INTERNATIONAL CIVIL AVIATION ORGANIZATION

Fourth Meeting of the Eastern Caribbean Network Technical Group

(E/CAR/NTG/4)

and

Second Eastern Caribbean Radar Data Sharing

Ad hoc Group Meeting (E/CAR/RD/2)

FINAL REPORT

(Martinique, French Antilles, France, 17 - 18 June 2013)

INDEX

HISTORY OF THE MEETINGS

ii.1 PLACE AND DURATION OF THE MEETINGS

The Fourth Meeting of the Eastern Caribbean Network Technical Group (E/CAR/NTG/4) and the Second Eastern Caribbean Radar Data Sharing Ad-hoc Group Meeting (E/CAR/RD/2) were held at the Carayou Hotel, Martinique, French Antilles, France, from 17 to 18 June 2013.

ii.2 OPENING CEREMONY

The opening ceremony commenced with a welcome from Ms. Veronica Ramdath, E/CAR/NTG Rapporteur, and was followed by introductory remarks from Mr. Julio Siu, ICAO NACC Regional Officer, Communications, Navigation and Surveillance, on behalf of Mrs. Loretta Martin, Regional Director of the ICAO NACC Regional Office, highlighting the importance of the work of the E/CAR/NTG, the relevant meeting agenda issues and the radar data sharing requirements mandated by the E/CAR Directors. Mr. Olivier Jouans, Director of Air Navigation Services of the French Antilles and Guyana (DSNA), opened the meeting and commented on the importance of having an efficient and cost beneficial navigation infrastructure to support aviation growth in the region.

ii.3 WORKING LANGUAGE

The working language of the meetings was English. Documentation was provided electronically to the participants and was available on the ICAO NACC Regional Office website under the section “meetings”: http://www.mexico.icao.int/Meetings/ECARNTG4.html

ii.4 PARTICIPANTS AND ORGANIZATION

The meetings were attended by 7 E/CAR States/Territories; 1 international organization, ECCAA, in representation of the OECS States; ICAO; and the E/CAR AFS Network Service Provider (TSTT); making a total of 29 participants. The list of participants is presented from pages iii-1 to iv – 3.

The meetings were chaired by Ms. Veronica Ramdath, Rapporteur of the Eastern Caribbean Network Technical Group, who also acted as Secretary of the meetings. She was assisted by Mr. Julio Siu, ICAO NACC Regional Officer, Communications, Navigation and Surveillance.

ii.5 AGENDA

The Meeting adopted the following agenda:

Agenda Item 1: Review of valid conclusions from E/CAR/WG/33 and E/CAR/DCA/24 Meetings related the work of the NTG

1.1 Follow-up to previous E/CAR/NTG Conclusions and Decisions
1.2 Revision and actions concerning E/CAR/WG/33 and E/CAR/DCA/24 meetings related to the E/CAR AFS Network
1.3 New Air Navigation Implementation Working Group (ANI/WG) and 12th Air Navigation Conference recommendations

Agenda Item 2: E/CAR AFS Network

2.1 Network Performance analysis and general aspects

a) Analysis of performance of the network (web portal)
b) Analysis of failures and recommendations
c) Maintenance and reporting procedures (Top desk)
d) Logistics activities and their improvements
e) New requirements if any

2.2 Implementation of AMHS and AISS/Central FDP System
2.3 Participation in MEVA III RFI Process
2.4 E/CAR AFS Network Interconnection to MEVA

Agenda Item 3: Radar Data Sharing Activities

3.1 Radar Data Agreement and Teleconferences follow-up
3.2 Operational requirement review
3.3 Radar Display Trial Results
3.4 Implementation of radar data sharing tasks

Agenda Item 4: Other Business

ii.6. SCHEDULE AND WORK MODE

The Meeting agreed to hold its daily sessions from 09:00 to 15:30 hours with two breaks. The Meeting also agreed to work in plenary.

ii.7 DECISIONS AND CONCLUSIONS

The Fourth Eastern Caribbean Network Technical Group and the Second Eastern Caribbean Radar Data Sharing Ad hoc Group recorded their activities as Decisions and Draft Conclusions as follows:

ii.8 List of Working, Discussion and Information Papers and Presentations

Working and information papers are available on the ICAO website at the following link: http://www.mexico.icao.int/Meetings/ECARNTG4.html

