



E/CAR NTG/1

INTERNATIONAL CIVIL AVIATION ORGANIZATION

First Meeting of the Eastern Caribbean Network Technical Group

E/CAR/NTG/1

REPORT

(Port of Spain, Trinidad and Tobago, 6 – 7 April 2010)

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HISTORY OF THE MEETING

1. PLACE AND DURATION OF THE MEETING

The First Meeting of the Eastern Caribbean Network Technical Group was carried out in the Blue Rotors Room at the Bristow Caribbean Limited, Training and Conference Facility, in Port of Spain, Republic of Trinidad and Tobago, from 6 to 7 April, 2010.

2. OPENING

Mr. Ramesh Lutchmedial Director General of the Trinidad and Tobago Civil Aviation Authority ICAO welcomed the participants, pointing out the importance of the issues to be treated.

3. WORKING LANGUAGES

The meeting working language for the discussions and documentation was English.

4. PARTICIPANTS AND ORGANIZATION

The meeting counted with the assistance of 4 States and 1 International Organization (Barbados, Trinidad & Tobago, United States, United Kingdom and ECCAA), making a total of 18 participants. The list of participants is being presented in pages iii-1 to iii-4.

Ms. Veronica Ramdath, Rapporteur of the Eastern Caribbean Network Technical Group, acted as moderator and secretariat.

5. AGENDA

The Meeting adopted the following agenda:

Agenda Item 1: E/CAR Network: General information and the formation of the Eastern Caribbean Network Technical Group (E/CAR NTG) and revision of its Terms of Reference, work programme and assigned tasks.

Agenda Item 2: Revision of current E/CAR AFS Network Status: Operation and Performance

2.1 *Analysis and monitoring of the status of the current E/CAR AFS Network;*

- a) maintenance and reporting procedures,
- b) technical personnel involved,
- c) spare parts,
- d) tools for monitoring the Network status,
- e) identify common network points of failure
- f) logistics activities and their improvement

2.2 *Follow-up on the immediate agreed activities for the recovery of the existing E/CAR AFS Network as well as the near term solution activities for its timely implementation;*

- a) Revision of Network recovery immediate agreed activities and follow-up of its achievements;
- b) Analyze the E/CAR AFS Network connectivity with other regional and domestic digital communications networks of the CAR and SAM Regions.

2.3 *Follow-up on E/CAR AFS Network for the immediate/near term activities:*

- a) Multi-Protocol Label Solution description and its implementation action Plan
- b) Identification of improvements and new requirements

Agenda Item 3: E/CAR AFS Network Replacement Activities

- a) Definition of E/CAR AFS Network Replacement Process
- b) Revision of “Request for proposal” (RFP) document for the replacement of the Network and preparation of related technical documentation for the replacement process of the E/CAR AFS Network including considerations for contingency planning;
- c) provide technical assistance and follow-up to the replacement process of the E/CAR AFS Network during its preparation, implementation and operation; and

Agenda Item 4: Other Business

- a) Revision of E/CAR CNS Committee Terms of Reference and activities (E/CAR DCA Decision 22/6)
- b) Next meeting/ Future activities

6. SCHEDULE AND WORK MODE

The Meeting agreed to hold its daily sessions from 09:00 to 16:00 hours, with two breaks.

7. RECOMMENDATIONS AND CONCLUSIONS

The Eastern Caribbean Network Technical Group recorded its activities as Recommendations and Draft Conclusions as follows:

No.	Title	Page
Draft Conclusion E/CAR/NTG/1/01	E/CAR NTG Contributions to the development of E/CAR/WG work programme	1-1
Draft Conclusion E/CAR/NTG/1/02	Reclassification of GANDD Deficiencies for E/CAR AFS Network from “U” to “A”	2-2
Draft Conclusion E/CAR/NTG/1/03	A Request for Information document for the E/CAR VSAT Network be compiled and issued to industry.	3-2

8. List of Working and Information Papers

Working and Information Papers are available on the ICAO website at the following link:
<http://mexico.icao.int/restricted/Meetings/ECARNTG01Documentation.zip>

WORKING PAPERS				
Number	Agenda Item	Title	Date	Prepared and Presented by
WP/01	1	Draft Agenda, Working Method and Schedule of the E/CAR/NTG/1 Meeting	11/03/2010	Rapporteur
WP/02	1	General information and the formation of the Eastern Caribbean Network Technical Group (E/CAR NTG) and revision of its Terms of Reference, work programme and assigned tasks	31/03/2010	Rapporteur
WP/03	2	French contribution to 1 st E/CAR/NTG Meeting		Prepared by France/Presented by Rapporteur
WP/10	2	Air Navigation Requirements supported by the E/CAR AFS Network and E/CAR NTG Contribution to E/CAR/WG Work Programme	31/03/2010	Prepared by ICAO Secretariat/Presented by Rapporteur
WP/06	2.1	Analysis of the performance of the current E/CAR AFS network and information on the immediate activities for the recovery of the existing E/CAR AFS network	11/03/2010	Trinidad and Tobago
WP/12	2.1	Issues to be included in the analysis of the current E/CAR AFS Network Operations	31/03/2010	Prepared by ICAO Secretariat/Presented by Rapporteur
WP/07	2.2	Information on the design of the new E/CAR AFS Network solution.	11/03/2010	Trinidad and Tobago
WP/07	2.3	Information on the design of the new E/CAR AFS Network solution.	11/03/2010	Trinidad and Tobago
WP/08	2.3	Information requested in order to implement the new E/CAR AFS Network	11/03/2010	Trinidad and Tobago
WP/04	2.3	Plans for Federal Aviation Administration packet switched network (x.25) de-commissioning		United States
WP/03	3	French contribution to 1 st E/CAR/NTG Meeting		Prepared by France/Presented by Rapporteur

WORKING PAPERS

Number	Agenda Item	Title	Date	Prepared and Presented by
WP/05	3	Technical and user requirements for a VSAT E/CAR Network	31/03/2010	Trinidad and Tobago
WP/11	3	Digital networks in the CAR region and MEVA II / REDDIG interconnection	31/03/2010	Prepared by ICAO Secretariat/Presented by United States

INFORMATION PAPERS

Number	Agenda Item	Title	Date	Prepared and Presented by
IP/01	--	General information	11/03/2010	Rapporteur
IP/02	4	Development of file server in support of international satellite communication system		United States

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List of Participants

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TRINIDAD AND TOBAGO

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List of Participants

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List of Participants

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iii — 4

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Agenda Item 1: E/CAR Network: General information and the formation of the Eastern Caribbean Network Technical Group (E/CAR NTG) and revision of its Terms of Reference, work programme and assigned tasks

1.1 The Meeting reviewed the formation of the E/CAR NTG, discussed the Terms of Reference, working methodology and work programme as assigned by the E/CAR/DCA/22 Meeting (Port of Spain, Trinidad and Tobago, 8-11 December 2009). The Meeting had no adverse comments to the Terms of Reference, agreed on the working methodology proposed and agreed to revisit the Work Programme at the end of the meeting's discussions.

