



ICAO

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

**Eighth Eastern Caribbean Network Technical Group  
(E/CAR/NTG/8)  
and Sixth Eastern Caribbean Radar Data Sharing Ad  
hoc Group (E/CAR/RD/6)  
Meetings**

**Draft Report**

Saint George's, Grenada, 3 - 5 September 2018

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

Under this Agenda Item, the following working paper was discussed:

- WP/01 (Rapporteur)

1.1            The E/CAR/NTG Rapporteur presented WP/01, inviting 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 and Approval of the Agenda, Working Method and Schedule of the Meetings**

Under this Agenda Item, the following workings papers were discussed:

- WP/02 (E/CAR/NTG Rapporteur)

2.1            Under WP/02, the actions taken regarding the valid conclusions from previous E/CAR/NTG Meetings, as well as the conclusions and decisions formulated by the E/CAR/NTG/7 and E/CAR/RD/5 Meetings were examined.

2.2            The status and follow-up comments for each conclusion/decision is 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 The status for each conclusion/decision is designated as valid, completed or superseded.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 A** to the report.

- WP/03 (Secretariat)

2.3            Under WP/03, a summary of the conclusions and recommendations provided by the ICAO NACC Meetings and the Task Forces was presented to achieve regional and global implementations to support regional harmonization and standardization.

2.4            The ICAO Secretariat provided information on the activities that the different Task Forces are developing in the NAM/CAR Regions and invited them to adopt the recommendations provided in the different meetings regarding ADS-B, AIDC, MEVA communication improvement and others to support them to adopt regional agreements because of these implementations.

¿When the projects that are delay will start again?

**Agenda Item 3 E/CAR Aeronautical Fixed Services (AFS) Network Performance and Operation Network Performance and General Aspects**

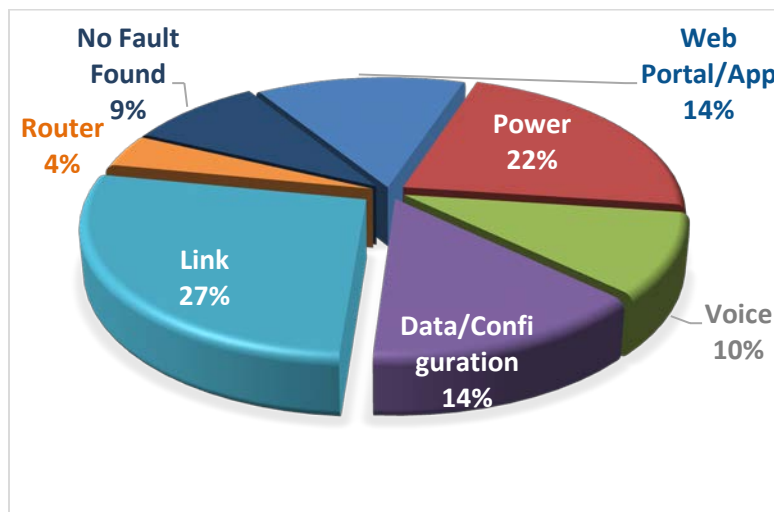
Under this Agenda Item, the following workings papers were discussed:

- P/01 (Trinidad and Tobago)

3.1 Under P/01, the E/CAR AFS network service provider, TSTT, examined E/CAR network features, managed service capabilities, network performance analysis and upgrade and recommendations. Regional MPLS circuits with Cisco WAN edge routers, Converged Voice and Data and Redundant paths and standby devices aspects of the network were discussed in particular Fault Management, Availability & Performance Monitoring. Fault Analysis, Remediation and Configuration changes and Upgrades.

3.2 An analysis of the faults for the period July 2017- July 2018 showed that there were 118 Reported Faults.

Figure 1 below shows the statistics by type of fault:



The number of faults by State is shown in Table 2 below:

State	2015	2016	2017
Anguilla	14	11	2
Antigua	4	8	9
Barbados	3	3	3
Dominica – Canefield	3	10	2
Dominica – Douglas Charles	2	0	7
Grenada	11	0	1
Guadeloupe	6	17	12
Martinique	2	14	13

Montserrat	1	7	1
Nevis	4	3	4
St. Lucia – George Charles	3	4	0
St. Lucia - Hewanorra	1	8	3
St. Kitts	0	8	3
St. Vincent	0	3	1
Antigua Hub/St. Maarten	0	3	0
Tobago	6	3	0
Trinidad	9	7	26
San Juan	15	7	24

Availability statistics are shown as follows:

