower facilities was conducted to show the current use of the Radar Data Display and the E/CAR AFS Network equipment.

ii.6 Agenda

Agenda Item 1: Approval Agenda and Work Schedule

Agenda Item 2: Review of Valid Conclusions from E/CAR/NTG/06-RDS/04, E/CAR/CATG/02 and ECAR/DCA/26 Meetings related to the Work of the NTG and RDS

2.1 Follow-up on previous E/CAR/NTG-RD Conclusions and Decisions
2.2 Follow-up on E/CAR/CATG/02, ECAR/DCA/26, and NACC/DCA/6 Meetings
2.3 Follow-up to the Air Navigation Implementation Working Group (ANI/WG) Conclusions

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

3.1 Network performance and general aspects
3.2 Update on E/CAR AFS Network Interconnection to the MEVA Network

Agenda Item 4: Surveillance Sharing Activities

4.1 Review of Surveillance Sharing Letter of Agreements (LoAs)/Memoranda of Understanding (MoUs): Trinidad and Tobago, French Civil Aviation, and Barbados
4.2 Surveillance sharing update: Antigua and Barbuda, Guyana, Sint Maarten, Trinidad, and Tobago, United States (San Juan), Venezuela
4.3 Automatic Dependent Surveillance – Contract (ADS-C) and Automatic Dependent Surveillance - Broadcast (ADS-B)/MLAT developments
4.4 Review of Performance and User´s Comment on Radar Display Phase 1

Agenda Item 5: Radar Data Display Request for Proposal (RFP)

5.1 Definition of Technical Requirements and Proposal
5.2 Definition of RFP process

Agenda Item 6: Update of E/CAR/NTG and RDS Terms of Reference and Work Programme

Agenda Item 7: Other Business

ii.7 Attendance

The Meeting was attended by 9 States/Territories from the Eastern Caribbean, 1 International Organization, totalling 22 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 Radar Data Sharing Ad hoc Group (E/CAR/RD).

List of Draft Conclusions and Decisions

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

ii.9 List of Working and Information Papers and Presentations

Refer to the Meeting web page:
http://www2010.icao.int/NACC/Pages/meetings-2016-ecarnt7rd5.aspx

WORKING PAPERS

Number	Agenda Item	Title	Date	Prepared and Presented by
WP/01	1	Approval of Meeting Agenda, Work Method and Schedule	07/09/16	E/CAR/NTG Rapporteur
WP/02	2.1	Follow-Up to Valid Conclusions and Decisions of the E/CAR/NTG-RDS Meetings	10/10/16	E/CAR/NTG Rapporteur
WP/03	2.2	Review of Actions Concerning the Second Eastern Caribbean Civil Aviation Technical Group (E/CAR/CATG/02) Meeting, the Twenty-Sixth Meeting of Directors of Civil Aviation of the Eastern Caribbean (E/CAR/DCA/26) and NACC/DCA/6 Meeting related to the E/CAR Aeronautical Fixed Service (AFS) Network	10/10/16	Secretariat
WP/04	2.3	Review of Actions to Support ANI/WG and NACC/WG Valid Conclusions Related to the E/CAR Aeronautical Fixed Service (AFS) Network	06/10/16	Secretariat
WP/05	3.1	Network Performance and general aspects		Barbados
WP/06	3.1	Network Performance and General Aspects	13/10/16	ECCAA
WP/07	3.1	Network Performance and General Aspects	11/10/16	France
WP/08	3.1	Network Performance Analysis and General Aspects	13/10/16	Trinidad and Tobago
WP/09	3.2	Update on E/CAR AFS Network Interconnection to the MEVA Network	09/10/16	United States
WP/10	4.1	Update of Letters of Agreements for Sharing Surveillance Data — *Revised*	13/10/16	E/CAR/NTG Rapporteur
WP/11	4.2	Surveillance sharing update: Antigua and Barbuda, Guyana, Sint Maarten, Trinidad, and Tobago, United States (San Juan), Venezuela	13/10/16	Trinidad and Tobago
WP/12	4.2	Surveillance sharing update: Trinidad and Tobago, Sint Maarten, United States (San Juan), Antigua, Guyana, Venezuela	14/10/16	E/CAR/NTG Rapporteur
WP/13	4.2	Surveillance sharing update: Trinidad and Tobago, Sint Maarten, United States (San Juan), Antigua, Guyana, Venezuela		Antigua and Barbuda
WP/14	4.3	ADS-C and ADS-B/MLAT Developments	11/10/16	France
WP/15	4.3	ADS-C and ADS-B/MLAT Developments	10/10/16	Trinidad and Tobago

WORKING PAPERS

Number	Agenda Item	Title	Date	Prepared and Presented by
WP/16	4.3	ADS-C and ADS-B/MLAT developments		Barbados
WP/17	4.4	Review of Performance and User's Comment on Radar display Phase I		ECCAA
WP/18	5.1	Definition of Technical Requirements and Proposal		Ad hoc group
WP/19	5.2	Definition of RFP process		
WP/20	7	Implementation OF the ICAO NACC Regional Office No Country Left Behind (NCLB) Strategy	11/10/16	Secretariat

INFORMATION PAPER

Number	Agenda Item	Title	Date	Prepared and Presented by
IP/01	--	List of Working, Information Papers and Presentations	14/10/16	Secretariat

PRESENTATION

Number	Agenda Item	Title	Presented by
P/01	3.1	Network Performance Analysis and General Aspects	Trinidad and Tobago

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Agenda Item 1: Approval of Meeting Agenda, Work Method and Schedule

1.1 The Secretariat presented WP/01, inviting the Meeting to approve the draft 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 made minor changes to the schedule.

Agenda Item 2: Review of Valid Conclusions from E/CAR/NTG/06-RDS/04, E/CAR/CATG/02 and ECAR/DCA/26 Meetings Related to the Work of the NTG and RDS

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

2.1.1 Under WP/02, the Meeting reviewed and followed-up the E/CAR/NTG and E/CAR/RD valid conclusions/decisions. All conclusions and decisions were considered completed or superseded, as presented in **Appendix A** to this part of the report, except for DECISION E/CAR/NTG/5/8 **—** *Completion of E/CAR AFS Network Standard Operations Procedures (SOP).*

2.1.2 The Meeting recalled that the Network Contingency Procedures should have already been integrated into local documentation or into Letters of Agreement (LoAs) (for instance, between Martinique and Trinidad and Tobago or Martinique and Saint Lucia). Each State was invited to verify the validity of Private Switched Telephone Network (PSTN) numbers identified as a back-up phone medium and to upgrade existing LoAs accordingly.

2.1.3 The Meeting emphasized that the experience from States like France concerning the use of surveillance data evaluation tools, such as the Surveillance Analysis Support System for Air Traffic Control (ATC)-Centre (SASS-C), or the Radar Beacon Analysis Tool (RBAT), can support data quality and radar feeding recommended tests

2.2 Follow-up on E/CAR/CATG/02, ECAR/DCA/26, and NACC/DCA/6 Meetings

2.2.1 Under WP/03, the Meeting reviewed the valid conclusions related to the E/CAR Aeronautical Fixed Service (AFS) Network formulated by the Second Eastern Caribbean Civil Aviation Technical Group Meeting (E/CAR/CATG/02), recognizing that the NTG and RDS Groups are available and ready to support States, as requested under E/CAR/CATG/02 Conclusions 2/10 and 2/11 and awaiting further indications for this Working Group.

2.2.2 The E/CAR/NTG Rapporteur provided an overview to the E/CARD/DCA/26 Meeting as follows:

a) the surveillance data sharing activities achieved;
b) an update to the surveillance implementation plan; and
c) the Eastern Caribbean (E/CAR) AFS Network, highlighting the progress and milestone of the radar implementation plan.

2.2.3 The E/CAR/DCA/26 Meeting congratulated the effective work of the E/CAR/NTG Group on the Network improvements and performance, and the implementation of Phase I of the Radar Data Display. It concluded that the E/CAR/NTG has fulfilled its work as mandated by the E/CAR DCAs and therefore, agreed to keep the E/CAR/NTG only for the next meeting in 2016, passing its network functions to the E/CAR CNS Committee. However, during the NACC/DCA/6 Meeting the E/CAR/DCAs decided that the Eastern Caribbean Network Technical Group (E/CAR/NTG) will continue to be active in order to support the E/CAR area.

2.2.4 The Meeting also noted that following the Decision NACC/DCA/6/12 Consolidation Of Sub-Regional Directors of Civil Aviation (DCA) Meetings, E/CAR/DCA Meetings are no longer being held separately, but consolidated with all the sub-regional DCA meetings into a single annual DCA Meeting (NACC/DCA meeting). No relevant related E/CAR/NTG-RD Conclusions from the NACC/DCA/6 Meeting were reviewed.

2.3 Follow-up to the Air Navigation Implementation Working Group (ANI/WG) Conclusions

2.3.1 Under WP04, the Meeting reviewed the valid ANI/WG/3 and NACC/WG Conclusions, as presented in **Appendix B** to this part of the report, indicating how the Group will support these conclusions.