1.2 The meeting took note of information presented on the CAR/SAM Air Navigation Plan, Doc. 8733, which provides the air navigation facilities, services and procedures to be implemented, as an integrated system designed to meet the requirements of all international civil aircraft operations. This plan is based on the traffic forecasts, which represents the demand of future ATM. The Air Navigation Integrated Programme (ANIP) which supports the ICAO Business Plan serves as the mechanism for the Air Navigation Commission (ANC) to review ICAO work programmes and provide a planning and monitoring tool to ensure that ICAO work programmes lead to a more global and seamless air navigation system. In this regard, the NAM and CAR Regions adopted the NAM/CAR Regional Performance Based Air Navigation Implementation Plan (NAM/CAR PBANIP), which ensures the close coordination between all Air Navigation Services (ANS) fields, such as ATM, CNS, AGA, AIM and MET, toward a seamless ATM system in line with the *Global Air Navigation Plan* (Doc 9750).

1.2 Under the action plans and performance framework forms established in the NAM/CAR PBANIP, several tasks had been assigned and results are expected in a timely basis. Such is the case for the Action Plan on air-ground and ground-ground communications in which the E/CAR NTG has been tasked with the development of the "Replace E/CAR Network Telecommunication Network by E/CAR VSAT network" activities.

1.3 The E/CAR AFS Network which is the major regional telecommunication medium for the Eastern Caribbean is under review and implementation of a near term solution with a MPLS Network and proposals for new requirements (for example AMHS implementation) are being considered to have alternative means for interregional connections and future multiradar data sharing. A review of the ATN architecture (CNS Table 1Ba) should be made to confirm the planning in the ATN implementation. In this regard, the following draft conclusion is proposed:

Draft Conclusion E/CAR/NTG/1/01

E/CAR NTG Contributions to the development of E/CAR/WG work programme:

Due to the importance of the E/CAR AFS Network on the provision of services in the Eastern Caribbean subregion and that the E/CAR Network Technical Group (E/CAR NTG) conducts network performance analysis of all the services and the planning of future new services in the Network, that:

- a) the E/CAR/WG includes the E/CAR NTG contributions into the NAM/CAR ANIP Action Plan as detailed in the reviewed proposal provided, making an update to the plan by the next E/CAR/WG Meeting.
- b) E/CAR NTG supports the E/CAR/WG activities as included in the action plan of the NAM/CAR ANIP providing the necessary information and task advances during the E/CAR/WG Meetings

Agenda Item 2: Revision of current E/CAR AFS Network Status: Operation and Performance

2.1 During the E/CAR/WG/31 Meeting, several E/CAR AFS Network member States informed about the existing problems in the E/CAR AFS Network, including the need to establish a protocol for the easy and expeditious movement of spare parts within the Region, the non-compliance to their operational requirements (AFTN blackouts, operational telephone unavailability) and large time system outage.

2.2 The E/CAR AFS Network situation presented in the E/CAR/WG/31 Meeting concluded that the E/CAR AFS Network was unreliable and due to the faulty and degraded services that are provided in both data and voice circuits, immediate actions should be implemented to recover the network performance, short term actions and a replacement process should be conducted to ensure the adequate operation and performance of the network. In this regard conclusions 31/5, 31/6 and 31/7 were formulated.

2.3 The SPS -12 device in Antigua (Cable & Wireless IMC) became unserviceable on 12/08/2009 which adversely affected data circuits to all States connected to the Antigua hub: to Antigua, Anguilla, St. Kitts, Nevis, Montserrat and Guadeloupe. Immediate recovery action after analysis of problem was to bypass the SPS-12 and connect direct circuits between Trinidad Piarco Promina 400 and the Promina 200 on each of the affected islands, which restored service on 22/10/2009. This solution was selected due to unavailability of the SPS-12 device.

2.4 Under this agenda Item, an analysis was presented on the statistics of failures and resolutions over the period September 2009 to February 2010. The Meeting was informed that at some installation sites (St. Kitts, Dominica, Grenada) poor environmental conditions contributed to the degraded performance of the equipment. At the beginning of the sixth month period frequent recurrent outages on voice and data services and core node failure at Piarco resulted in outages Dec 1, 2009 and Jan 29, 2010. Percentage of failures presented showed that data failures of 27%, voice failures of 46% and node or link failures of 27%. **Appendix A** shows the percentage of faults reported by States for the period. **Appendix B** shows the percentage of total faults reported for the same period. **Appendix C** shows the fault balances for the period September 2009 to February 2010.

2.5 In October 2009, TSTT sought to address shortcomings and present short term and long term solutions for an improved network and implemented the following:

- a) An improved Fault Ticketing System:
 - Reporting procedure adjusted to implement one number direct reporting for all faults on the ECAR network
 - Via 800-4NOC all reports are logged and identified personnel are notified and updated on the progress of faults
 - Adjustment resulted in:
 - improved response times
 - efficiency of fault dispatch locally and in ECAR states
 - improved fault analysis and information gathering
- b) Staff Resourcing & Technical Support:

- Team of 5 personnel and a Project Manager dedicated to the maintenance and implementations of existing network
 - Equipment Vendor support (NET Federal Inc)
- c) Spares Acquisition:
- Parts acquired July , November, December 2009 and January 2010 to facilitate the upgrade of software and hardware for the Promina multiplexers across the network
- d) Remote monitoring & Management:
- Engagement of a new third party (Promina Vendor NET Federal Inc) in March 2009
 - Agreement put in place that provides Vendor TAC support with a <10min response time on faults.
 - With a full agreement in place on the completion of network upgrades these reports would be automatic and accessible via portal access. (June 2010)

2.6 Actions completed to mitigate failures included trunk card replacement for full redundancy and software and hardware upgrade. Voice traffic issues to San Juan and New York via San Juan have been significantly reduced as a result of remedial configuration changes on the bandwidth manager node off of domain 25 of the FAA network, upgrade and configuration adjustments to N1 (domain 100) at Piarco and improved collaboration between the FAA, TTCAA, Promina MUX vendor NET and TSTT. Between November 15, 2009 and February 18, 2010 three defective nodes were replaced and four software and hardware upgrades completed.

2.7 Promina node upgrades are currently in progress with a total of 93% completed (**Appendix D**). Benefits of the upgrade include improved reliability of Voice and Data Services, improved monitoring and management of Mux and improved overall restoration time frame.