WORKING PAPERS

Number	Agenda Item	Title	Date	Prepared and Presented by
WP/01	--	Draft Agenda and Schedule	20/05/13	E/CAR/NTG Rapporteur
WP/02	1.1	E/CAR/NTG Conclusions and Decisions Follow-up	11/06/13	E/CAR/NTG Rapporteur
WP/03	1.2	Revision and Actions Concerning E/CAR/WG/33 and E/CAR/DCA/24 Conclusions Related to the ECAR AFS Network	28/05/13	ICAO Secretariat
WP/04	1.3	Twelfth Air Navigation Conference (AN-CONF/12) Recommendations, Implementation of Aviation System Block Upgrades (ASBUs) Methodology and the New Air Navigation Implementation Working Group (ANI/WG)	11/06/13	ICAO Secretariat
WP/05	2.1	Analysis of Performance of the Network	17/06/13	Barbados
WP/06	2.1	Analysis of Performance of the Network	12/06/13	ECCAA
WP/07	2.1	E/CAR AFS Network Performance on French West Indies (FWI)	24/05/13	France
WP/08	2.1	Maintenance and Reporting Procedures	12/06/13	Trinidad and Tobago
WP/09	2.2	Implementation of AMHS and AISS/Central FDP System	13/06/13	Trinidad and Tobago
WP/10	2.4	MEVA II-ECAR AFS Network Interconnection Activities	22/05/13	MEVA TMG Coordinator
WP/11	4	E/CAR/NTG Future Meetings and Update to ToR	11/06/13	E/CAR/NTG Rapporteur
WP/12	3.1	Radar Data Agreement and Teleconference Follow-Up	12/06/13	ICAO Secretariat
WP/13	3.3	Radar Display Trial Results	13/06/13	France
WP/14	3.2	Operational Requirements Review for Radar Display use	11/06/13	ECCAA
WP/15	3.4	Implementation of Radar Data Sharing Tasks	28/05/13	ICAO Secretariat
WP/16	3.3	Analysis of Radar Coverage in Grenada and Saint Vincent	11/06/13	Trinidad and Tobago

INFORMATION PAPERS

Number	Agenda Item	Title	Date	Prepared and Presented by
IP/01	--	List of Working, Information and Discussion Papers and Presentations	18/06/13	Secretariat
IP/02	2.3	Participation in MEVA III RFI Process	13/06/13	E/CAR/NTG Rapporteur
IP/03	2.2	Implementation of AMHS Circuit PIARCO- Atlanta	13/06/13	United States

DISCUSSION PAPERS

Number	Agenda Item	Title	Date	Prepared and Presented by
DP/01	3.1	Radar Data Agreement and Teleconference Follow-Up	13/06/13	E/CAR/RD Rapporteur

PRESENTATIONS

Number	Agenda Item	Title	Presented by
P/01	2.1	Network Performance analysis and general aspects	TSTT

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Shenneth P. Phillips
Lorraine Davis
Denise Silston

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Cedric H. Murrell
Suzanne Griffith
Richard Odle
Shirley Ford

DOMINICA

Benoit Bardouille
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Honica Lawrence

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Olivier Jouans
Jean-Jacques Deschamps
Michel Humbert
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Agenda Item 1: Review of Valid Conclusions from E/CAR/WG/33 and E/CAR/DCA/24 Meetings related the Work of the NTG

Follow-up to previous E/CAR/NTG Conclusions and Decisions

1.1 Under WP/02, the Meeting reviewed the valid conclusions from the previous E/CAR/NTG meetings: C2/1, C2/3, C2/5, C2/9, C/3/1 and decision D3/2. The Meeting concluded that all the conclusions were completed and C2/1 was superseded. In **Appendix A** to this part of the report, detailed follow-up of these conclusions is shown.