APPENDIX A

FOLLOW UP TO CONCLUSIONS AND DECISIONS - SIXTH EASTERN CARIBBEAN NETWORK TECHNICAL GROUP MEETING (E/CAR/NTG/6) AND FOURTH EASTERN CARIBBEAN RADAR DATA SHARING ADHOC GROUP MEETING (E/CAR/RD/4)

Conclusion/Decision	Description	Follow-up	Status
CONCLUSION E/CAR/NTG/5/5 E/CAR AFS Network Contingency Procedures was superseded by) **DECISION E/CAR/NTG/6/1** E/CAR AFS Network Contingency Procedures Inclusion To Operational Procedures	In order to make official and homogeneously apply the E/CAR AFS Network contingency procedures, E/CAR AFS Members should implement/include the following procedures by the E/CAR/DCA/26 Meeting in their operational procedures: a) In case the E/CAR network is not available for voice communications: use of PSTN phones; and b) In case E/CAR Network is not available for data: use of SPATIA Web for NOTAM and flight plans.	E/CAR AFS Members confirmed this implementation during the E/CAR/NTG/6 Meeting.	Completed
DECISION E/CAR/NTG/5/8 Completion of E/CAR AFS Network Standard Operations Procedures (SOP)	That, in order to complete the SOP and start its application, the E/CAR/NTG Rapporteur finalize the compilation of the E/CAR AFS Network Standard Operations Procedures (SOPs): MPLS maintenance procedure and Service Level of Agreement, including the inputs from France, United States, ECCAA and TSTT, and present this final draft document at the follow-up teleconference in February 2015.	This activity work is on-going with a draft document to be available for review by June 2017.	Valid
DECISION E/CAR/NTG/5/12 Surveillance Data sharing implementation Action Plan	That, to show the latest progress and next future action on surveillance matters, France, Trinidad and Tobago, United States, and ECCAA to develop an update for the surveillance data sharing action Plan including the agreed milestones by: a) Drafting this update for the next Radar Data Sharing teleconference of January 2015; and b) Complete this update for its presentation for the E/CAR/DCA/26 Meeting.	a) The surveillance data sharing action plan with the agreed milestones remains unchanged after review. A draft Action Plan was presented. b) Completed	a) completed b) completed

Conclusion/Decision	Description	Follow-up	Status
CONCLUSION E/CAR/NTG/6-RD/4/2 Improvement to E/CAR AFS network in technical and procedural aspects	That, in order to improve the existing E/CAR AFS operation and procedural aspects, TSTT to conduct the following improvements by 15 October 2015: a) To complete Guadeloupe routers hardware and to replace fan tray b) To order a France Telecom (Orange) Internet Protocol (IP) line between Guadeloupe and Martinique c) To improve communication (failure feedback) with end users d) To analyze the feasibility to have both routers connected with automatic switch over in case of failure	All items were reviewed under Agenda Item 3.1.	Superseded
CONCLUSION E/CAR/NTG/6-RD/4/3 Local monitoring implementation	That, considering the kind offer by France on a local monitoring tool of the E/CAR AFS nodes: a) France complete Guadeloupe E/CAR monitoring and editing Tool manual; b) States that wish to implement the local SNMP supervision tool send their request to the NTG Rapporteur by December 2015; c) Trinidad and Tobago and the Network Service Provider, TSTT, analyze the integration of the monitoring tool into the web portal, including Pings and Simple Network Management Protocol (SNMP) router interrogations.	a) France has completed Guadeloupe E/CAR monitoring and editing Tool manual. France still need rights on routers and switch to complete the monitoring proposed tool. These authorizations have not yet been received. b) No requests received. States have taken note. c) TSTT can provide access to the related sites via the web portal. A network view of layer 1 to layer 3 status of the services will be provided. TTCAA/TSTT cannot integrate the network test tool to this service, since it may compromise the security and stability of the network. To be managed as individual local implementations considering improvements on current TopDesk Application.	Completed

Conclusion/Decision	Description	Follow-up	Status
CONCLUSION E/CAR/NTG/6-RD/4/4 MEVA III-ECAR AFS NETWORK interconnection - voice circuits	That, to complete the voice circuits implementation in the MEVA III – E/CAR AFS Network interconnection: a) Trinidad and Tobago replace the routers in Anguilla by July 2015; b) United States complete the wiring between the MEVA III and E/CAR AFS Node by 14 August 2015 after the routers in Anguilla are replaced; and c) For the testing, Anguilla, Antigua, Saint Kitts and Nevis, Sint Maarten, Trinidad and Tobago, United States, COMSOFT and TSTT coordinate the corresponding actions.	Voice circuits have been implemented.	a) Completed b) Completed c) Completed
CONCLUSION E/CAR/NTG/6-RD/4/5 French RADAR/DAKOTA data adjustments	That, in order to show the correlated flight plan and radar data in the Radar Data displays with Dakota Data feed from the E/CAR AFS Network, by 21 August 2015 France coordinate with TTCAA and Saint Lucia to: a) transfer the radar back to the International Private Leased Circuits (IPLCs) while the issue of the Flight ID is being resolved; and b) conduct latency checks of the data and data adjustments.	a) IPLC abandoned and E/CAR network used to transmit radar data to Saint Lucia. FID sent to Saint Lucia for labelling radar tracks through the E/CAR network. b) Basic measurements achieved with success. No accurate measurements required for RASA use.	a) Completed b) Completed
CONCLUSION E/CAR/NTG/6-RD/4/6 Signing of LOA regarding the French radar CPUS	That, in order to complete the corresponding LoA for the Radar CPU implementation, Anguilla and Montserrat (UK-ASSI) to complete the LoA for the delivery of the IRMA computers under the terms and conditions of the French radar donation by the E/CAR/DCA/26 Meeting.		Completed

Conclusion/Decision	Description	Follow-up	Status
CONCLUSION E/CAR/NTG/6-RD/4/7 Surveillance data evaluation tools	That, in order to ensure radar data quality and for its provision into any ATC Automated System, E/CAR States/Territories: a) conduct safety assessment by means of the ATC automated assessment capabilities including independent supporting tools; b) consider the use of surveillance data evaluation tools such as RBAT and SASS-C, and the radar feed recommended tests; and c) notify to the E/CAR/NTG - RD groups of the use of these tools and the results of the tests by December 2016.	a) and b) France: France uses SASS-C for mono radar performance analysis, with a minimum of 2 full evaluations per year. The analysis is performed by Martinique or by Toulouse air navigation technical center. An evaluation is performed as soon as a change is done on radar with possible impact on radar performances. France qualifies every 3 years the Dacota radar tracker through a full appraisal process. Additional evaluations are performed on request when necessary. Specific measurements are performed when telecommunication devices are changed (i.e. latency checks). On real time basis: • Both radars are monitored by local maintenance through a specific tool (STRASS) • Radars are capable of detecting anomaly through their Built-in Test Equipment, then an information is sent through Asterix messages to the ATCO display • Dacota MRT checks radar data. In case of anomaly detected, depending of corruption detected, it can discard the data and/or send a message to the ATCO display (i.e. in red "Loss of 5NM minima"). c) Other E/CAR States (Barbados, ECCAA, Trinidad and Tobago, etc.) are expected to benefit from this experience.	Completed

Conclusion/Decision	Description	Follow-up	Status
DECISION E/CAR/NTG/6-RD/4/8 E/CAR Radar data display RFP document	That, in order to continue the review and complete the end user requirements and the RFP process to be adopted by the E/CAR area, the E/CAR States/Territories involved in the Radar Data Display RFP process use as reference the version 0 of the E/CAR Radar Data Display RFP document (Appendix B to the E/CAR/NTG/6 Report).	States noted	completed
DRAFT CONCLUSION E/CAR/NTG/6-RD/4/9 New E/CAR radar data display acquisition RFP milestones	That, in order to allow the E/CAR States/Territories involved in the Radar Data Display RFP process to include their end-user requirements and express their formal commitment: a) ECCAA to coordinate with their OECS States/territories for a formal commitment and process chosen for conducting the RFP process and inform the E/CAR/RD and ICAO by 30 October of this commitment; b) Trinidad and Tobago to conduct teleconference with each involved OECS State/territory for explaining the Radar Data Display and the end user requirements to be defined starting 1 August; and c) Conduct the RFP process with the following new milestones: o E/CAR Radar Display Tender- preparation of RFP: October 2015-January 2016 o E/CAR RD Tender- process: March - June 2016 o E/CAR RD Selection: July 2016 o E/CAR RD Implementation: October 2016-March 2017	a) ECCAA to update- see follow-up to conclusion E/CAR/DCA/26/10 made in the NACC/DCA/6 Meeting- new date is 1 September 2016 b) No teleconferences were conducted. A questionnaire has been developed and sent out to States for completion. To be discussed during the Ad hoc group at the E/CAR/NTG/7 and E/CAR/RD/5 c) New approach adopted	Completed
CONCLUSION E/CAR/NTG/6-RD/4/10 Approval of E/CAR/NTG Terms of Reference and work programme	That, E/CAR/NTG Terms of reference and Work programme as shown in Appendix C are considered approved.		Completed

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APPENDIX B

FOLLOW UP TO E/CAR/NTG-RD RELATED CONCLUSIONS FROM ANI/WG/3 CONCLUSIONS/DECISIONS

Number	Conclusion/Decision	Follow-up BY E/CAR/NTG-RD
C-3/1 REGIONAL PERFORMANCE OF AIR NAVIGATION IMPLEMENTATION PROJECT	That, bearing in mind that the deadline for Port-of-Spain Declaration targets finishes in December 2016, and the implementation of the NACC *No Country Left Behind (NCLB)* Strategy the ICAO NACC Regional Office to coordinate the development of a web application of the performance air navigation implementation system for the CAR Region in accordance with the new requirements of the CAR/SAM Electronic Air Navigation Plan (eANP) by 30 December 2016.	The E/CAR/NTG-RD Group to review the status of the ANS corresponding targets (NACC Webpage)
C-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; b) take advantage of the ATSN Data Link Implementation Application Workshop scheduled for 18 to -21 April 2016 in St Maarten to exchange information and progress on the implementation; and 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	E/CAR AFS Network to be considered for the testing the XML data transmission

FOLLOW UP TO VALID NACC/WG/4 CONCLUSIONS RELATED TO THE E/CAR/NTG-RD

NO.	CONCLUSIONS	FOLLOW-UP BY E/CAR/NTG-RD
CONCLUSION NACC/WG 4/5 ACTIVE SUPPORT FROM STATES FOR ICAO ITU WRC-2015 POSITION	That NAM/CAR States/Territories, in order to ensure their active support for the ICAO WRC-15 position for the protection of the aeronautical frequency spectrum and satisfy future frequency spectrum aviation needs: a) include the main points addressed by the ICAO International Telecommunication Union (ITU) WRC-15 position for the protection of the C-band when used for aeronautical purposes and the ICAO WRC-15 position as a whole, including any amendments, when preparing national ITU WRC-15 proposals in coordination with the National Spectrum Management Authority; b) include representatives from civil aviation administrations and aviation experts from national delegations, to the extent possible, when participating in the ITU Radio and regional preparatory activities for WRC-15; and c) if not already done so, nominate their focal point for WRC-2015 to ICAO by December 2014.	Done