2.8 The Meeting unanimously agreed that the performance of the E/CAR AFS showed considerable improvement after the extensive corrective work and the upgrade of the Promina equipment and in this regard the meeting formulated the following draft conclusion:

Draft Conclusion E/CAR/NTG/1/02

Reclassification of GANDD Deficiencies for E/CAR AFS Network from “U” to “A”

2.9 A strict maintenance schedule is proposed to be maintained to avoid deterioration in operation with the next scheduled routine / preventive carded for September 2010, implementation of new network and continued collaboration with member states.

2.10 France proposed that States should have the ability, with limited rights, to locally monitor the E/CAR network via a portal or device. This simple supervision would be very useful for instance, when the network fails. The only information presently available is visual alarms on the Promina. Some of the alarms are not useful, due to past problems not acknowledged. With such a portal or device, more information will be directly available which can facilitate limited actions (resets), authorized under TSTT supervision. **Appendix E** lists the questions raised by France and the response from Trinidad and Tobago.

2.11 France further proposed the use of email for reporting failures as the primary medium, for acknowledgement of report, for analysis and for feedback about the failure. The Meeting supported this

proposal and confirmed that all States had access to email. States were requested to send to the Rapporteur E/CAR NTG by **Monday April 12th 2010** a list of contacts including phone numbers and email addresses for the purpose of fault logging and feedback. Trinidad and Tobago would then advise States of the change in procedure for reporting a fault and supply a 24/7 monitored email address to address fault reports to.

2.12 Trinidad and Tobago informed that work had started on the development of a website to realize fault logging and feedback, allow access to fault records and quarterly reports.

2.13 Under Agenda Item 2.3 the Meeting discussed the design of the new E/CAR AFS network proposed by Trinidad and Tobago. The new network design takes advantage of a modern IP network elements and protocols providing one platform for both voice and data services. It is fully redundant and its simplified design provides redundancy and scalability via the use of Metro Ethernet Links and CISCO routers. The simple network design with a reduced number of elements and linkages reduces the number of points of failure in the new network and has the capacity to link to TSTT's IP network management diagnostics, providing manageability and 24 hour 365/7 day per week via a TSTT Network Operating Centre. Trouble ticket portal would be made available to provide full visibility to the customer of their network and trouble ticket management process. Benefits of the new flexible network include but are not limited to, ease of expansion, faster repair times, increased reliability and availability.

2.14 The new network combines MPLS circuits and dedicated International Private Leased Circuits. States that presently do not offer MPLS international connectivity, in this instance, Guadeloupe, Martinique, San Juan (United States) and Sint Maarten, will be connected via dedicated IPLC as depicted in **Appendix F**. TSTT clarified that the single heavy line in the drawing of Appendix E that connects Piarco to the MPLS 'cloud' is in fact two discrete redundant 4Mbps circuits into the Piarco ACC: one fibre from the Mausica telephone exchange (to be installed) and the other from the Piarco telephone exchange (existing). Both fibres would go into a 3-layer switch at Piarco ACC which would then connect to the router. Piarco exchange and Mausica exchange were connected in a ring circuit to TSTT House (point of international circuit termination). The Meeting requested that the drawing be modified to reflect the true configuration showing as much detail and information as possible to assist everyone in understanding the design.

2.15 It was confirmed that no redundant paths existed on the E/CAR islands between the LIME international termination point and the Control Tower; commonly referred to as the 'last mile'. TSTT confirmed that the design presented at this meeting has 99.97 % availability which translates into unavailability time of 156 minutes per year.

2.16 TSTT gave a brief explanation of MPLS and how it works. The United States presented and explained a schematic of the Piarco/San Juan to Atlanta circuit based on information obtained through troubleshooting. Likewise, TSTT shared information on the existing circuit configuration at Piarco, also verified through troubleshooting. The Meeting found the explanations and synergy of information sharing very useful and recommended that the overall drawing of the existing E/CAR AFS Network (**Appendix G**) be amended accordingly. **Appendix H** lists questions posed by the United States on the new network prior to this meeting and the responses from Trinidad and Tobago.

2.17 Each site would have a standby router installed in the rack. Only one router would be in use at any given time. The routers would be switched into use twice per year. A lengthy discussion was had on the type of handsets that would be supplied: IP, digital, analogue, multiline telephone or single

handsets. TSTT explained that each router can accommodate one IP telephone which can be connected to a local LAN to provide extensions as required. An IP telephone handset was requested for each site regardless of whether the site was equipped with a VCCS or not.

2.18 The existing network has four trunk lines per site with the exception of Piarco which has six. For States that do not have a VCCS, handsets would need to be supplied. If single handsets are used there would be four handsets at the tower. A question was asked on using multiline handsets instead of single handsets. A multiline handset was clarified as having access to the four trunk lines on one phone with push button selection of any line and if required additional multiline handsets may be connected as extensions. TSTT confirmed that the router was equipped with an analogue port which would allow connection to the Civil Aviation's voice recorder.

2.19 A question was raised on the ability of the router to support line hunting i.e. when a call is received on a specific trunk group, the system shall automatically look for a free line inside the group and seize that line. In the present configuration the Option 11 PABX performs this function. In the new Network the Option 11 will be removed. Antigua queried how line hunting would work in relation to San Juan which has Sectors of operation that are assigned specific numbers and whether the four lines would be sufficient to ensure that all calls connect to the called party as it relates to specific assigned sector numbers. In addition, Antigua informed that in the existing network their Option 11 was connected to another internal PABX.

2.20 The Meeting discussed redundancy of the dedicated IPLCs. The design presented to the Meeting does not have redundancy in the IPLCs. The MPLS cloud by its inherent design offers multiple redundant paths. Suggestions were to install additional IPLCs to MPLS sites in such a manner as to create redundant paths in the event of failure of an IPLC to a particular State. For example, install another IPLC between San Juan and Barbados or Antigua to provide a redundant path to San Juan/Piarco.

2.21 The United States shared that Sint Maarten and San Juan were connected to the MEVA II VSAT network.

2.22 Regarding the dialling plan the United States stated that the dialling plan by necessity of complex internal programming on their systems must remain the same for all connections into San Juan.

2.23 The United States confirmed that the new network equipment will be installed in a secured area separate from their other equipment (referred to as a 'cage') that would be security-access acceptable for TSTT to carry out the installation and on-going maintenance. As a result of this information, TSTT will be carrying out equipment installations and follow up maintenance procedures at each site.

2.24 The Meeting briefly reviewed the Scope of Works Document and Project Management Plan including the Pre-Installation Site Qualification Check List and the Service Level Agreement (SLA). Trinidad and Tobago and TSTT, in previously held meetings mutually agreed that TSTT will conduct site surveys in conjunction with States to verify suitable environment conditions to install the equipment. In this regard, States were requested to supply to the Rapporteur E/CAR NTG the name and contact information of a person, in addition to an alternate person, who will liaise with TSTT to conduct the site surveys.