State	Availability 2017/2018
Antigua	98.9%
Barbados	100%
Dominica – Canefield	5%
Dominica – Douglas Charles	69.8%
Grenada	100%
Guadeloupe	99.5%
Martinique	99.8%
Nevis	99.1%
St. Lucia	99.9%
St. Kitts	99.2%
Trinidad and Tobago	100%

3.3 An upgrade of the network was discussed with the following key features:

- Automatic Services Failover
- Enhanced Monitoring & Management
- Firewall and Security
- Power Management
  
- WP/05 (ECCAA)

3.4 Under WP/05, ECCAA informed the meeting that C.J. Lloyd Airport, Anguilla and Canefield Airport, Dominica suffered loss of terminal equipment during the passages of Hurricanes Irma and Maria in September 2017. Apart from the affected Airports noted above, the network on a whole performed well, and the few outages which were reported did not significantly affect the operations of the ATS units.

- WP/06 (France)

3.5 Under WP/06, France presented information on the situation in FWI and identified possible improvements. The E/CAR/AFS network is globally compliant with operational requirements, but some improvements may be needed, both in technical and procedural aspects. The FWI E/CAR/AFS network connection is achieved through dual access: Guadeloupe (Antigua, Martinique) and Martinique (Trinidad & Tobago, Guadeloupe). A new technical architecture to improve the quality and reliability of the service was proposed by the vendor Southern Caribbean Fiber and accepted by the TTCAA. The improvement provides protection mechanism on the wet portion based on ring protection switching within SCF network but also using third party networks and protection mechanism on the backhaul (local loop) portion based on HSRP between DSL connection and fiber optic connection in Martinique and Guadeloupe. In that perspective, SCF partnered with Digicel Business Solutions in order to provide the local loop for the access links in Guadeloupe and Martinique. Both access links in Guadeloupe and Martinique use copper lines. It is already scheduled to migrate on the copper access line of Martinique to fiber technology. The optical fiber is delivered but yet to be connected.

3.6 France reported some difficulties with phone communications. By resetting the router, the problem is resolved. TSTT informed that during the last maintenance activity in July this year the IP SLA feature of the router was set to 10 seconds which would authorize automatic switchover to the alternate track route (path) in the event of an issue lasting more than 10 seconds. The performance is being monitored to confirm resolution. France and Trinidad and Tobago agreed to amend the procedure via the LoA for requesting authorization and approval to reset the router.

3.7 France informed the meeting of their plans to replace their CAGOU AFTN Switch to MANGO, a COMSOFT system (AIDA, CADAS-ATS), compliant with AMHS. The new system will be in operation beginning 2020. The meeting was also informed about the measures to increase cyber security and safety. All outgoing or incoming data will go through a new system, called NARCISSE which will become operational in the beginning of 2020.

- WP/18 (United States)

3.8 Under WP/18, United States provided information on the combined activities in the Central and Eastern Caribbean and updates on Aeronautical Message Handling System (AMHS) implementation. These activities are carried out in order to improve the telecommunications in the area.

3.9 The FAA identified some need in the Caribbean and addressed some five projects to improve safety. These projects were delayed because of the hurricane season. The five projects are:

1. San Juan CERAP to BVI – Incomplete
2. San Juan CERAP to Curaçao – Incomplete
3. San Juan CERAP to Piarco – Incomplete
4. San Juan to Maiquetia, Venezuela – Complete
5. Houston ARTCC to Habana – Complete

3.10 Also, United States provided information about the ADS-B and AMHS activities in the region at their Status.

#### **Agenda Item 4            Surveillance Sharing Activities**

Under this Agenda Item, the following workings papers were discussed:

- WP/04 (Secretariat)

4.1            Under WP/04, information about surveillance data sharing, benefits of sharing and integrates surveillance data in different ATC systems was presented.

4.2            The Secretariat talked about the importance of having common situational awareness information, in the last years ICAO assisted those States which make decisions based on realistic information to allow safety improvement, sharing Surveillance data information is an essential requirement to support and improve situational awareness and it is a basis requirement before AIDC implementation.

4.3            The Secretariat recommended that Eastern Caribbean States incorporate the following issue in the NTG and RD activities:

- 1)            Update technical infrastructure of Eastern Caribbean States' surveillance systems (radar Systems, MLAT, ADS-B) indicating manufacturer, model, protocols etc.
- 2)            Update technical infrastructure of Eastern Caribbean States' ATC Systems, indicating the manufacturer, model and surveillance protocols that can be managed for them.
- 3)            Perform an analysis of the current infrastructure and create the necessary recommendations of minimum requirements that surveillance systems and air ATC systems must meet to ensure their integration.
- 4)            Ensure not only local integration and standardization, but integrate regional requirements with the other States of the Caribbean and South America with whom Eastern Caribbean States make coordination.