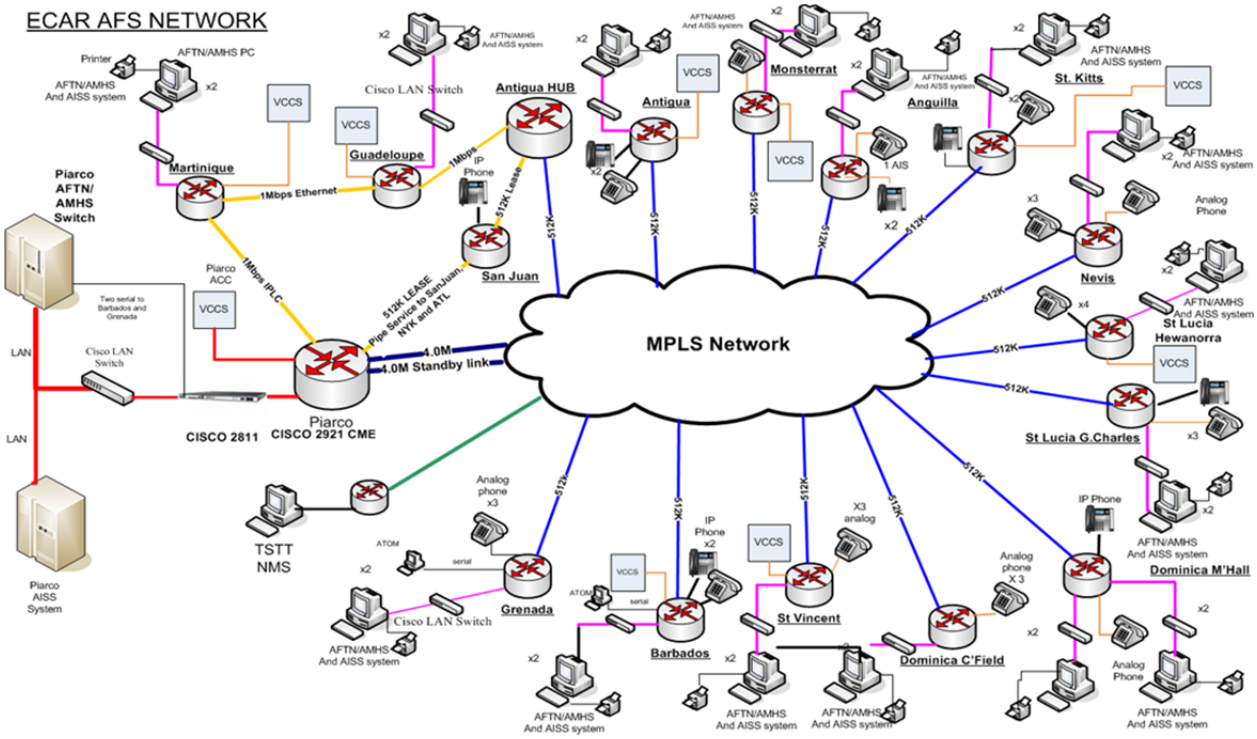
NO.	CONCLUSIONS	FOLLOW-UP BY E/CAR/NTG-RD
CONCLUSION NACC/WG 4/6 REPORTING ON THE PROGRESS ACHIEVED IN THE IMPLEMENTATION OF THE AERONAUTICAL INFORMATION EXCHANGE MODEL (AIXM)	That NAM/CAR States and international organizations: a) adopt the AIXM 5.1 information exchange model; and b) report on the progress achieved with application of the conceptual model and aeronautical information exchange to the ICAO NACC Regional Office by **31 December 2014**.	E/CAR Network is ready to be implemented
CONCLUSION NACC/WG 4/7 AIM ACTION PLANS FOR THE AIS TO AIM TRANSITION	That CAR States that have not yet done so: a) develop/update and execute the Action Plans for the transition from AIS to AIM taking into consideration the latest AIM developments, and the AIM TF work until AIM is completed according the AIM RPO of the RPBANIP; and b) inform the ICAO NACC Regional Office of all the AIM progress to be presented at the upcoming GREPECAS/17 Meeting.	E/CAR Network is ready to be implemented
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.	E/CAR Network is ready to be implemented
CONCLUSION NACC/WG 4/12 APPROVAL OF IPV4 ADDRESSING SCHEME, VER 1.0	That, in order to expedite and facilitate the implementation of the IPv4 ATN in the CAR Region, States/Territories of the CAR Region: a) approve the revised version of the CAR IPv4 addressing scheme, version 1.0; b) implement their Aeronautical Telecommunication Networks (ATNs) in accordance with the IPv4 addressing scheme ver. 1.0, where applicable; and c) report use/planned use to the ICAO NACC Regional Office no later than **December 2015**.	E/CAR network has implemented conclusion.

NO.	CONCLUSIONS	FOLLOW-UP BY E/CAR/NTG-RD
CONCLUSION NACC/WG 4/15 AIR NAVIGATION REPORTING/ MONITORING IN THE NAM/CAR REGIONS	That no later than **December 2014**, for the harmonized and efficient collection of data for reporting and monitoring air navigation implementation progress and achieved performance/benefits, NAM/CAR States/Territories: a) invite all air navigation stakeholders to participate in the data collection and reporting process; b) use the RPBANIP Air Navigation Report Forms (ANRFs) to the extent possible to report their national, sub-regional and regional implementation and performance progress; and c) periodically report to the ICAO NACC Regional Office on the air navigation implementation status.	E/CAR/NTG-RD ready to support this reporting and monitoring for the E/CAR area

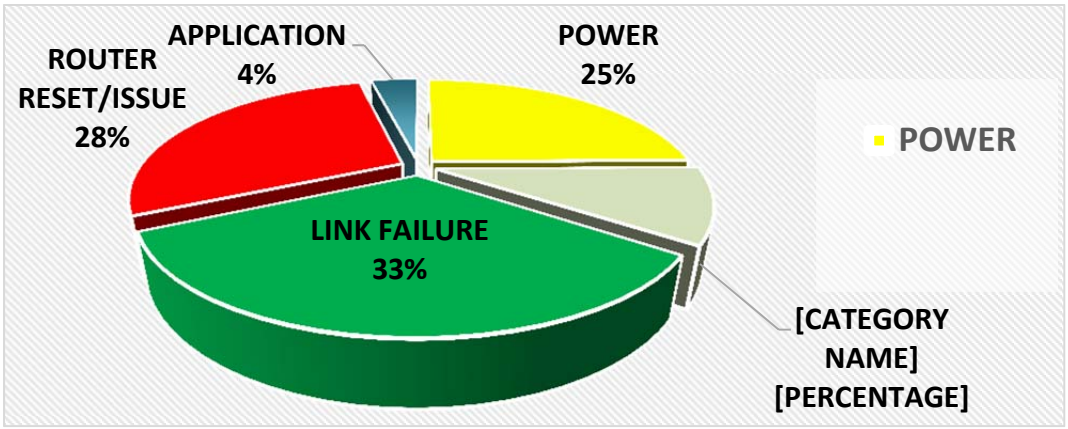
Agenda Item 3: E/CAR Aeronautical Fixed Service (AFS) Network Performance and Operation

3.1 Network performance and general aspects

3.1.1 Under Presentation 01, the E/CAR AFS Network Service provider, Telecommunication Services of Trinidad and Tobago (TSTT), gave an overview of the E/CAR Network performance since the E/CAR/NTG/5 Meeting, (August 2015 to September 2016) showing good consistent performance and availability of the network. The current network configuration was presented as follows:



3.1.2 The failure reporting system registered that a total of one hundred and nine (109) tickets were reported. The breakout of faults is illustrated as follows:



3.1.3 The Meeting took note of the challenges and activities on local equipment operation conditions. Moreover, the Meeting took note of the maintenance procedures timelines and their escalation conditions. The following percentage (%) of availability of the E/CAR network year on year on a comparison was observed:

Country	% Availability 2014/2015	% Availability 2015/2016
Anguilla	98.9	98.29
Antigua	99.9	99.25
Barbados	99.9	99.56
Dominica - Canefield	97.4	82.13
Dominica – Douglas Charles	99.6	0.00
Grenada	99.9	99.53
Guadeloupe	99.7	99.76
Martinique	99.5	98.29
Montserrat	99.9	98.36
Nevis	98.4	99.42
Saint Kitts	99.3	97.86
Saint Lucia -George F Charles	99.9	99.53
Saint Lucia- Hewanorra	98.7	99.49
St. Vincent and the Grenadines	98.1	98.97
Tobago	99.7	99.7
Trinidad	99.8	98.26
United States of America (San Juan)	93.2*	98.75

3.1.4 It was noted that the E/CAR/AFS Network maintenance activity is in progress and will be performed from: 11 September – 4 November 2016. Oversight visits and maintenance activities of the E/CAR/AFS network and the Aeronautical Message Handling System (AMHS)/aeronautical Information Service System (AISS) user end equipment were successfully conducted by Trinidad and Tobago over the months of February to April 2016.

3.1.5 TSTT informed on the current actions to resolve some of the failures, such as:

a) Dominica Douglas Charles site currently Out Of Service (OOS) due to force majeure: equipment room was destroyed by flood. Site has to be reinstalled as a new site when the location is ready.

b) Dominica Power Fluctations (Douglas Charles/Melville Hall): There is the constant issue as it relates to power regularity and conditioning on the island. The frequency of outages has decreased, but it is suggested that a power regulation analysis be conducted at both airports in order to deliver safe and clean power to AFS hardware.

c) Saint Kitts: adverse environmental conditions continue to affect routers replacement primary needed. Routers and switches were relocated to Tower Equipment Room during 2015 maintenance.

d) Guadeloupe: The secondary router needs a replacement due to the faulty fans, power supply, and Radar Position Symbol (RPS).