Revision and Actions Concerning E/CAR/WG/33 and E/CAR/DCA/24 Meetings related to the E/CAR AFS Network

1.2 Under WP/03, the Meeting reviewed the valid conclusions formulated by the E/CAR/WG/33 and E/CAR/DCA/24 Meetings, identifying those related to the E/CAR AFS Network, and proposed to inform the E/CAR/CATG and E/CAR/DCA Meetings of the progress achieved by the E/CAR/NTG as detailed in **Appendix B** to this part of the report. From the analysis of the E/CAR/WG/33 and E/CAR/DCA/24 Meetings, the following conclusions are considered related to the E/CAR AFS Network:

- E/CAR/WG/33 Meeting: C/33/3 and C/33/8; and
- E/CAR/DCA/24 Meeting: C24/2 and C24/3

New Air Navigation Implementation Working Group (ANI/WG) and 12th Air Navigation Conference recommendations

1.3 In WP/04, ICAO presented a summary of the recommendations of the Twelfth Air Navigation Conference (AN-Conf/12) approved by the ICAO Council, as presented in the Appendix of WP/04. The Meeting reviewed the recommendations and agreed that follow-up to these recommendations will be carried out in coordination with the E/CAR/CATG and the NAM/CAR Air Navigation Implementation Working Group (ANI/WG).

1.4 Regarding the ASBUs and impact on regional plans, the Meeting took note of the ASBU methodology and new edition of the Global Air Navigation Plan, noting that by adopting the ASBUs and follow-up to regional implementation plans undertaken by the regional working groups, all air navigation regional plans and implementation activities should be updated during 2013. This task will be undertaken by the ANI/WG during its first meeting to be held in the ICAO NACC Regional Office in Mexico City, Mexico, from 29 July to 1 August de 2013.

1.5 The Meeting was informed on the details and reasons for the establishment of the ANI/WG, in accordance with the Fourth Meeting of North American, Central American and Caribbean Directors of Civil Aviation (NACC/DCA/4) Conclusion 4/9 - *Consolidation of Sub-Regional Working Groups in the CAR Region.* The Meeting expressed its support for the ANI/WG through the actions and results of the Eastern Caribbean Civil Aviation Technical Group (E/CAR/CATG).

Conclusion/Decision	Description	Status
Conclusion E/CAR/NTG/2/1 MPLS Maintenance Procedure and Service Level of Agreement	In order to establish and define the MPLS Maintenance procedures and inform on the service level of agreement to be applicable to the MPLS Network, that: a) E/CAR AFS Network members provide the E/CAR/NTG Rapporteur the necessary information for the coordination of the maintenance (Point of Contact information, working hours available for technical intervention, any particular security procedure to follow, escalation, etc.) by the **30 June 2011**; b) United States, Trinidad and Tobago and TSTT to review and draft a personalized version of the Standard Operations Procedure (SOP) by **31 July 2011**; c) E/CAR/NTG Rapporteur to draft a MPLS Maintenance Procedure based on the personalized SOP and the MPLS SLA by **30 August 2011**; d) Comments to MPLS Maintenance Procedure by E/CAR/NTG Members by **15 September 2011**; and e) E/CAR AFS Network members to apply MPLS Maintenance Procedure final version by **1 October 2011**.	**SUPERSEDED** a) **Completed** – Point-of-Contact (PoC) and escalation information provided by States. b) **Completed** - United States submitted a draft SOP for consideration. The SOP was reviewed by TSTT and TTCAA and sent back to the United States PoC. c) **Valid** -The information in the SOP and the SLA to be combined into one document by September 30, 2013. d) **Valid** -based on c). The combined SOP/SLA (E/CAR Maintenance Procedures) to be provided to States by October 31, 2013. e) **Valid** -based on d) by December 31, 2013.
Conclusion E/CAR/NTG/2/3 Removal of old unused E/CAR Network equipment	To free the space occupied by the old E/CAR Network equipment and to complete the installation of the MPLS Network that TTCAA inform the E/CAR Network members no later than **30 July 2011** on the actions to be carried out for the removal of these old unused equipment.	**COMPLETED** Via email on 7 January 2013, States were advised that Trinidad and Tobago will donate the old ECAR AFS and AFTN equipment to the States to do as they wish or dispose as necessary. This message was reiterated during the installation of the new AMHS.