2.25 Trinidad and Tobago shared its experience on the electrical conditions at sites as seen during the installation of the AFTN workstations replacement. Each State shall provide the proper electrical rated termination point to connect the new equipment rack and UPS. This point shall be

connected to a separate circuit breaker whose sole load is the new equipment. TSTT will supply the electrical and environment requirements in the site survey report. A report on each site will be forwarded to States for corrective action of the installation site as required.

2.26 TSTT stated that the SLA was a work in progress and will be forwarded in due course for comments.

2.27 The **Traffic Matrix** that was previously sent to States for verification or amendment was explained. The traffic matrix shows the voice connectivity required and the number of data connections. States were also asked to provide the number of voice extensions required and the locations of the extensions, similarly the location for any additional AFTN workstations. With the assistance of the United States, the Meeting examined the information presented in the Traffic Matrix and compared it to the ATS Direct Speech information in FASID Table CNS 1C. The information in both documents does not match. As such, it is imperative that States verify their ATS Direct Speech Circuits in order to implement the new E/CAR AFS Network. States requested a 2-week period to complete this exercise and send the information to the Rapporteur of E/CAR NTG no later than 23 April 2010.

2.28 Trinidad and Tobago noted that delays to the implementation date of the new network initially proposed for second quarter 2010 are to be expected based on the site surveys to be conducted and the receipt of information on speech and data requirements. A firmer timeline for completion of the new network will be supplied by Trinidad and Tobago upon completion of the site surveys since site conditions encountered and the time to resolve will have an impact on the delivery date.

2.29 The United States presented information on the Federal Aviation Administration (FAA) decision to decommission its internal National Airspace Data Interchange Network (NADIN) X.25 Packet Switched Network (PSN) and is actively transitioning domestic users to a private Internet Protocol (IP) network. The FAA will continue to support X.25 links for international AFTN and AMHS message traffic, but access will be concentrated at the KATL (Atlanta, GA) and KSLC (Salt Lake City, UT) centers. Existing international connections will be re-routed and new connections for both X.25 and IP message transports are requested to be directed to these centers.

2.30 The FAA has deployed an operational IP network as part of its telecommunications infrastructure in line with the trend toward IP technology. Domestic users, where possible, are transitioning to this network for their operational connectivity. KATL and KSLC serve as the primary U.S. AFTN message switching centers and are being enhanced to offer AMHS services for both OSI and IPS transports. They are also the primary locations for the FAA's National Enterprise Management Center (NEMC), which provides 24x7 monitoring, and control of critical network and application functions.

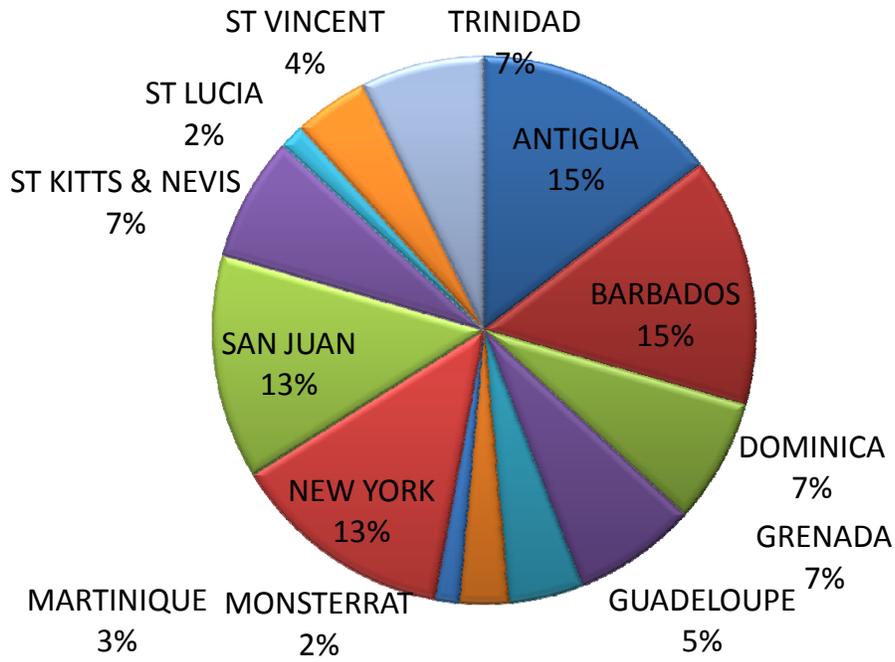
2.31 As the NADIN PSN network is reduced, international X.25 links will be re-routed to nodes at these centers, which will eventually be replaced with X.25 to IP conversion functionality. Centralization of the X.25 functionality at the NEMC locations provides concentrated expertise and streamlined troubleshooting.

2.32 For efficient rerouting of MEVA II satellite data connections, the FAA plans to commission a new MEVA II ground station at Atlanta, GA to be collocated with the KATL center. MEVA II AFTN connections currently landed at Miami will be reconfigured to land at the new Atlanta ground station. Affected States requires no changes. AFTN and X.25 link configuration parameters will remain the same. Existing MEVA satellite voice connection routing will be unaffected. In line with these

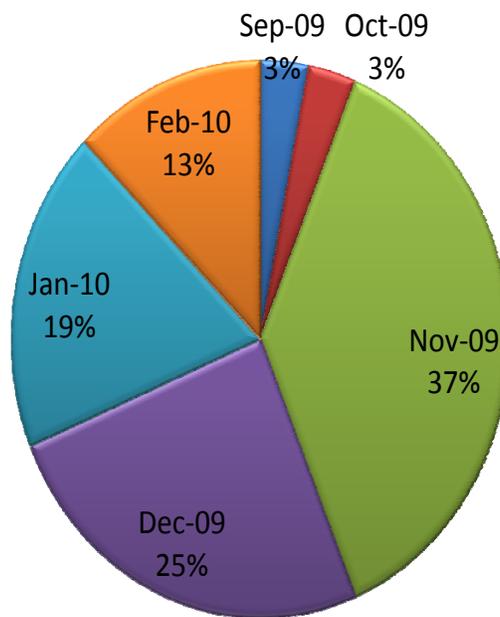
plans, States are requested to route future AFTN and AMHS connections to KATL or KSLC, and are asked to assist during the rerouting of existing connections to these locations.

2.33 The Meeting agreed that a transition plan for seamless cutover from the existing network to the new network would need to be developed in collaboration with the users and the service provider.