3.1.6 TSTT explained the ongoing activities to the network:

a) New Saint Vincent Argyle Airport ECAR Node implementation
b) Dominica Canefield Node Replacement
c) New line to NYK (1849) configuration and software tested. To be completed during November 2016 network maintenance visits.
d) New ring down line between San Juan (1844) and Piarco (5004) configuration and software tested. To be completed during November 2016 maintenance.
e) Ring down line was configured at Tobago to replace service provided by Private Branch Exchange (PBX) destroyed by lightning strike.
f) AICC ring down lines to Piarco being configured and tested during 2016 Maintenance. Anguilla and San Juan need additional voice cards for completion

3.1.7 Under WP/05, Barbados informed that the network availability over the period was satisfactory, that all failures or faults reported during the period were rectified and suggested that an arrangement of automatic changeover of routers on failure could further improve reliability. The Meeting agreed on this suggestion, which was also indicated by France, adopting the following Decision:

DECISION
E/CAR/NTG/7-RD/5/1 ROUTER AUTOMATIC CHANGEOVER CAPABILITY

That, in order to increase the reliability of the nodes and the network, TSTT analyse the feasibility and cost-effectiveness of implementing automatic changeover feature in the CISCO Routers by the E/CAR/NTG/8 Meeting.

3.1.8 Under WP/06, ECCAA provided an overview performance evaluation of the E/CAR AFS Network for the past twelve (12) months. Except for one (1) unit that continually experienced dropouts on the speech lines, all other units reported that the network performed reasonably well. Very few down times were reported and on those occasions the outages were very short and did not impact heavily on the operations of the units. Some failures can be attributed to the terminal equipment problems. There seemed to have been a slight breakdown on feedback when faults are reported. On such occasions, escalation measures were taken.

3.1.9 The problem at Saint Lucia-Hewanorra International Airport on the speech circuit of when ATC is on a call and another unit calls, the first call is interrupted. TSTT clarified that there are three (3) analogue phones at Hewanorra: two (2) in the Tower and one (1) in the Aeronautical Information Services (AIS) (for communication with the tower). If both tower phones are engaged and a third call comes in, it will ring at the AIS. During the TSTT maintenance visit in September 2016, the issue that was previously reported of call dropping was resolved.

3.1.10 ECCAA complemented TSTT failure report informing that:

a) The terminal equipment problems at Anguilla and Saint Kitts were a result of environmental issues.

b) The major failure at Douglas Charles Airport, Dominica occurred in August 2016 when the equipment was destroyed during the passage of a tropical storm.

3.1.11 Under WP/07, France reported that the E/CAR/AFS network is globally compliant with operational requirements, but recommended some improvements both in technical and procedural aspects. In Guadeloupe only one (1) router is on site. As previously informed by TSTT, the backup was faulty and sent to Trinidad and Tobago. Cisco through TSTT advised that the damage seen in the router is not covered under the Smartnet terms. The damage appears to be the result of improper environmental conditions; specifically, corrosion on the modules. Trinidad and Tobago informed that a quotation was requested from TSTT to replace the router, which when received will be sent to Guadeloupe for review and acceptance. The Meeting recalled that any damage due to environmental conditions must be replaced at the State's cost.

3.1.12 In this regard the following draft conclusion was proposed:

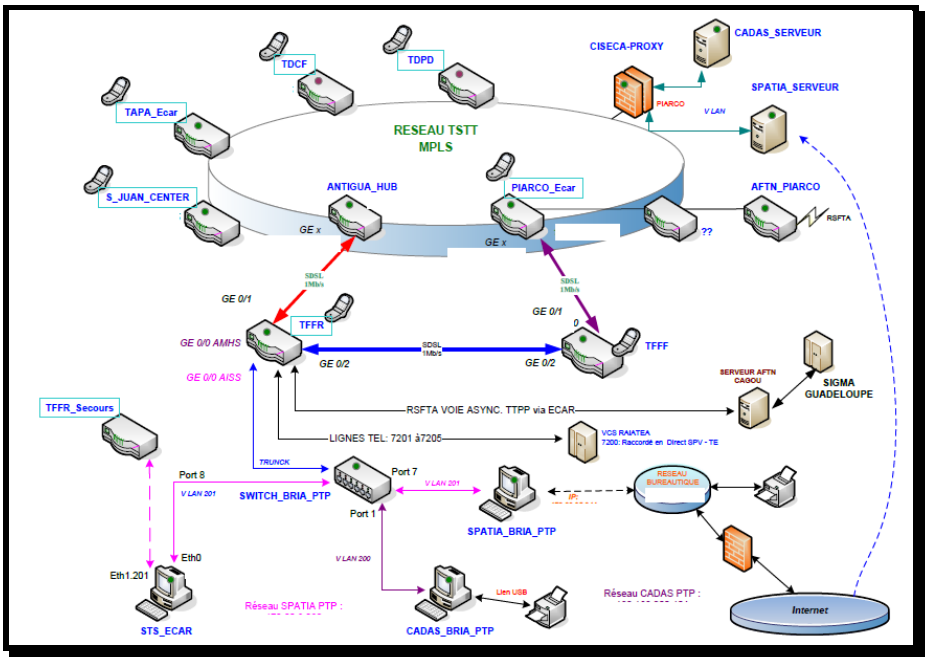
DRAFT CONCLUSION
E/CAR/NTG/07-RD/5/2 REPLACEMENT OF AFS NETWORK NODE REDUNDANCY IN GUADELOUPE

That, in order to restore the node redundancy for the replacement of the failed equipment in Guadeloupe:

a) Trinidad and Tobago submit the cost of the replacement by **15 December 2016**; and;

b) France report by **30 January 2017**, on the actions taken to conduct this replacement.

3.1.13 Following CONCLUSION E/CAR/NTG/6-RD/4/3, France informed on their tool developed by Guadeloupe maintenance team to improve E/CAR monitoring information, giving more comprehensive information as far as systems and services are concerned. France SNA/AG can provide the tool to any State for their local monitoring; TSTT/TTCAA will provide 1-3 level access for this purpose. The following picture illustrates the E/CAR monitoring information:



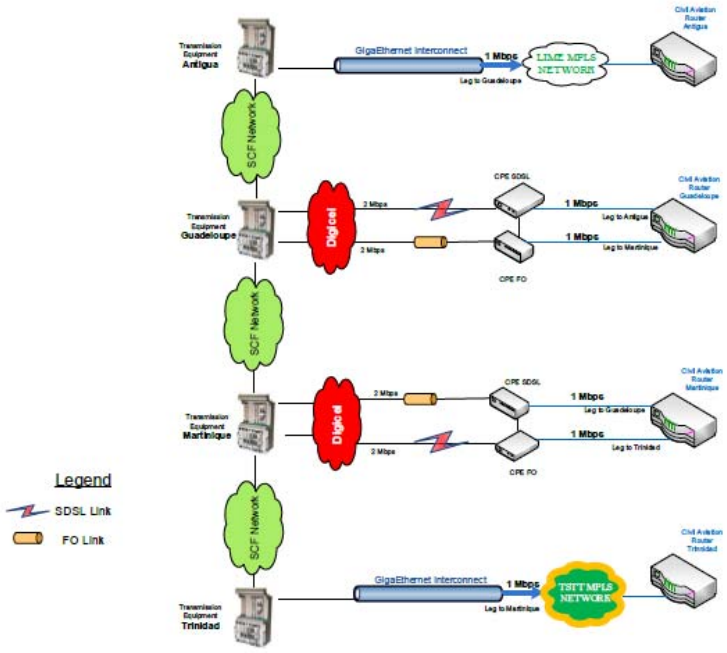
3.1.14 Due to the increased number of cyber-attacks on systems, France suggested performing a cyber-security and safety case on E/CAR network and connected applications. Due to the basic initial logins and passwords given for each ANSP to use both Spatia and Spatia Web, in accordance with TTCAA, the Guadeloupe and Martinique login and password have been changed to a more complex password. The Meeting was informed that the E/CAR AFS Network is a closed network and the only public access to internet is protected by firewalls and other protections. In this regard the Meeting agreed on the following decision:

DECISION
E/CAR/NTG/7-RD/5/3 CYBER SECURITY VULNERABILITY ASSESSMENT

That, due to the increase number of cyber-attacks on systems and in order to increase the reliability of the nodes and the network, that ECCAA, Barbados, Trinidad and Tobago, United States and lead by France conduct a cyber security vulnerability assessment to the E/CAR AFS Network by the E/CAR/NTG/8 Meeting.

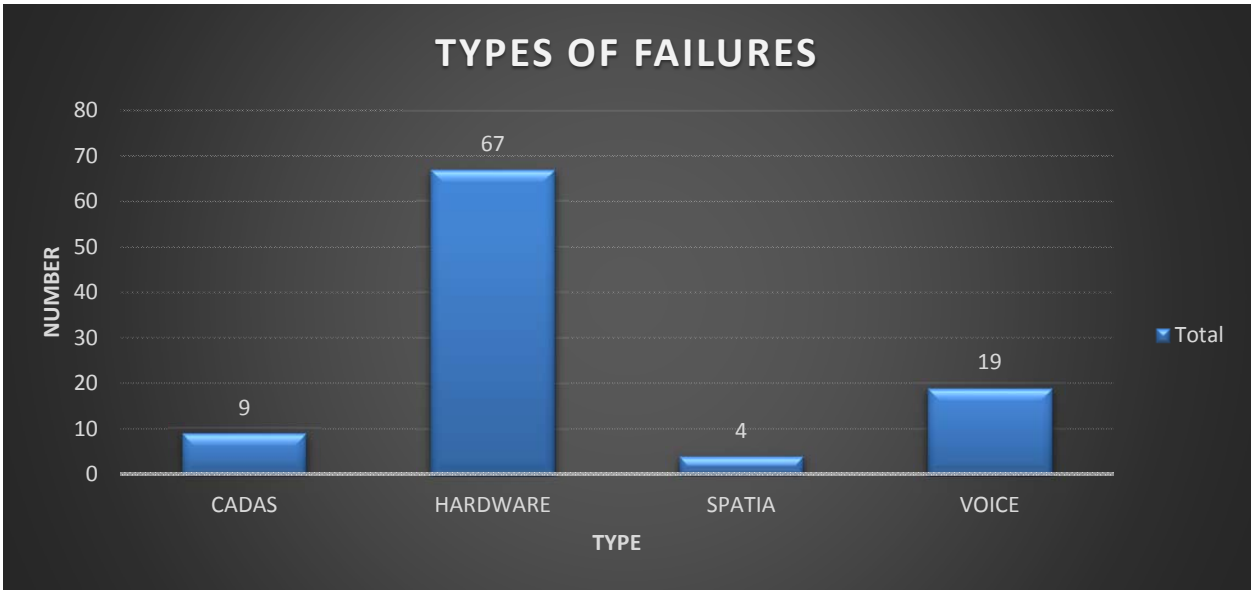
3.1.15 France also noted that future ATC systems will be full IP. For instance, VCCS using Voice over IP (VOIP) could be connected to E/CAR with direct IP connection and France suggested that studies could start to handle these future technological changes and support information about these changes. The Meeting highlighted that the E/CAR AFS Network is already IP-compliant as IP Phones are available as back-up.