4.4 In this regard the following Draft Conclusion was formulated:

<b>DRAFT CONCLUSION</b> <b>E/CAR/NTG/8 – E/CAR/RD/6</b>		<b>UPDATE SURVEILLANCE INFRASTRUCTURE OF EASTERN CARIBBEAN</b>
<b>What:</b>  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: 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) 3. Integrate into your development plans the necessary requirements for new projects to come, integrate these capabilities.		<b>Expected impact:</b>  <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Operational/Technical
<b>Why:</b>  It is necessary to improve safety in the region and improve surveillance data sharing.		
<b>When:</b> Before December 30, 2018	<b>Status:</b> <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed	
<b>Who:</b> <input checked="" type="checkbox"/> States <input type="checkbox"/> ICAO <input type="checkbox"/> Other:	All States	

- WP/09 (E/CAR/NTG Rapporteur)

4.5 Under WP/09, updated information on the Letters of Agreement (LoA) between Trinidad and Tobago and Barbados, the Service de la Navigation Aerienne Antilles Guyane and Sint Maarten was presented. The LoA between the Service de la Navigation Aerienne Antilles Guyane and the Trinidad and Tobago Civil Aviation Authority was revised earlier this year to allow the TCAA to distribute the MRT tracks enriched with French radar data to FAA for the sole use of the ATFM initiative. The revised LoA includes the provision of radar data from the ATS Units of Martinique Aimé Césaire and Guadeloupe, for the benefit of member States of the E/CAR AFS Network. These States are Antigua and Barbuda, Barbados, the Commonwealth of Dominica, Grenada, the United Kingdom (Anguilla and Montserrat), the kingdom of the Netherlands (Sint Maarten), Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines and Trinidad and Tobago.

4.6 Following the destruction of ANS infrastructure on Sint Maarten including the Sunhillo RICl box in the wake of hurricane IRMA in September 2017, the LoA between Trinidad and Tobago and Sint Maarten has been put on hold until Sint Maarten’s infrastructure including the MEVA node and the radar services are restored.

4.7 The revision of the LoA with Barbados to include ADS-B and MLAT data to Trinidad and Tobago and the authorization to redistribute this data as part of the Piarco MRT data is in progress.



- WP/12 (Trinidad and Tobago)

4.8 Under WP/12, Trinidad and Tobago presented information on developments in the areas of Automatic Dependent Surveillance – Broadcast (ADS-B)/Multilateration (MLAT) in the Piarco FIR. Surveillance within the continental airspace of the Piarco Flight Information Region (FIR) is presently achieved with the Piarco radar and radar data from Guadeloupe and Martinique through radar sharing. ADS-B would be an economical and relatively easy solution to implement to enhance the surveillance in the continental airspace.

4.9 In accordance with the Surveillance Concept for Piarco FIR at least two (2) sources of surveillance within the same coverage area are recommended. If one source fails or has to be removed from service for maintenance, two (2) sources should still be available. This is not the case in the continental Piarco FIR. The coverage of the Piarco radar is not the same as that of Martinique and Guadeloupe which results in only one (1) source in some areas. If this source fails or is removed from service for maintenance then no surveillance is available in that area. The introduction of ADS-B would provide a second source.

4.10 Analysis of data obtained from trials conducted in November 2017 with one (1) ADS-B receiver located at Piarco showed that over sixty percent (60%) of aircraft transiting the continental airspace are equipped for ADS-B.

4.11 In August 2018 the TCAA engaged ICAO TCB for the ADS-B/WAM project for the continental airspace of the Piarco FIR. It is envisaged that the project will be completed in 2019. The E/CAR AFS Network shall be the medium of transport from the airports to Piarco. The Piarco ACC shall be repository for all the ADS-B/WAM data processing where the data will be integrated into the Piarco ATM System and the Multi Radar Tracker (MRT). The combined data from all available surveillance sources will be available over the E/CAR AFS Network for distribution to the E/CAR States.