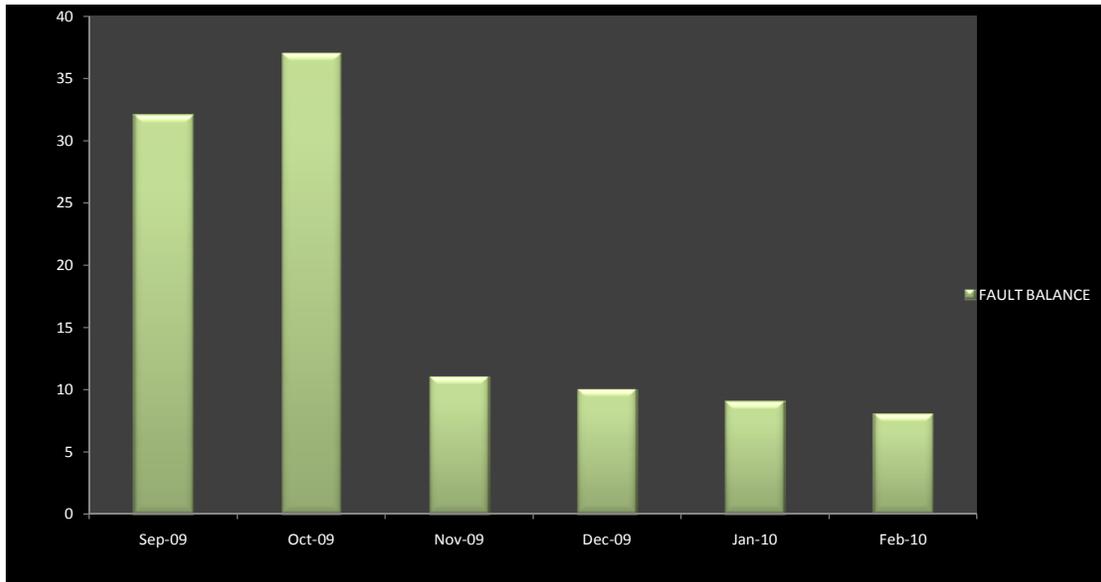
FAULTS REPORTED PER STATE SEP 2009 to FEB 2010



TOTAL FAULTS REPORTED PER MONTH SEP 2009 TO FEB 2010



FAULT BALANCES FOR THE PERIOD SEP 2009 TO FEB 2010



Promina Upgrades

SITE	COMMENTS
Antigua Airport	<i>Completed March 16, 2010</i>
Antigua Hub	<i>Completed March 17, 2010</i>
Monsterrat	<i>Completed March 18, 2010</i>
Guadeloupe	Completed March 25, 2010
St Lucia	Completed March 22, 2010
Barbados Airport	Completed March 22, 2010
Barbados Hub	To be advised
Martinique	Completed March 24, 2010
St Vincent	Completed March 24, 2010

Questions and Comments - France

1. A tool should be delivered to ECAR States. This tool could monitor locally the network, with limited rights. This simple supervision would be very useful. For instance, when the network fails, the only information available are visual alarms. Some of them are not useful, due to past problems not acknowledged. With such a tool, more information will be directly available as limited actions (resets), these actions authorized under TSTT supervision.

RESPONSE:

- Tool implementation and related access/operational rights are to be guided by the requests of the Trinidad & Tobago Civil Aviation Authority
2. A report should be delivered to the NTG group, indicating where are the main problems (MUX, PBX, telecom infrastructures, power supplies, VCS, ATN routers, etc). That information should help to find adapted solutions to existing problems.

RESPONSE:

- Delivered in WP/06
3. The use of emails for declaring a failure, for acknowledgement, for analysis, and for feedback about the failure.

RESPONSE:

- Noted
4. The decision to replace ECAR network with a terrestrial telecom network is to be studied cleverly, taking into account the poor capability of terrestrial networks in our regions, the lack of warranties on their correct service, taking into account the experience of neighbouring interconnected networks (VSAT MEVA2 and REDDIG), and the ICAO recommendation to prefer VSAT networks and to reduce the number of existing networks by merging existing VSAT networks.
 5. The replacement of the ECAR network, if based on terrestrial infrastructure, should involve contacts and negotiations with all telecom operators in ECAR region. Indeed, all States should benefit the new network. For instance, would it be possible to extend C&W MPLS to France Telecom area? Unless, the service proposed is different for TSTT MPLS eligible States and others.

RESPONSE:

- Service to Guadeloupe and Martinique is different. Service is IPLC (International Leased line service unlike the other states which are MPLS. This is based on information gathered from service providers engaged
6. Low rate leased lines (less the 2 Mbps) will no more be provided by France Telecom after end 201: how will FWI be connected to Piarco?

RESPONSE:

- When TSTT made enquiries to begin requesting links to the states no mention was made of this. Information received was that MPLS was not available and alternate requests were made.
- TSTT will now have to follow up based on this information; action taken to get information on what will be replacing low speed leased lines in these states

7. Will the MPLS implemented be MPLS/VPN?

RESPONSE:

- Yes

8. How the MPLS will be connected to the control towers, and how non C&W MPLS sites will be connected to Piarco

RESPONSE:

- Please see response to question 5)
- Location of CPE for MPLS to be determined on site visits to be scheduled

9. What are the warranties and figures about availability and capacity of MPLS?

RESPONSE:

- C&W has given a figure of 99.999% availability on the **network core**.
The warranties on individual components on this new network differ per component

10. Piarco appears as the central node. If the design is correct (Part2_a.docx page 2), if Cisco 2921CME VRRP fails for instance, Martinique and Guadeloupe have no more AFTN nor telephone. Idem for 4 port WAN card. Does this mean that design is not complete, not showing redundant equipments?

RESPONSE:

- Redundant (cold standby equipment) while not represented in design drawings will be provided at all sites
- Design is being redone to depict circuit redundancy for IPLC served states and will be presented after further technical discussions with the TTCAA

11. TSTT demarcation in Piarco switch should not be connected only to one Cisco 2921 (if that one fails, all network down).

RESPONSE:

- Please see response to question 10)
- While not depicted in circuit design drawing there will be fully redundant circuit links as well as equipment at the Piarco site

12. More generally speaking, a safety case should be done to analyse consequences of simple failures and correcting design if performance requirements are not met.

RESPONSE:

- This has to be incorporated as part of the test plan before the network is handed over for acceptance by the TTCAA
- Required - A definition and understanding of what is a safety case

13. In the designs, PBX are not present. Is it correct, and in case of yes, how the phone numbering is managed? In case of no, is the PBX replacement under consideration?

RESPONSE:

- Voice service delivery will be made via the CISCO 2921 units

14. Errors probably detected:

- Part2_a.docx page 2: Piarco: 4-port Wan cards connected to Power Supply instead of Cisco 2921.
- Part2_b.docx page 2 : Guadeloupe connected to MPLS

RESPONSE:

- Errors in design drawings noted; Amendments made and to be discussed with TTCAA prior to re-distribution

15. FWI would support the set up of a test bend of the new network, and is proposing to be one of the sites involved in it.