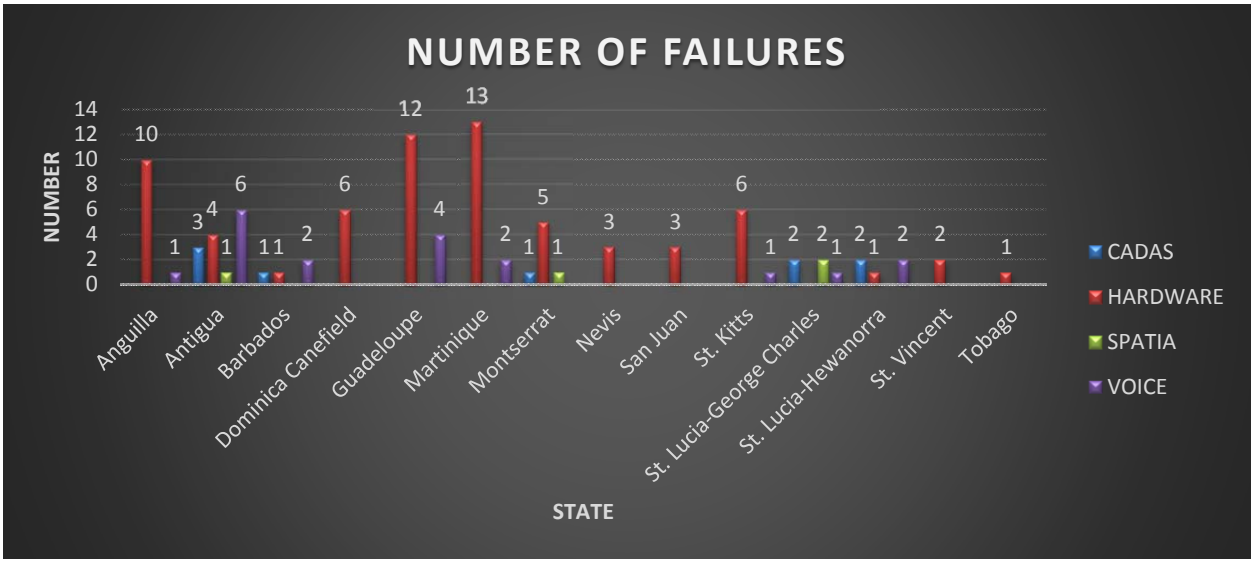
3.1.16 Further to the improvement of the availability and reliability of the International Private Leased Circuits (IPLC) between Piarco and Martinique, Martinique and Guadeloupe and Guadeloupe and Antigua. Trinidad and Tobago is working with Southern Caribbean Fiber (SCF) to implement redundancy in the IPLC in addition to replacing the end transmission devices. The service consists of 1 Mbps Ethernet Layer 2 connections and protected service with Digicel circuits. The architecture is being revised with a completion date of end of October 2016 as follows:



3.1.17 In WP/08, Trinidad and Tobago informed that in July 2016, Antigua and Barbuda reported that the following error was being displayed on CADAS: " Server unreachable" when retrieving Flight Plan (FPLs) messages. There were also numerous alarms stating “connection to server loss”. TTCAA did some initial checks with ECCAA technicians to establish that the fault was not local. A report was sent to TSTT and checks were conducted on the network. No issues were found on the Multi-Protocol Label Switching (MPLS). Subsequent to this report by Antigua and Barbuda, Barbados and Saint Lucia also reported a "slowing up" of their CADAS system. Further checks at Piarco's end revealed that the status of the message handler (software module) on the CADAS Server was in error. This issue was picked up after some investigation by TTCAA technicians since the error was not visible as a fault on the server. After stopping/starting the terminal server and the message handler, the service was normalized. It was noted the CADAS service for this period was always available.

3.1.18 Trinidad and Tobago noted to the Meeting that the Topdesk statistics are based on the users’ report and not the equipment monitoring which is captured by TSTT. The following breakout of reported faults taken from Topdesk for the period October 2015 to September 2016 is presented as follows:





3.2 Update on E/CAR AFS Network Interconnection to the MEVA Network

3.2.1 Under WP/09, the MEVA TMG Coordinator presented information on the combined regional activities in the Central and Eastern Caribbean, which are carried out through bilateral agreements in order to improve the telecommunication in the area. Such agreements and activities include MEVA III-E/CAR Network interconnection, AMHS Implementation, Radar Data Exchange and mutual cooperation. Similarly United States commented on their Caribbean Initiatives: three (3) shout services from San Juan (ZSU) Combined Center Radar Approach Control (CERAP) to Beef Island, British Virgin Islands, Curacao, and Piarco; an Automatic Ring Down (ARD) Service from ZSU CERAP to Maiquetia, Venezuela and a shout service from Houston (ZHU) ARTCC to Havana, Cuba.

3.2.2 The FAA and Trinidad and Tobago Civil Aviation Authority (TTCAA) have agreed to the implementation the hot line as indicated in the Caribbean Initiative, ordering an E&M card for the San Juan operational voice switch and identified the extension to be used to support the new shout service. TTCAA has scheduled TSTT technicians to be at the San Juan CERAP during the first week of November 2016 to perform maintenance on the E/CAR Network router and connect the new service.

3.2.3 FAA informed on the Aeronautical Message Handling System (AMHS) circuit between PIARCO and United States, where interoperability testing has been completed and TTCAA and the FAA are planning for operational deployment.

Agenda Item 4: Surveillance Sharing Activities

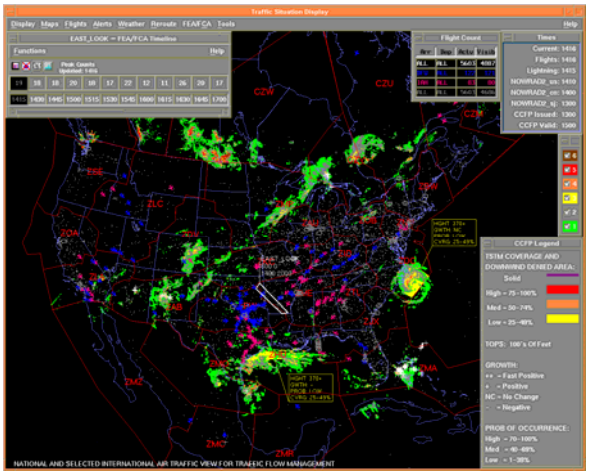
4.1 Review of Surveillance Sharing LOAs/MOUs: Trinidad and Tobago, French Civil Aviation, Barbados

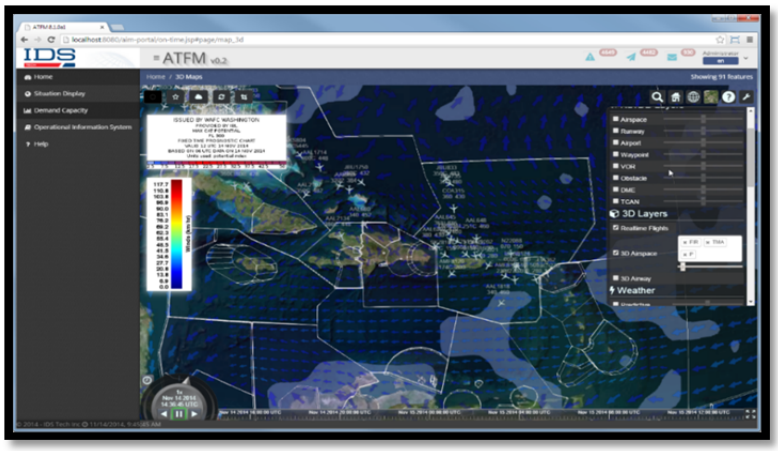
4.1.1 Under WP/10, the E/CAR/NTG Rapporteur briefed the Meeting on the background and historical justifications for the radar data sharing activities, highlighting the French Civil Aviation´s donation of ten (10) IRMA computers to the E/CAR states in order to allow States to gain familiarization with a surveillance environment and for trial purposes. Eleven (11) IRMA computers were installed by the French Civil Aviation from March to November 2015 in Anguilla, Antigua and Barbuda (2), Barbados, Dominica, Grenada, Montserrat, Nevis, Saint Kitts, Saint Vincent, and Trinidad and Tobago (for monitoring) respectively. This was considered as Phase 1 of the Radar Data Sharing Project.

4.1.2 The Meeting recalled that the IRMA computers are equipped with software that can process only the French radars, so they cannot process the formatting of the Piarco radar or the Piarco Multi Radar Tracker (MRT). Accordingly, the E/CAR/RD group developed a Project Plan which included the procurement of end user systems that will process the Piarco MRT data for the E/CAR States (Phase 2).

4.1.3 The LoA signed between Trinidad and Tobago and the Service de la Navigation Aerienne Antilles Guyane (French Civil Aviation) on 4 October 2007 with the most recent update to the Annexes on 10 August 2015 and the LoA signed between Trinidad and Tobago and Barbados on 17 November 2006, dealt with the remoting of radar data from Martinique and Barbados respectively to Trinidad and Tobago. Phase 2 of the E/CAR/RD will require that Trinidad and Tobago export the MRT (all surveillance sources) to States. In this regard, an update to the current LoAs is required.