- WP/19 (Antigua and Barbuda)

4.12 Under WP/19, Antigua and Barbuda provided a brief overview of their intention to acquire surveillance for the Antigua Terminal Control Area (TMA). As the region progresses towards the implementation of ADS-B within the Piarco FIR, Antigua will work towards meeting the targets of the ICAO Regional Performance Based Air Navigation Implementation Plan (RPBANIP). In this regard, meetings have been held with the appropriate Government agency to discuss the necessity of meeting this goal. Taking into consideration the wide range of the types of aircraft which operate within the airspace and their capabilities, the realistic goal must incorporate the needs of all users, therefore, some SSR capabilities are necessary. To this end, Request for Information (RFI) to acquire ADS-B with SSR capabilities, has been disseminated.

4.13 Antigua discussed some of the challenges in receiving the relevant approvals for the fulfilment of the RPBANIP targets and appealed to the meeting for assistance from ICAO and Trinidad and Tobago to sensitize their government on the importance of the objectives. In this regard the following Draft Conclusion was formulated:

<b>DRAFT CONCLUSION</b>	
<b>E/CAR/NTG/8 – E/CAR/RD/6</b>	<b>SUPPORT EASTERN CARIBBEAN STATES IN THE DEVELOPMENT OF THEIR IMPLEMENTATION PLANS</b>
<p><b>What:</b></p> <p>That,</p> <p>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:</p> <p>a) It is necessary that ICAO support the Second phase of the radar data implementation project.</p> <p>b) Trinidad and Tobago support this project in all possible ways, since it promotes safety in the PIARCO region.</p> <p>In that sense, ICAO will provide an approach between the different Eastern Caribbean states, before March 2019.</p>	<p><b>Expected impact:</b></p> <p><input checked="" type="checkbox"/> Political / Global</p> <p><input type="checkbox"/> Inter-regional</p> <p><input checked="" type="checkbox"/> Economic</p> <p><input type="checkbox"/> Environmental</p> <p><input checked="" type="checkbox"/> Operational/Technical</p>
<p><b>Why:</b></p> <p>It is necessary to improve safety in the region.</p>	
<p><b>When:</b> March 2019</p>	<p><b>Status:</b> <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed</p>
<p><b>Who:</b> <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input type="checkbox"/> Other:</p>	<p>Antigua, Dominica, Grenada, St. Lucia, St. Kitts and Nevis, St. Vincent</p>

4.14 WP/11 France explained that The FWI ATM system is based on the use of two (2) systems: IRMA (radar display) and SIGMA (Flight Plan system). The surveillance is based on the use of two (2) monopulse secondary radars (Thalès RSM970 MSSR in Guadeloupe and Martinique) and on one (1) multi radar tracker (MRT, called DACOTA based on Martinique).

4.15 France noted the SNA AG plans to modernize the overseas ATM systems. These heterogeneous systems (IRMA and SIGMA) will be replaced by a single system to be realized by the Canadian company ADACEL. It is expected that Guadeloupe will be in operation in 2020 and Martinique in 2021. New features will include Electronic Flight strips and Automatic coordination between Martinique and Guadeloupe and the opportunity to do AIDC with other ANSPs. The radar and MRT DACOTA will use format UDP/IP. A second MRT DACOTA to be operational in 2020 will be installed in Guadeloupe.

4.16 IRMA will be discontinued by 2021.

- WP/13 (Barbados)

4.17 Under WP/13, Barbados updated the meeting on the work done in Barbados in the areas of ADS-B and Multilateration (MLAT). Since 2014 Barbados embarked on a project to replace its aging MSSR system and provide greater safety and efficiency in its airspace through the use of more modern technologies that would facilitate automation in Management of Air traffic. Specific objectives include:

- Replacement of the aging MSSR
- Improving low level coverage provided by the exiting MSSR
- Providing the ability to monitor for Runway incursions by identifying all vehicles and their location in the Airfield
- Providing the ability to fully cover in Barbados Airspace using Multilateration
- Provide coverage of approximately 250 N using ADS-B.
- Provide the facility to receive and share Surveillance data in keeping with Regional Civil Aviation and ICAO objectives subject to the appropriate agreements.
- Provide enhancements including a more modern Flight data Processor system
- Introduce safety features such as safety nets ( Short, and Medium term conflict Alerts and trajectory prediction)
- Provide greater automation with the introduction of Electronic flight strip processing

4.18 Notwithstanding several challenges resulting in delays to the project, the current status is as follows:

- **Surface movement system:** Installed and Active.
- **Wide Area Multilateration and ADS-B:** four (4) out of seven planned sites installed and Active. A provisional mast has been put in place to facilitate Activation of the remaining sites

4.19 The vendor is expected to recommence installation and software customization and additional training activities in mid- September. The system is expected to be fully installed with Site acceptance testing currently scheduled to complete around the end of October 2018.