16. the ECAR replacement proposed technical solution is commented (both for ToR and activities), identifying some errors and questions in the architecture design, and pointing out several issues that should be clarified:

- the service proposed is different for TSTT MPLS eligible States and others,
- the way States will be connected to MPLS or to Piarco node is unclear
- low rate leased lines (less the 2 Mbps) will no more be provided by France Telecom after end 2011: how will FWI be connected to Piarco ?

RESPONSE:

- Please see responses to questions 5), 6) and 8)

17. the central position of the Piarco node and the corresponding common mode failures.

RESPONSE:

- Please see responses to questions 11) and 14)

18. In the designs of TSTT document, redundancy is not obvious. If only the routers shown on the design are present, then redundancy seems far not adapted.

RESPONSE:

- Please refer to response to question 12)

19. The way the IP traffic will be managed, the security of the network (VPN applied?), the way the telephone internal numbering will be managed (present PBX still used?)

RESPONSE:

- TSTT and it's team will be managing the security of it's network. Details of which will be provided to the TTCAA prior to the start of testing on the proposed design and configuration
- The present PABX will not be used but based on feedback from TTCAA the numbering system will be retained

20. The future needs to take into account

RESPONSE:

The network is designed to be scalable and flexible

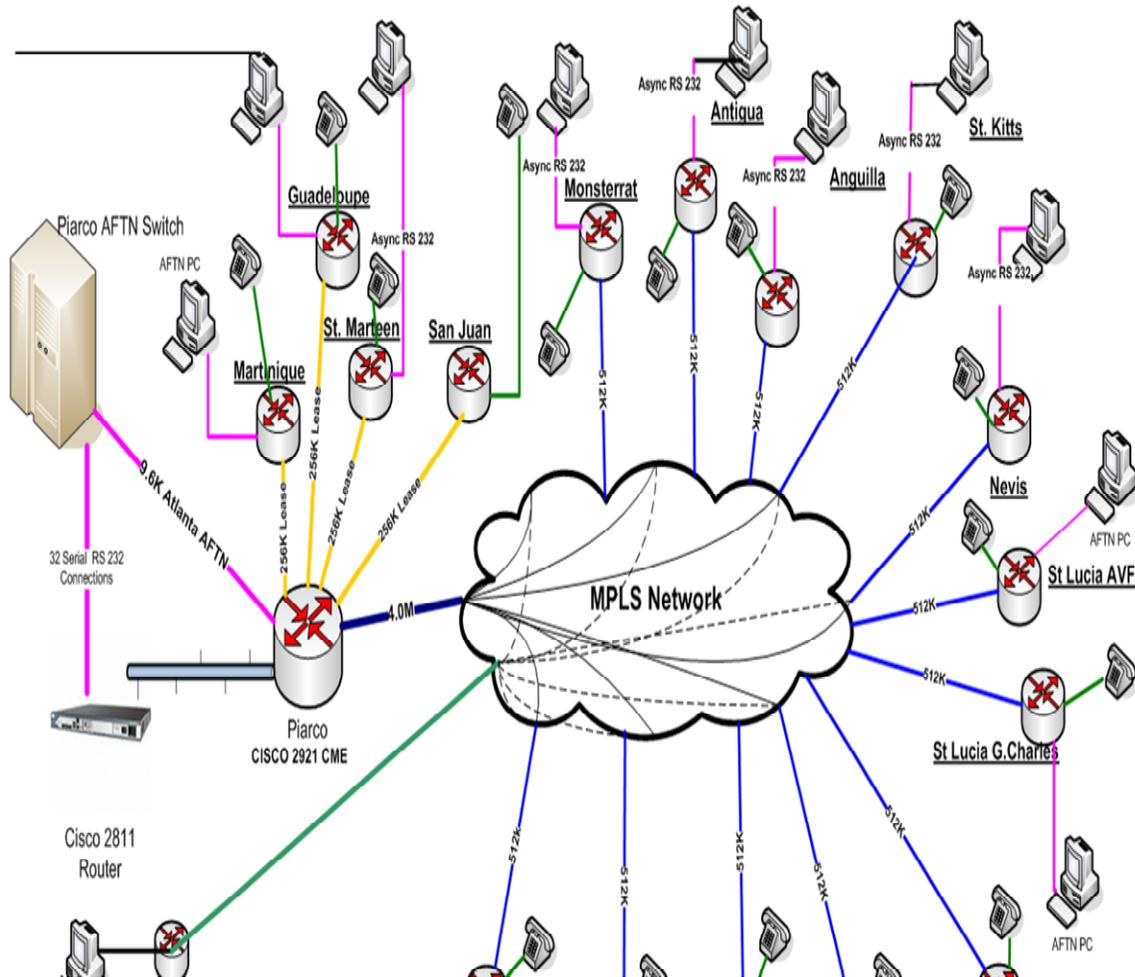
21. The warranties about MPLS present and future performances

RESPONSE

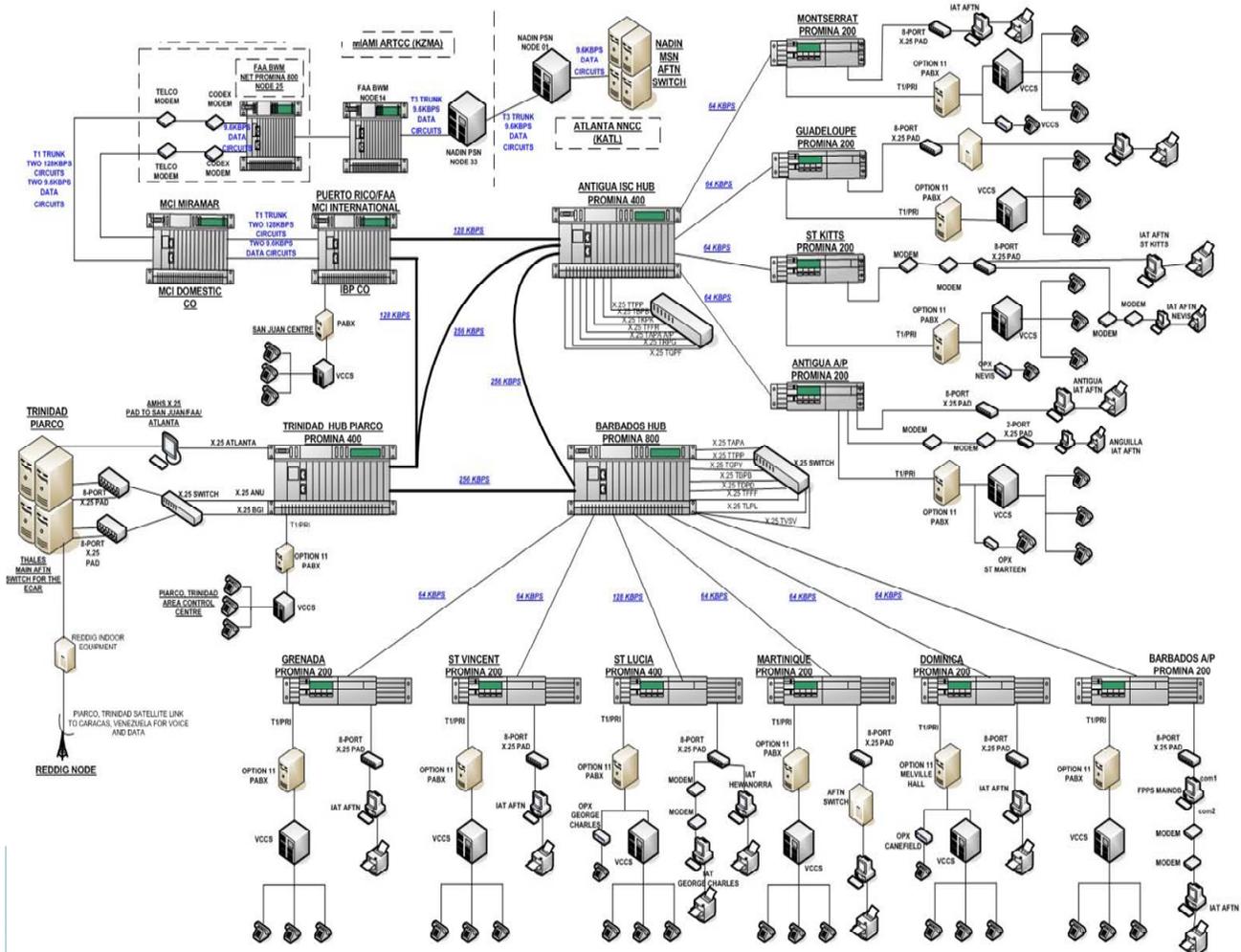
- Please see response to question 10)