4.1.4 Regarding Air Traffic Flow Management (ATFM) implementation, TTCAA is currently working on implementing an ATFM system for the Piarco Flight Information Region (FIR) using a Collaborative Decision Making (CDM) methodology. The main benefits from CDM are realized through sharing data with stakeholders to provide the most up-to-date information on flight schedules, system constraints, weather forecast, and traffic demand. In this regard, United States previously informed that they have a system called Aircraft Situation Display for Industry (ASDI), which includes radar and flight plan data from Canada, Europe, Mexico and United States and several other States with a one-minute updates that is used to create an Aircraft Situation Display (ASD). The following photos illustrate the ASD:





4.1.5 A bilateral agreement between United States and Trinidad and Tobago is currently under discussion for flight data exchange to keep the objectives of ATFM, utilizing the System Wide Information Management concept. The intention is to incorporate the FAA's Traffic Flow Management data into the Trinidad and Tobago Air Traffic Flow Management (ATFM) system. The FAA has requested the Piarco MRT data, which presently comprises the Piarco radar and the French Dacota (Martinique and Guadeloupe radars MRT) in order to combine and display the data on the Aircraft Situation Display (ASD) for the Caribbean.

4.1.6 In return for the data, United States will assign a user ID and password to access the system in order to receive the benefits of seeing the aircraft as they transition from departure through to destination. Access is available to stakeholders in the CAR region including Air Navigation Service Providers (ANSPs), airliners, airports, military, search and rescue operators and weather services. In this regard, the following draft conclusions were formulated:

DRAFT CONCLUSION
E/CAR/NTG/7-RD/5/04 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 revise 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.

4.2 Surveillance sharing update: Trinidad and Tobago, Sint Maarten, United States (San Juan), Antigua and Barbuda, Guyana, Venezuela

Trinidad and Tobago - Venezuela Radar Exchange

4.2.1 Under WP/11, Trinidad and Tobago recalled their interest in the exchange of radar data with Venezuela in order to improve the redundancy, availability, and quality of the existing radar data in the Maiquetia and PIARCO Flight Information Regions (FIRs), summarizing of all the activities conducted up to the bilateral meeting planned between Trinidad and Tobago and Venezuela and the letter of invitation issued to Venezuela through both ICAO Regional Offices. This radar exchange is still awaiting Venezuela to react. In this regard the following draft conclusion was formulated:

DRAFT CONCLUSION
E/CAR/NTG/7-RD/5/5 REACTIVATION OF TRINIDAD AND TOBAGO - VENEZUELA RADAR EXCHANGE

That, in order to continue the Trinidad and Tobago - Venezuela Radar Exchange activities, that the ICAO NACC Office, in coordination with the SAM Office, contact Venezuela for the reestablishment of the coordination activities with Venezuela for this purposes by 30 December 2016.

Trinidad and Tobago – Guyana Radar Exchange

4.2.2 Guyana implemented one (1) Automatic dependent surveillance – broadcast (ADS-B) receiver in 2014 in Timehri. Guyana has plans to implement a second receiver to expand their ADS-B coverage area. Guyana and Trinidad and Tobago have expressed an interest in sharing surveillance data, but no information has been exchanged. In this regard, a bilateral meeting to discuss the way forward may be beneficial. In this sense, the following conclusion was formulated:

DRAFT CONCLUSION
E/CAR/NTG/7-RD/5/6 TRINIDAD AND TOBAGO – GUYANA RADAR EXCHANGE

That, in order to share surveillance data in benefit of improving the accuracy and precision of the surveillance data, Trinidad and Tobago to:

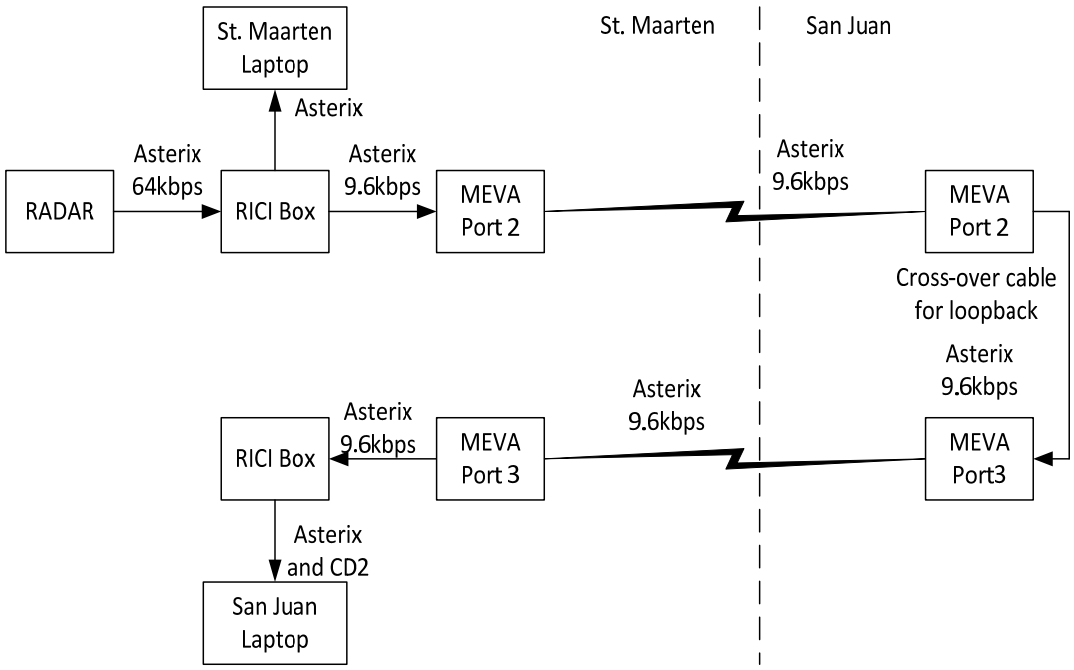
a) Coordinate a meeting with Guyana for this purposes by 30 December 2016; and

b) Inform the E/CAR/NTG/8 Meeting of this progress.

Trinidad and Tobago – Sint Maarten Radar Exchange

4.2.3 Under WP/12, the Meeting was updated on the interconnection and Radar sharing activities between Sint Maarten and Trinidad and Tobago. It was commented that United States is supporting the exchange of RADAR between Sint Maarten and Trinidad through an interconnection of the E/CAR Network to the MEVA III Network at the San Juan (ZSU) Center Radar Approach Control (CERAP). A proof of concept testing was done earlier in 2016, between San Juan and Sint Maarten through the MEVA III Network. The Sint Maarten RADAR output is in Asterix-formatted datagrams clocked at 64kbps and the MEVA service is a 9.6kbps service. The proof of concept testing showed that the 64kbps output of the RADAR could be sent using the 9.6 MEVA service for transport between MEVA sites in San Juan and Sint Maarten. The Asterix format could be converted to Common Digitizer-2 (CD2) format for possible future use at ZSU using Sunhillo Real Time Interface and Conversation Item (RICI) boxes for compression and conversion.

4.2.4 The following diagram depicts the process:



4.2.5 Only one (1) channel of the MEVA satellite duplex circuit was used to transmit RADAR information from Sint Maarten to San Juan. This indicates that the other channel of the duplex circuit could be used for returning a separate RADAR stream. This duplex operation exchanging separate RADAR streams was not tested and should be confirmed through futher proof of concept testing before attempting to exchange RADAR data operationally.

4.2.6 A teleconference was held on 12 October 2016 with representatives from Sint Maarten, Trinidad and Tobago, and United States on the exchange of Radar Data between Piarco and Sint Maarten. To facilitate the exchange requires a cross connect from the E/CAR AFS Network to the MEVA Network in San Juan CERAP. The new connection between Piarco and Sint Maarten which will cross connect in San Juan will only be for radar data exchange.

4.2.7 At the San Juan CERAP, the location of the MEVA node is physically far from the E/CAR router and will require two (2) modems in San Juan. It was agreed that these modems will be ordered/provided by the FAA. The E/CAR router in San Juan has already been configured for the pass-through of radar data from Sint Maarten. Both Trinidad and Tobago and FAA have agreed to exchange as-built information. Trinidad and Tobago has agreed to combine the information and provide as-built diagrams once implementation has been completed.

4.2.8 The FAA has agreed cover the expenses for the MEVA line between Sint Maarten and San Juan. Currently, there are two (2) vacant 9.6K lines between Sint Maarten and San Juan. Sint Maarten has agreed to use the existing MEVA line and coordinate the exchange of monthly payment with FAA at a later date. Data out of Sint Maarten is 64Kbps and out of MEVA it is 9.6Kbps. A RICi box may be required in Sint Maarten. Further coordination is required between Trinidad and Tobago and Sint Maarten regarding the equipment that may be needed.

4.2.9 The FAA commented the Meeting of their recent progress with the agreements/ coordination with Sint Maarten with three proposed annexes to the Air Navigation Services Agreement:

a) AIS-R System implementation
b) Possible implementation of a FAA own radio site to support San Juan CERAP
c) Possible use of radar data for situational awareness or for radar separation control- awaiting validation and funds from FAA

4.2.10 United States and Trinidad and Tobago updated the Meeting on their actions for the agreement arrangement for radar data as follows:

a) Sint Maarten- United States radar agreement on-going, but timeline for accomplishment is October 2017; and
b) Sint Maarten – Trinidad and Tobago radar agreement is being drafted and an update will by informed by the E/CAR/NTG/8 Meeting

4.2.11 Under WP/13, Antigua and Barbuda informed the Meeting that its Government has recommitted the acquisition of a surveillance system to be installed at the V. C. Bird International Airport. In this regard, the vendor, Aeronav Incorporated, was selected to provide the necessary equipment that will allow full Radar Surveillance implementation and Radar Control. The period proposed for procurement is 6 February 2017 to 24 July 2017, with installation to follow during the period from 16 October 2017 to 12 December 2017. In this regard, the following Conclusion was agreed:

DRAFT CONCLUSION
E/CAR/NTG/7-RD/5/7 ANTIGUA AND BARBUDA RADAR DATA

That, in order to ensure the appropriate planning and coordination for testing and integrating the radar data from the Antigua and Barbuda Radar into the E/CAR MRT data, ECCAA/Antigua and Barbuda provide the ICAO Regional Office and the E/CAR/NTG by **30 December 2016**, the details planning (timelines and actions), technical information (radar data format, circuit speed, etc.) from the radar in Antigua.