- WP/08 (Secretariat)

4.20 Under WP/08, a summary of the benefits identified by NAM/CAR/SAM regions to implement ADS-B was presented.

- IP/02 (United States)

4.21 Under IP/02, United States provided information about the status of ADS-B equipment implementation in the region, also the level of aircraft capacity before July 2018. United States made an analysis to obtain these information and it was observed that some aircraft equipped with Link Version 2 and with ICAO codes in the blocks belonging to Canada and Mexico were using the UAT link, either by itself or in combination with a 1090ES ADS-B Out system. Therefore, the results for Canada and Mexico were broken out by Link technology as well as Link Version. 2.3 The results of the analysis are shown below; in each column, the number of ICAO codes per Link Version per country block is shown. It is gratifying to see the high percentage of Link Version 2 equipage in this data.

4.22 As a result of the analysis it was concluded that most aircraft flying in airspace covered by FAA-contracted ADS-B ground stations and having ICAO codes associated with a NACC State (other than the U.S.) are equipped with DO-260B.

- IP/03 (United States)

4.23 Under IP/03, United States indicated that in 2010, the United States (U.S.) Federal Aviation Administration (FAA) published a regulatory requirement for all aircraft operating within certain airspace to be equipped with Automatic Dependent Surveillance – Broadcast (ADS-B) Out technology by January 1, 2020, according to Title 14 of the U.S. Code of Federal Regulations (14 CFR) sections 91.225 and 91.227. This requirement will affect all flights in the designated airspace. To prepare the aviation community and prevent any operational disruptions, the FAA is promoting the new mandate to the international community so that foreign aircraft intending to operate within the affected airspace will be equipped with the appropriate ADS-B Out system by the compliance date.

**Agenda Item 5            Radar Data Display Request for Proposal**

Under this Agenda Item, the following working paper and presentations were discussed:

- WP/16 (E/CAR/NTG Rapporteur)

5.1            Under WP/16, an update on the agreed actions of Phase II of the Radar data project was presented. The Meeting recalled previous agreement on the procurement process for Phase II. There was consensus that a task force will be set up comprising ECCAA, France, Trinidad and Tobago and the United States to review the technical specifications, evaluate the tender responses and select a successful vendor. The issuance of the tender would be done through ICAO TCB with responses sent to ICAO NACC office. At the last meeting ICAO 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 proposed for funds.

5.2            ICAO was advised upon contacting the NCLB Project that the E/CAR radar data sharing project Phase II does not qualify under the NCLB Project. In light of the length of time that has elapsed since the last meeting of the RD group and in consultation with ICAO it was agreed that an invitation would be issued to industry to present any developments in end user equipment processing of surveillance technology related to Phase II of the project. In this regard and based on the information presented by industry at this meeting, a revised RFP will be developed and submitted as previously agreed as an ICAO TCB project. In this regard the following Draft Conclusion was formulated:

<b>DRAFT CONCLUSION</b>	
<b>E/CAR/NTG/8 – E/CAR/RD/6</b>	<b>TITLE</b>
<p><b>What:</b></p> <p>That,</p> <p>The NTG Rapporteur in coordination with ECCAA, France, Trinidad and Tobago and the United States revise the operational requirements and contact ICAO TCB for an estimate of the project based on the defined user requirements by 31 January 2019.</p>	<p><b>Expected impact:</b></p> <p><input type="checkbox"/> Political / Global</p> <p><input type="checkbox"/> Inter-regional</p> <p><input type="checkbox"/> Economic</p> <p><input type="checkbox"/> Environmental</p> <p><input type="checkbox"/> Operational/Technical</p>
<p><b>Why:</b></p> <p>XX</p>	
<p><b>When:</b>    31 January 2019</p>	<p><b>Status:</b>   <input checked="" type="checkbox"/> Valid / <input type="checkbox"/> Superseded / <input type="checkbox"/> Completed</p>
<p><b>Who:</b>      <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO <input type="checkbox"/> Other:</p>	<p>E/CAR/NTG Rapporteur, ECCAA, France, Trinidad and Tobago and the United States</p>

- P/02 (THALES)

5.3 Under P/02, Thales presented their solution about surveillance, communication, navigation and automatization. Provided a solution for radar data display project phase II using ECOsystem architecture with Thales cloud and E/CAR network, also using SWIM/FAA like a server information. Implement an Air Situational awareness and display, monitorization, correlation automatic or manual and additional functional capabilities. Presented the main features; human machine interface, technical monitoring and control that could be standalone position for each island.