22. the lack of provision for radar data in case Martinique Dacota radar data is merging all radars available and transmitted to every candidate State.

23. The need to take into account the experience of neighbouring interconnected networks (MEVA2 and REDDIG), and the need to be connected or integrated to these networks, knowing satellite (IR14) is covering ECAR region, and in accordance with ICAO recommendation to develop VSAT networks integration.



Existing AFS Network



TRINIDAD AND TOBAGO CIVIL AVIATION AUTHORITY
TELECOMMUNICATION SECTION
APRIL 25th 2007

Questions and Comments – United States

1. Currently, there are two 128kbps lines for voice and two 9.6kbps lines for data between San Juan and Antigua and San Juan to Piarco. The proposed design shows new architecture for San Juan Link will use 2x2931 that will carry voice and data. Is the objective of the proposed design to:
 - Replace the existing link with one 256kbps link to Trinidad
 - Reuse the existing 128kbps link to Trinidad
 - Or reuse both existing links

RESPONSE

Replace the existing link with one 512kbps link to Trinidad

2. Is the intent in the new architecture to route the (converted) AFTN X.25 traffic from the CISCO 2811 via CISCO 2921s as some form of Circuit Emulation (CEM)?

RESPONSE

No

3. The connectivity at San Juan shown in the proposed diagram is not accurate. We will verify this information and will provide a correct version.

RESPONSE

Noted

4. The proposed architecture shows the CISCO 2921 CME router in San Juan connected to Piarco through a leased line. Is a lease lined required or could the connection be into the MPLS network cloud.

RESPONSE

MPLS international service not available to San Juan

5. Is the Miami AFSS voice connectivity included in the San Juan interface?

RESPONSE

Yes

6. The proposed architecture denotes two MPLS networks; one at Piarco and another at Barbados. Are these two different networks?

RESPONSE

No

Agenda Item 3: E/CAR AFS Network Replacement Activities

3.1 Trinidad and Tobago recapped the events leading up to the initial compilation of a draft VSAT Request for Proposal document.

3.2 At the E/CAR/WG/30 Meeting the CNS Committee discussed the problems affecting the E/CAR digital network regarding voice and data AFS circuits and agreed that the E/CAR Region needed an end-to-end solution from a single provider/point of contact which would tie responsibility for resolution of failures to a single point of contact, increasing efficiency, reliability and availability of the network. Three options for replacement were proposed:

- a) Full VSAT solution.
- b) Combination VSAT and ground lines network.
- c) Retain the existing backbone and tributary links from Cable & Wireless (C&W) but replace all the end user and interface equipment.

3.3 Of the three options proposed, a recommendation was made to replace the existing terrestrial based E/CAR network with a VSAT network. In this regard Trinidad and Tobago contracted a Survey Design Report and subsequently drafted a User and Technical Specifications Requirements document to provide a VSAT solution for the Eastern Caribbean which was sent to States for comments.

3.4 At the E/CAR/WG/31 the CNS Committee discussed information presented in the report of the ATN/TF/1 on the Initial Transition Plan for the Evolutionary Development of the ATN in the CAR/SAM Regions and agreed that the existing E/CAR AFS network did not meet the requirements for an ATN network. This further confirmed the need to replace the existing network.

3.5 The initial thought for outright purchase of the VSAT equipment with Trinidad and Tobago as the System Administrator and owner of the network was revised for economical, logistical and managerial reasons and the requirements were redrafted for a service provider type of network. Based on information received regarding bandwidth, satellite airtime and maintenance costs, the requirements were further revised to have a partial VSAT network with some terrestrial and microwave links depending on the traffic movements derived from statistics and collaboration with States.

3.6 Based on reports presented by States on the performance of the network, the E/CAR/WG/31 Meeting concluded that the E/CAR AFS Network was unreliable and a replacement process should be conducted to ensure the adequate operation and performance of the network. In this regard draft conclusion 31/7 for the replacement of the E/CAR AFS network was proposed, subsequently ratified by the DCAs and reiterated at the E/CAR/DCA/22 Meeting in the formation of the E/CAR/NTG and its Terms of Reference.

3.7 The Meeting reviewed the information presented by ICAO on the status and activities carried out by the digital VSAT networks in the CAR Region and a follow-up of implementation of the

interconnection of the MEVA II and the REDDIG VSAT Networks and took note of ALLPIRG Conclusion 5/16 – Implementation of very small aperture terminals (VSATs).

3.8 In discussing the matter of the draft VSAT RFP some States expressed comments on whether the need for a VSAT network was still valid based on the new 'MPLS' network to be implemented in the short term. States felt that sufficient information was not provided to make a decision on the type of VSAT solution (full or partial), changeover parameters for primary/secondary configuration, bandwidth and budgetary costs.

3.9 The United States shared their experience in deploying the MEVA II VSAT network in the Central Caribbean Region and suggested that a Request for Information (RFI) be issued as a first step. The responses to the RFI would inform on what is available and how it can be done with budgetary costs, which would assist the E/CAR NTG in making decisions for finalizing the specifications for the E/CAR VSAT network.