4.2.12 Under WP/14, France recalled the offer made to the E/CAR States to deliver, free of charge, of IRMA2000 radar display software. States having the IRMA Display installed have to sign a letter of agreement with the French civil aviation authorities. Anguilla and Montserrat are missing to comply with this requirement as follows:

Item No.	Quantity of CPUs	State/Territory	Installation Date	Location	LoA Signed
1	1	Saint Vincent and the Grenadines	27 January 2015	TWR	LOA
2	2	Antigua and Barbuda	19 March 2015	TWR and Tech room	LOA
3	1	Grenada	17 April 2015	TWR	LOA
4	1	Montserrat	18 May 2015	Tech room	
5	1	Dominica	15 June 2015	TWR	LOA DASPA
6	1	Barbados	18/19 June 2015	IFR Room	LOA GAIA
7	1	Nevis	25 June 2015	TWR	LoA NASPA
8	1	Saint KITTS	25 June 2015	TWR	LoA SCASPA
9	1	Trinidad	20 Aug 2015	For trials	For trials
10	1	Anguilla	No news	Abandoned	

4.2.13 Two (2) demands for CPU repairing/replacement were made, and no further activity since the end of 2015 has been reported.

4.2.14 From 2017, France commented that the radar output protocol will change for UDP/IP (Asterix cat 1 and 2). Dacota shall be capable of sending UDP/IP information too (Asterix cat 30 and or 62). These changes are prerequisite to the installation of the new ATM system in French West Indies (FWI). These new format should facilitate French radar integration into the Piarco Selex systems, but will require test and prior coordination with TTCAA. The plan for Mode S upgrade has been accepted and should start in 2020. The Dacota Multi Radar Tracker (MRT) system would be kept, as French civil aviation gets further knowledge on Dacota (MUST multiplot tracker). The COSNET safety net alert system would be kept too, as all safety nets are already tuned (MSAW, STCA). This should reduce risks on the project.

4.2.15 Finally, France informed on their Radar programmed evaluation using SASS-C for mono radar performance analysis, with a minimum of 2 full evaluations per year and on their real time checks as done in their Dacota MRT.

4.3 ADS-C and ADS-B/MLAT developments

ADS-B implementation

4.3.1 Under WP/14, France informed the Meeting that two (2) Automatic Dependent Surveillance - Broadcast (ADS-B) stations will be tested in FWI from 2017, and that ADS-C is not planned nor required in FWI. Five (5) ADS-B stations will be installed from 2017, with a roadmap from Tier3 to Tier1 operation, in radar environment. Two (2) ADS-B stations should be ordered and installed in Martinique and Guadeloupe for trials, in order to:

- Define a possible concept of operation (Tier2 as a radar backup)
- Define how ADS-B could help in Search and Rescue (SAR) activities
- Determine how far the fleet is ADS-B equipped and get related figures

4.3.2 France has published ADS-B carrying requirement for the EUR/NAT ICAO regions, and is working on an ADS-B carrying requirement text for French Guyana and FWI. SNA/AG suggests defining the regional ADS-B roadmap, including carrying requirements, so that France would be integrated, as necessary, to the regional ICAO policy. ICAO ADS-B out target date is the end of 2019.

4.3.3 Work has been done through the ICAO NACC Regional Office – ANI/WG ADS-B TF to define the technical specifications and concept of operations (CONOPS) for ADS-B in the NAM/CAR States. The ADS-B Task Force has submitted a draft report that has been distributed through the chair of the TF.

4.3.4 In this sense, Trinidad and Tobago commented on the existing ADS-B receiver in Trinidad and on their Project for installing 5 ADS-B Receivers in the E/CAR Regions to enhance the upper airspace level surveillance data availability, accuracy and precision. The Project shall be implemented by mid 2017.

ADS-C Implementation

4.3.5 Under WP14, France commented the ADS-C/CPDLC use in French Guiana since May 2011, with Future Air Navigation System 1/A (FANS1/A) equipped airplanes. With these flights, CPDLC is the primary means for communication. HF is still in use with others (HF antennas have been renewed in 2010 for 3 M). Trials should be performed in 2017 to test and activate AIDC with Brazil and Dakar, then Piarco.

4.3.6 Trinidad and Tobago in WP/15 informed the Meeting that CPDLC and ADS-C were implemented for operational use on 7 July 2016. Communications and situational awareness has been greatly enhanced in the Oceanic Sector, resulting in enhanced safety, improved efficiency and reduction of harmful CO_2 emissions. A period of ADS-C testing and trials was conducted between May 2015 and start of service (7 July 2016). At the beginning of the service, all of the controllers who routinely work in the Oceanic Sector were competent certified in FANS 1/A services. Training is ongoing to certify all the ACC controllers in FANS 1/A operation. The training and certification process is in accordance with that approved by the TTCAA Safety Regulators. All current Area Control Centre (ACC) controllers would be certified in FANS 1/A and this would be included as part of the standard training package for future ACC controllers. The safety assessment conducted prior to commencement of the FANS 1/A service was to the satisfaction of both the TTCAA ANSP Safety Unit and the Regulatory Department. The mitigations suggested have ensured that all identified hazards to FANS 1/A operations bring the risks into an acceptable range.

4.3.7 Under WP/16, Barbados briefed the Meeting on their ADS-B/MLAT developments . GAIA Inc. is currently in the advanced stages of installing an ADS/B MLAT network to support civil aviation in Barbados. The Project has been contracted to Leonardo (formerly Finmeccanica and Selex ES). Current projection is for completion of the installation in December 2016.

4.3.8 The Barbados project includes a Wide Area Multilateration (WAM)/ADS-B System using seven (7) sensors distributed around the island in conjunction with a Ground Surveillance Tracking System employing five (5) sensors in the surroundings of the Grantley Adams International Airport. Integral to this project is also the replacement of all ATC surveillance display equipment with a Flight Data Processing (FDP). Included in the project are facilities to integrate and display incoming surveillance data from the E/CAR AFS Network, as well as, the ability to send available surveillance data from Barbados via the network.

4.3.9 An Integrated Display System (IDS) replacing the ATOM system in Barbados with client workstations in both the AIS and MET requiring AFTN or AIDC connectivity is included as well as a Data Base System for statistical Analysis and Billing (DASB). Installation of the electronic equipment at the supporting buildings at all sites has been done. The antenna installations at some sites are currently in progress and expected to be completed by mid-November. Software support personnel are expected on site during the month. Maps are currently available at the new controller working positions for evaluation. Testing of data availability and display of all surveillance data will be required during this phase requiring the availability of combined Radar Data from the Radar Data at Barbados for integration. MSSR, MLAT/ADS-B will be sent over the network during this phase to facilitate integration testing in Trinidad. Formulation and promulgation of the necessary agreements with respect to the surveillance data sharing will be required. In this regard the following draft conclusion was formulated:

DRAFT CONCLUSION
E/CAR/NTG/7-RD/5/8 INTEGRATION OF BARBADOS SURVEILLANCE DATA INTO THE PIARCO MRT AND EXCHANGE OF PIARCO MRT WITH BARBADOS

That, in order to plan and timely coordinate the integration of the Barbados surveillance data into the MRT System, Trinidad and Tobago and Barbados work together to coordinate by **30 December 2016**:

a) the integration of the Piarco MRT at Barbados during the next planned visit of the ATM vendor (Leonardo); and

b) the integration of the Barbados surveillance (radar/ADS-B/MLAT) into the Piarco MRT.

4.3.10 Considering the current and short term activities described in the Meeting on ADS-B activities, France planning on 2 ADS-B Stations in FWI, Trinidad and Tobago ADS-B Project, Barbados´ ADS-B implementation and the intent for ADS-B data exchange; the Meeting identified the need to align these activities with the regional implementation of the ANI/WG. The Secretariat explained that in the region there have been several achievements on ADS-B activities, from the CONOPS development, to ADS-B Data Analysis applications, guidance on ADS-B trials, etc. Finally, considering that under the CONOPS the ADS-B has to be considered for SAR purposes, The Meeting agreed on the following draft conclusion:

DRAFT CONCLUSION
E/CAR/NTG/7-RD/5/9 ADS-B OUT IMPLEMENTATION IN THE E/CAR AREA

That, in order to prepare the E/CAR area and take advantage of the operational benefits of ADS-B out:

a) Barbados, France, 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) the E/CAR/NTG Rapporteur coordinate with the E/CAR States and ANI/WG ADS-B TF Rapporteur to align the different E/CAR ADS-B activities with the regional ADS-B plan and implementation by **February 2017**; and

d) the E/CAR/NTG-RD Rapporteur update the surveillance plan and inform the E/CAR/NTG/8 Meeting of this progress.

4.4 Review of Performance and User's Comment on Radar Display Phase I

4.4.1 The responses received for the Radar Data Display Survey was reviewed by the Meeting. Comments were provided by Barbados, Grenada, Saint Lucia, and Saint Kitts and Nevis noting the benefits in having the IRMA computers that were donated by the French Civil Aviation.

Agenda Item 5: Radar Data Display Request for Proposal

5.1 Definition of Technical Requirements and Proposal

5.1.1 The Meeting reviewed the results of the surveillance data questionnaire that was distributed to States to complete the information. The following States responded to the questionnaire:

- Antigua
- Grenada
- Saint Kitts
- Saint Lucia

5.1.2 The above States' requirements for the next three (3) years is to have situational awareness with the implementation of full radar service in some five (5) to ten (10) years in the future. Functionalities, for example, billing, flight data processing system (for stripping, flight management), will be requested in the Request for Proposal (RFP) as optional for the particular State. In order to move forward with the activities of the RD group for Phase II, the RFP will focus on situational awareness.

5.1.3 Regarding information on Dominica's and Saint Vincent and the Grenadines requirements, the following draft conclusion was formulated:

DRAFT CONCLUSION
E/CAR/NTG/7-RD/5/10 SURVEILLANCE DATA REQUIREMENTS FOR DOMINICA AND SAINT VINCENT AND THE GRENADINES

That, ECCAA inform the E/CAR/NTG Rapporteur of the surveillance data requirements for Dominica and St. Vincent by **30 November 2016**.