5.4 Thales explained that provide two types of service for implementation:

1. Implement automatic system the equipment (buy Equipment)
2. Contract the service, pay for the service and data.

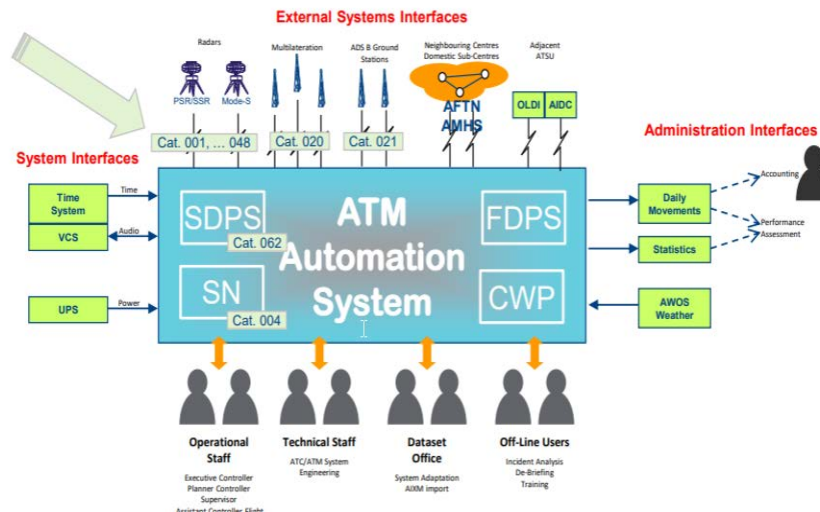
Trinidad and Tobago asked for have an application to integrate data from their systems and probe this functionality, as a demonstration.

Thales agreed to provide that demonstration

- P/03 (FREQUENTIS)

5.7 Under P/03, Frequentis sharing information about the different activities support by Frequentis (COMSOFT) and the experience in the implementation of many projects relatives to surveillance, ATM and other around the world.

5.8 In this presentation Frequentis proposed their application for the second phase of radar data sharing of PIARCI FIR and their States.



**Agenda Item 6            Update of E/CAR/NTG and E/CAR/RD Terms of Reference and Work Programme**

Under this Agenda Item, the following working papers was discussed:

- WP/14 (E/CAR/NTG Rapporteur)

6.1            Under WP/14, an update to the E/CAR/NTG Terms of Reference (ToRs) and work programme and Radar Data Sharing Adhoc Group Tasks was provided. The Meeting noted that the E/CAR/NTG meetings have proven to be very productive and effective and the joint execution of the meeting with the Radar Data Sharing Adhoc Group activities has demonstrated an efficient and cost-effective implementation.

6.2            An updated work programme for the E/CAR/NTG is presented in the **Appendix B** to this report, aligning them to the RPBANIP and ASBU methodology. The membership was revised to reflect the actual attendance and contributions to the success of the meetings to include Antigua, Dominica, Grenada, St. Lucia, St. Kitts and Nevis and St. Vincent.

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**Agenda Item 7            Other Business**

Under this Agenda Item, the following working, information papers and presentations were discussed:

- WP/10 (Secretariat)

7.1 Under WP/10, information about the AIDC (ATS INTERFACILITY DATA COMMUNICATIONS) and NAM/ICD (North American Common Coordination Interface Control Document (ICD)) in the region NAM/CAR/SAM was presented.

7.2 The Secretariat indicated that regional agreement was adopted for all NAM/CAR States integrate as basis protocols for their implementations, the NAM ICD (Version E) and AIDC (APAC Version 3), as minimum requirement to conduct connections with their adjacent States. For any new version, the State must ensure that the new protocol is compatible with the aforementioned protocols.

7.3 The NAM/CAR Regions, based on their experience, had identified a series of weaknesses during AIDC implementation, as well as post-implementation issues and other that were identified by the ATC Sistema Provider. In that sense it is necessary that eastern Caribbean States take advantage of lesson learned and avoid to make the same mistake and improve in a better and low time the AIDC Implementation.

7.4 The Secretariat indicated that it is necessary that technical and operational people work together development the automatization protocols, also it is necessary to collaborate with the all states with who have coordination to include their requirement in the development and implementation of AIDC.  
NEED training?

- WP/15 (Secretariat)

7.5 Under WP/15, a review of Performance-Based Communication and Surveillance (PBCS), operative objectives, ICAO standards application and implementations requirements was presented.