3.10 The Meeting agreed that the RFI would be helpful and proposed the following recommendation:

Draft Conclusion E/CAR/NTG/1/03

That:

A Request for Information document for the E/CAR VSAT Network be compiled and issued to industry.

3.11 If this draft conclusion is accepted by the DCAs, a first draft of the RFI will be issued by Rapporteur to the NTG members for comments.

Agenda Item 4: Other Business

4.1 The meeting was informed on the United States' proposal for File Server in lieu of a File Transfer Protocol (FTP) server that can be used to access OPMET and World Area Forecast System Products via the Public Internet and the status of WIFS development.

4.2 The International Satellite Communication System (ISCS) provides Operational Meteorological Data (OPMET) and World Area Forecast System (WAFS) products to authorized users. The US National Weather Service (NWS) has a File Transfer Protocol (FTP) capability that can serve as backup to the satellite broadcast, but the FTP as currently configured is not user-friendly. The NWS, in collaboration with the FAA, plans to build a File Server that will allow access to all WAFS products in a user-friendly format in place of the existing FTP service.

4.3 As a WAFS provider State, the United States provides aviation weather forecast data in accordance with Annex 3 to the Convention on International Civil Aviation via the ISCS to WAFS workstations around the world. There is also a need to add an Internet communications capability. This new program is referred to as the WAFS Internet File Service or WIFS. This service will comply as a Qualified Internet Communication Provider (QICP) in accordance with Federal Aviation Administration's (FAA) Advisory Circular (AC) 00-62, which is similar to the ICAO Doc 9855, Guidelines on the Use of the Public Internet for Aeronautical Applications, using the Hypertext Transfer Protocol Secure (HTTPS) protocol to deliver WAFS data products. WIFS will provide access to WAFS products that are stored in directories, grouped by type. This data is accessed by the WAFS workstation vendors using the GNU "wget" a free software package for retrieving files using HTTPS a widely-used secure Internet protocol. This open source package is available for Windows or Linux Operating Systems.

4.4 WIFS is to be provided by the National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS). The WIFS will have access to all WAFS products from the National Weather Service Telecommunication Gateway that supports the ISCS.

4.5 Following the test and evaluation period, access restrictions will be implemented to restrict connections to known and registered ISCS users through the establishment of user accounts. Authorized ISCS users who are not registered may request access authorization from the FAA. If approved, they will then provide the NWS ISCS Program Office with the necessary contact and system IP information.

4.6 Users of WAFS workstations will have to make some modifications to their workstations to access the File Server via the Internet. In discussion with selected WAFS workstation vendors, there will be a cost to make the changes to the workstation. It is our understanding that there will be no cost for users who have maintenance contracts. We encourage users to contact their vendor for more information on maintenance and costs associated with upgrading the WAFS workstation to ensure they will be able to access the WIFS via the Internet.

4.7 The reviewed activities for the NTG are presented in **Appendix A**.

4.8 The activities in preparing the RFI and reviewing the Traffic matrix will be accomplished via email and teleconferences. The date for the next face-to-face meeting could be after the responses from the RFI are received if this recommendation is accepted.

ID	Title/Description/Updates	Deliverables	Action by	Target Dates	Slippage date
1	First Meeting			18/01/2010	6-7 April 2010
2	Review of the ToR		NTG	18/01/2010	6-7 April 2010
3	Definition of procedures and coordination agreement	working method	NTG	18/01/2010	6-7 April 2010
4	Follow up of activities and formulation of conclusions	Review work done as per ECAR/WG Conclusion 31/5, 31/6 and 31/7		18/01/2010	6-7 April 2010
5	E/CAR AFS Network Immediate Recovery actions:	Fault report for that period		14/12/2009-30/12/2011	Completed December 2009
6	Follow up of agreed actions and provide technical assistance when required		States	14/12/2009-30/12/2011	Completed December 2009
7	Preparation of near term solution (MPLS)	Discuss operational requirements with States	Trinidad and Tobago with assistance NTG	14/12/2009-29/01/2010	Dec 2009-May 2010
8	Coordination and assistance to implement near term solution	site contact form	States, NTG	01/02/2010 -30/04/2010	12 April 2010
9	Revision of current status of network	Promina upgrade - last report		14/12/2009-30/12/2011	6-7 April 2010
10	Revision of failure status	examine U deficiency (copy of deficiency)	TSTT, States	14/12/2009-30/12/2011	6-7 April 2010
11	Spare parts, 1 st level maintenance personnel, documentation, skills and other logistics	discuss first level maintenance by States, what documentation is required,	NTG, States	14/12/2009-26/03/2010	May – July 2010
12	Replacement of Network:			16/12/2009-22/07/2011	
13	Evaluation of current requirements and definition of future requirements	discuss traffic matrix, primary and backup networks,	NTG, States	16/12/2009-08/02/2010	23 April 2010
Insert 1	Discuss ATN requirements with States regarding new Network		States	8 April – 10 May 2010	

ID	Title/Description/Updates	Deliverables	Action by	Target Dates	Slippage date
Insert 2	Transition plan	TSTT, States		9 April – 30 June 2010	
Insert 3	Preparation of RFI			3 weeks from acceptance of recommendation by DCAs	
14	Preparation of RFP	comments from states	Trinidad and Tobago with assistance from NTG and States	09/02/2010 – 10/03/2010	
15	Revision of RFP	for follow up meeting via email		11/03/2011-24/03/2010	
16	RFP Process – Request proposal			25/03/2010-02/06/2010	
17	Tender process			25/06/2010-09/12/2010	
18	Network Replace activities			10/12/2010-31/03/2011	
19	Technical follow-up and review of implementation Plan			10/12/2010-31/03/2011	
20	Technical Post implementation			01/04/2011-21/06/2011	
21	Transition process			22/06/2011 – 2/07/2011	

No.	Description	Tasked to
2	Email account to log and receive feedback on faults	TTCAA, States
3	Amendment to new network drawing to show actual connections	TSTT
4	Amendment to existing network drawing to incorporate information shared by the US	TSTT
5	Site Surveys	TSTT/States
6	Confirm type (multiline/digital/analog/single) and number of handsets to be supplied to each site	TSTT/States during site surveys
7	Confirm Line hunting capability	TSTT
8	No. of trunk lines as it relates to Sector positions with dedicated numbers	TSTT
9	Redesign of new network with IPLC redundancies to MPLS sites	TSTT
10	Dialling plan	TSTT
11	Site Contact List	States
12	Electrical and environmental conditions	Site Survey report/TSTT
13	SLA	TSTT
14	Completion/verification/amendment of Traffic Matrix and notification to ICAO re: FASID Table CNS 1C	States
15	Transition plan	TSTT/States
16	Initial compilation of RFI	Rapporteur
17	Type of IPLC to interface with France in the near future	France/France telecoms