5.1.4 ECCAA noted that for Anguilla and Montserrat, all information on the requirements for surveillance data in relation to Phase II of the surveillance sharing project must be approved and communicated by United Kingdom (UK - ASSI), since they are UK Territories. Therefore, the following draft conclusion was formulated:

DRAFT CONCLUSION
E/CAR/NTG/7-RD/5/11 SURVEILLANCE DATA REQUIREMENTS FOR ANGUILLA AND MONTSERRAT

That,

a) The E/CAR/NTG Rapporteur send by **30 Novem ber 2016** 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

b) ICAO write to United Kingdom (ASSI) regarding their commitment to part of Phase II and the agreed procurement process.

5.2 Definition of RFP Process

5.2.1 The Meeting discussed the procurement process for Phase II. There was consensus that a task force will be set up comprising ECCAA, France, Trinidad and Tobago, and United States to review the technical specifications, evaluate the tender responses and select a successful vendor. The issuance of the tender will be done through ICAO TCB with responses sent to ICAO NACC office with a target date for June 2017. In this regard the following Decision was agreed:

DECISION
E/CAR/NTG/7-RD/5/12 DEFINITION OF RADAR DATA DISPLAY PHASE II PROCESS

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.

Agenda Item 6: Update of ECARNTG and RDS Terms of Reference and work program

6.1 The Secretariat recalled that with the approval of the Sixth Eastern Caribbean Network Technical Group (E/CAR/NTG/6) and Fourth Eastern Caribbean Radar Data Sharing Ad-hoc Group (E/CAR/RD/4) Meetings Final Report, reference ICAO State Letter EMX0769 dates 5 August 2015, the ECAR/DCA approved the ECARNTG and RDS Terms of Reference and work programme contained in said Final Report. The current ToRs are presented in the **Appendix C** to this agenda item.

Agenda Item 7: Other Business

7.1 Under WP/20, ICAO presented the 1st year performance evaluation of the implementation of the ICAO NACC "*No Country Left Behind (NCLB)"* Strategy, which has been presented to the North American, Central American and Caribbean Directors General of Civil Aviation during the NACC/DCA/6 Meeting held in Nassau, Bahamas, and proposes the use of the NCLB mechanism for Project formulation.

7.2 The main goal of the strategy is to ensure that Standards and Recommended Practices (SARPs) implementation is better harmonized so that States can meet their ICAO obligations as signatory members to the Chicago Convention. This will enhance aviation safety and security and support Member States to have access to the significant socio-economic benefits of safe and reliable air transport system. The global NCLB information is available at: http://www.icao.int/about-icao/NCLB/Pages/default.aspx.

7.3 The NCLB Strategy specifically developed by the ICAO NACC Regional Office promotes efforts to resolve Significant Safety Concerns (SSCs) identified through the ICAO Universal Safety Oversight Audit Programme-Continuous Monitoring Approach (USOAP-CMA). The Strategy also aims to assist States to achieve an effective implementation of the deficient areas that are critical for States in order to have a safe, secure, environmentally sound, and sustainable civil aviation system. The NCLB Strategy success depends on the participation and commitment of the States in the NAM/CAR Regions. In this sense, it is essential that Civil Aviation Authorities (CAAs) designate a Point of Contact (PoC) in order to keep continuous communication on activities and outcomes achieved by the State.

7.4 The full performance evaluation report and the analysis of needs and challenges encountered in our region, and the search for solutions and agreements was made during the NACC/DCA/6 Meeting. States were invited to look for Projects of interest to be funded by NCLB supporting financial entities such as the World Bank and the Interamerican Development Bank. The NACC NCLB webpage is available for more details: http://www2010.icao.int/NACC/Pages/nacc-nclb.aspx).

7.5 The Secretariat highlighted that if the Radar Data sharing States interested in implementing Phase II organized their common requirements and are willing to work together for a common Project, a NCLB Project may be formulated and propose for funds. In this regard the Meeting agreed in the following draft Conclusion:

DRAFT CONCLUSION
E/CAR/NTG/7-RD/5/13 PROJECT PROPOSAL FOR E/CAR AREA UNDER THE NACC NCLB STRATEGY

That, in order to seek possible funds and resources for the Radar Data Sharing Phase II Project or the regional Surveillance improvements with ADS-B States, the E/CAR/NTG Rapporteur work with the NTG Members for formulating a Project Proposal by February 2017.

7.6 Antigua and Barbuda offered to host the ECARNTG/8 and RD/6 Meeting in October 2017.

APPENDIX D
EXECUTIVE LIST OF CONCLUSIONS/DECISIONS

Number	Conclusion/Decision	Responsible for action	Deadline
D 7/1	**ROUTER AUTOMATIC CHANGEOVER CAPABILITY** That, in order to increase the reliability of the nodes and the network, TSTT analyse the feasibility and cost-effectiveness of implementing automatic changeover feature in the CISCO Routers by the E/CAR/NTG/8 Meeting.	TSTT	
C 7/2	**REPLACEMENT OF AFS NETWORK NODE REDUNDANCY IN GUADELOUPE** That, in order to restore the node redundancy for the replacement of the failed equipment in Guadeloupe:		
	a) Trinidad and Tobago submit the cost of the replacement by **15 December 2016**; and;	Trinidad and Tobago	15 December 2016
	b) France report by **30 January 2017**, on the actions taken to conduct this replacement.	France	30 January 2017
D 7/3	**CYBER SECURITY VULNERABILITY ASSESSMENT** That, due to the increase number of cyber-attacks on systems and in order to increase the reliability of the nodes and the network, that ECCAA, Barbados, Trinidad and Tobago, United States and lead by France conduct a cyber security vulnerability assessment to the E/CAR AFS Network **by the E/CAR/NTG/8 Meeting**.	ECCAA, Barbados, France, Trinidad and Tobago, and United States	By E/CAR/NTG/8 Meeting
C 7/4	**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 revise 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.	France and Barbados	

Number	Conclusion/Decision	Responsible for action	Deadline
C 7/5	**REACTIVATION OF TRINIDAD AND TOBAGO - VENEZUELA RADAR EXCHANGE** That, in order to continue the Trinidad and Tobago - Venezuela Radar Exchange activities, that the ICAO NACC Office, in coordination with the SAM Office, contact Venezuela for the reestablishment of the coordination activities with Venezuela for this purposes by **30 December 2016**.	ICAO NACC and SAM Regional Offices	30 December 2016
C 7/6	**TRINIDAD AND TOBAGO – GUYANA RADAR EXCHANGE** That, in order to share surveillance data in benefit of improving the accuracy and precision of the surveillance data, Trinidad and Tobago to**:**		
	a) Coordinate a meeting with Guyana for this purposes by **30 December 2016**; and	Trinidad and Tobago	30 December 2016
	b) Inform the E/CAR/NTG/8 Meeting of this progress.	Trinidad and Tobago	
C 7/7	**ANTIGUA AND BARBUDA RADAR DATA** That, in order to ensure the appropriate planning and coordination for testing and integrating the radar data from the Antigua and Barbuda Radar into the E/CAR MRT data, ECCAA/Antigua and Barbuda provide the ICAO Regional Office and the E/CAR/NTG by **30 December 2016**, the details planning (timelines and actions), technical information (radar data format, circuit speed, etc.) from the radar in Antigua.	ECCAA and Antigua and Barbuda	30 December 2016
C 7/8	**INTEGRATION OF BARBADOS SURVEILLANCE DATA INTO THE PIARCO MRT AND EXCHANGE OF PIARCO MRT WITH BARBADOS** That, in order to plan and timely coordinate the integration of the Barbados surveillance data into the MRT System, Trinidad and Tobago and Barbados work together to coordinate by **30 December 2016**:	Trinidad and Tobago and Barbados	
	a) the integration of the Piarco MRT at Barbados during the next planned visit of the ATM vendor (Leonardo); and	Trinidad and Tobago and Barbados	30 December 2016
	b) the integration of the Barbados surveillance (radar/ADS-B/MLAT) into the Piarco MRT.	Trinidad and Tobago and Barbados	30 December 2016

Number	Conclusion/Decision	Responsible for action	Deadline
C 7/9	**ADS-B OUT IMPLEMENTATION IN THE E/CAR AREA** That, in order to prepare the E/CAR area and take advantage of the operational benefits of ADS-B out:		
	a) Barbados, France, 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**;	Barbados, France, and Trinidad and Tobago	30 December 2016
	b) b) E/CAR States and Territories inform the NTG and ICAO by **30 December 2016** of new plans for ADS-B implementation activities;	E/CAR States and Territories	30 December 2016
	c) the E/CAR/NTG Rapporteur coordinate with the E/CAR States and ANI/WG ADS-B TF Rapporteur to align the different E/CAR ADS-B activities with the regional ADS-B plan and implementation by **February 2017**; and	E/CAR/NTG Rapporteur	February 2017
	d) the E/CAR/NTG-RD Rapporteur update the surveillance plan and inform the E/CAR/NTG/8 Meeting of this progress.	E/CAR/NTG-RD Rapporteur	
C 7/10	**SURVEILLANCE DATA REQUIREMENTS FOR DOMINICA AND SAINT VINCENT AND THE GRENADINES** That, ECCAA inform the E/CAR/NTG Rapporteur of the surveillance data requirements for Dominica and St. Vincent by **30 November 2016**.	ECCAA	30 November 2016
C 7/11	**SURVEILLANCE DATA REQUIREMENTS FOR ANGUILLA AND MONTSERRAT** That,		
	a) The E/CAR/NTG Rapporteur send by **30 November 2016** 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	E/CAR/NTG Rapporteur	30 November 2016

Number	Conclusion/Decision	Responsible for action	Deadline
D 7/12	**DEFINITION OF RADAR DATA DISPLAY PHASE II PROCESS** 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.	E/CAR/NTG Rapporteur	30 December 2016
C/13	**PROJECT PROPOSAL FOR E/CAR AREA UNDER THE NACC NCLB STRATEGY** That, in order to seek possible funds and resources for the Radar Data Sharing Phase II Project or the regional Surveillance improvements with ADS-B States, the E/CAR/NTG Rapporteur work with the NTG Members for formulating a Project Proposal by **February 2017**.	E/CAR/NTG Rapporteur	February 2017

— END —