7.6 The Secretariat explained the technical requirement to provide this service, integrate equipment aboard, ground capacity and validate/certified surveillance and communication equipment.

7.7 The Secretariat indicated that it is necessary that Trinidad and Tobago work closely with the vender to define the requirement of the ADSC/CPDLC capacity in the update of the Trinidad and Tobago ATM system.

- WP/17 (Secretariat)

7.8 Under WP/17, information to be taken into account in order to promote communications systems that support future aviation services was presented. The ICAO Secretariat indicated that it is necessary that Eastern Caribbean States make an analysis about their current and future communications needs and integrate these needs on a regional approach that allows Implementing and integrating a new network within an IP-based ATN network, which complies with availability requirements, security, efficiency and low cost.



7.9 Also, to integrate the result of their analysis in the requirement of a new IP communication infrastructure to support the new service.

- WP/20 (Secretariat)

7.10 Under WP/20, information about flight plans errors was presented, indicated that flight plan automation and management errors were not only associated to flight plan information errors but also to other factors, such as non-compliance with ICAO standards concerning flight plan (Doc 4444), database information inconsistencies (including names of procedures, fixes, airways, aircraft information), lack of integrity in the information published in AIP or weakness in the process of the amendment and application of the AIRAC calendar, among others.

7.11 It's necessary that States apply mechanisms to validate and verify the information contained in the databases of their control centres and aeronautical messaging systems, taking into account AIP current data, ICAO standards, and changes to information addressing, in order to allow systems to properly manage their security alarms and properly validate flight plans. Lack of training, lack of management aeronautical information is problems identified in the flight plan process.

7.12 The Secretariat informed that ICAO is going to development two workshops on 2019, with aid to provide States the necessary information that permits States to address in correct way the flight plan information.

7.13 ICAO asked about the possibility that one Eastern Caribbean States could be host of the second training that will be address to all States that speak English.

- IP/04 (United States)

7.14 Under IP/04, United States shared information about the destruction of hurricane Maria on MEVA equipment at the San Juan CERAP, and the aftermath to restore services.

7.15 During the discussion some States talked about their procedures before hurricane season as Antigua and Barbuda, France and United States.

7.16 The meeting agreed that closer collaboration was need among the stakeholders not only in other States but within each State in the development and roll out of contingency plans. These plans must be kept updated based on experiences gained.

- P/04 (THALES)

7.17 Under P/04, Thales presented an overview about those activities that Thales carried out in Sint Marteen after Hurricane Irma damage. Thales explained about the activities about surveillance and navigation systems that suffered damage also an ATM capability.

7.18 It was implemented a temporary FDP system with the objective to provide flight plan management information and provide training meanwhile the new ATC system enter in operation.

7.19 Thales indicated information about Fast Track program to support Sint Marteen recovery.

7.20 Talking about the implementation of the new system include 5 topsky remote position for the Islands around Sint Marteen.

7.21 Thales concluded that following a disaster the restoring of basic CNS/ATM capabilities is not easy, if not anticipated. Talking about transportable equipment that could be a solution for hurricane season.

- P/05 (Secretariat)

7.22 Under P/05, Secretariat presented information about factors to take into account before AIDC implementation.

**APPENDIX A**

**FOLLOW UP TO CONCLUSIONS AND DECISIONS - SEVENTH EASTERN CARIBBEAN NETWORK TECHNICAL GROUP MEETING (E/CAR/NTG/7) AND FIFTH EASTERN CARIBBEAN RADAR DATA SHARING ADHOC GROUP MEETING (E/CAR/RD/5)**

<b>Conclusion/Decision</b>	<b>Description</b>	<b>Follow-up</b>	<b>Status</b>
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 analyze the feasibility and cost-effectiveness of implementing automatic changeover feature in the CISCO Routers by the E/CAR/NTG/8 Meeting.	TSTT has provided a proposal to the TTCAA to implement automatic changeover as part of the upgrade of the E/CAR AFS Network.	Valid
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 December 15, 2016; and b) France report by <b>30 January 2017</b> , on the actions taken to conduct this replacement.	a) The cost of replacement was submitted to Guadeloupe but after discussions with TSTT, the replacement router was covered under the Cisco Smartnet agreement.  b) The replacement router was sent in May 2017 and installed by Guadeloupe.	Completed
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.	ECCAA, Barbados, Trinidad and Tobago, United States and France to report.	Valid
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.	The Trinidad and Tobago Civil Aviation Authority and the Service de la Navigation Aerienne Antilles Guyane reviewed and updated the Letter of Agreement regarding remoting and use of radar data from Martinique and Guadeloupe ATS Units to the Piarco ATS Unit for ATFM.	Valid
CONCLUSION E/CAR/NTG/7-RD/5/5 REACTIVATION OF TRINIDAD AND	That, in order to continue the Trinidad and Tobago - Venezuela Radar Exchange activities, that the ICAO NACC		Valid

Conclusion/Decision	Description	Follow-up	Status
TOBAGO - VENEZUELA RADAR EXCHANGE	Office in coordination with the SAM Office to contact Venezuela for the reestablishment of the coordination activities with Venezuela for this purposes by 30 December 2016		
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: <ul style="list-style-type: none"> <li>a) Coordinate a meeting with Guyana for this purposes by 30 December 2016; and</li> <li>b) Inform the ECAR/NTG/8 Meeting of this progress.</li> </ul>	No progress has been made with the coordinating of a meeting.	Valid
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 30 December 2016 the details planning (timelines and actions), technical information (radar data format, circuit speed, etc.) from the radar in Antigua.		Valid
DECISION 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: <ul style="list-style-type: none"> <li>a) the integration of the Piarco MRT at Barbados during the next planned visit of the ATM vendor (Leonardo).</li> <li>b) the integration of the Barbados surveillance (radar/ADS-B/MLAT) into the Piarco MRT.</li> </ul>		Valid
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"> <li>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;</li> <li>b) E/CAR States and Territories inform the NTG and ICAO by 30 December 2016 of new plans for ADS-B implementation activities;</li> <li>c) E/CAR/NTG Rapporteur coordinate with the ANI/WG ADS-B TF Rapporteur for aligning the different E/CAR</li> </ul>	<ul style="list-style-type: none"> <li>a) An ADS-B project has been approved for Trinidad and Tobago. The theoretical surveillance coverage information is yet available.</li> <li>b) Papers to be presented under Agenda Item 4.</li> <li>c) To be discussed at the ANI/WG/4 meeting in August 2018.</li> <li>d) To be presented under</li> </ul>	Valid

Conclusion/Decision	Description	Follow-up	Status
	ADS-B activities with the regional ADS-B plan and implementation by February 2017; and d) E/CAR/NTG-RD Rapporteur to update the surveillance plan and inform the E/CAR/NTG/8 Meeting of these progress.	Agenda Item 5.	
CONCLUSION E/CAR/NTG/7-RD/5/10 SURVEILLANCE DATA REQUIREMENTS FOR DOMINICA AND ST. VINCENT	That, ECCAA inform the E/CAR/NTG Rapporteur of the surveillance data requirements for Dominica and St. Vincent by November 30, 2016.	ECCAA to report.	Valid
CONCLUSION E/CAR/NTG/7-RD/5/11 SURVEILLANCE DATA REQUIREMENTS FOR ANGUILLA AND MONTSERRAT	That, 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 b) ICAO to write to ASSI regarding their commitment to part of Phase II and the agreed procurement process.	a) Email sent to Air Safety Support International (ASSI). b) Letter sent.	Valid
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.		Valid
CONCLUSION E/CAR/NTG/7-RD/5/13 PROJECT PROPOSAL FOR ECAR REGION UNDER ICAO NACC NCLB	That, in order to seek the possible for 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.	Superseded	Superseded

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**APPENDIX B**  
**E 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**

2.2 For the activities related to the analysis and monitoring of the status of the current 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 and user expectations (Aviation System Block Upgrades (ASBU) Block 0 Modules);
- 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 attached project file.

**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 Air Navigation Implementation Technical Group: ANI/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)

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**STATE/TERRITORY MEMBERS OF THE E/CAR  
NETWORK TECHNICAL GROUP (E/CAR/NTG)**

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**E/CAR/NTG WORK PROGRAMME**

<b>No.</b>	<b>Activities</b>	<b>Objectives</b>	<b>Responsible</b>	<b>Deliverables</b>
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 Network awareness	NTG	<ul style="list-style-type: none"> <li>• Reliable E/CAR AFS Network website</li> <li>• Network Performance revision</li> </ul>
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
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

**APPENDIX C**

No.	State	Facilities Name	Type (PSR, SSR, MSS-S, MLAT, ADSB)	Provider	Model	ASTERIX Protocol Type that is provided	Location (Geographical Coordinates)	Altitude (Fts in respect to the sea)	Code Interrogator (II) (If assigned)	Observations
1	2	3	4	5	6	7	8	9	10	11