Conclusion/Decision	Description	Status
Conclusion **E/CAR/NTG/2/5** Urgent Immediate Solution to Power Supply Irregularity at Melville Hall Premises	Since E/CAR AFS Network equipment implemented at the Melville Hall premises is facing major power supply irregularities that will soon damage the operating equipment, that: a) TTCAA Director General writes to ECCAA Directorate advising of the matter of irregularities in the electrical power and bringing to his attention the resulting action if the AFS equipment is damaged as a result of power problems. As stated at the E/CAR/WG/32, the state will bear responsibility for the cost of replacing and installing the damaged equipment; and b) Dominica/Melville Hall Airport Authority to implement an urgent immediate solution for the power supply irregularity no later than **30 June 2011.**	**COMPLETED** Dominica informed the meeting that a new UPS was installed and commissioned since May 2013.
Conclusion **E/CAR/NTG/2/9** IPv4 Addresses implementation in the E/CAR AFS Network	In compliance with the regional agreement for implementing ATN IPS Networks, under the IPv4 addressing scheme, TTCAA carry out the necessary activities for the application of the IPv4 addressing scheme in the MPLS Network and inform the progress of this action to the E/CAR/NTG Members by the next E/CAR/NTG Meeting (E/CAR/NTG/03)**.**	**COMPLETED** A unique addressing scheme (not IPv4) was implemented for the ECAR AFS network and the supporting AMHS network. IPv4 addresses will be implemented in the San Juan ECAR AFS router for the AMHS to Atlanta only.
Conclusion E/CAR/NTG/3/1 Use of TopDesk faults reporting application	To improve the efficiency and shorten the fault reporting times, E/CAR AFS Network users are urged to utilize the Topdesk application as the primary means to log fault reports	**COMPLETED** All E/CAR/NTG Members have taken action to use the TopDesk Application.
Decision E/CAR/NTG/3/1 Regional Interconnection with the E/CAR Network	Considering the importance of exchanging information for a regional interconnection between the E/CAR and the MEVA Network (MEVA III) that the NTG Members a) Review the draft RFI and provide comments to the E/CAR/NTG representative in the MEVAIII Task Force; and b) Participate in the MEVA TMG/24 meeting where vendors are to respond to the RFI.	**COMPLETED** MEVA III RFI process completed, where E/CAR/NTG Rapporteur actively participated in the MEVA TMG/25 Meeting.

Conclusion	Description	Status
CONCLUSION E/CAR/WG 33/3 RADAR DATA SHARING ACTIVITIES IN THE ECAR REGION	In order to prepare for the implementation of the radar data activities in the E/CAR Sub-Region, that: a) Trinidad and Tobago confirm to E/CAR States/Territories and the ICAO NACC Regional Office by **29 June 2012** that the Flight Plan identification correlation information can be sent with the system tracks; b) E/CAR States and Territories interested in receiving radar data, provide a Point-of-Contact and their operational requirements to the CNS Committee Rapporteur (Veronica Ramdath, Trinidad and Tobago) by **31 August 2012**; c) States/Territories providing radar data to the Radar Data server, to provide their theoretical radar coverage (FL 10, 30, 50, 100, 150, 200 and 300) to the CNS Committee Rapporteur by **10 July 2012**; and d) Trinidad and Tobago to provide to E/CAR States and the ICAO NACC Regional Office the radar sharing Interface Control Document (ICD) by **31 October 2012**.	**COMPLETED** contribution by E/CAR/NTG. E/CAR AFS Network already capable to satisfy these radar data sharing needs.
CONCLUSION E/CAR/WG 33/8 ACTION PLAN FOR AIDC IMPLEMENTATION USING CPL - LAM MESSAGES	That, considering the importance and benefits of AIDC implementation, States/ Territories of the Eastern Caribbean: a) inform the ICAO NACC Regional Office about the capacity of their ATC Systems to process CPL - LAM messages no later than **21 September 2012**; b) review the NAM ICD and CAR/SAM ICD as a basis to implement AIDC, recommending changes to the CAR/SAM ICD for its update no later than **26 October 2012**; c) prepare with the support of ICAO an action plan to harmonize the AIDC implementation for the use of CPL – LAM messages; and d) present the implementation of this Action Plan to the next E/CAR/CATG meeting.	**VALID** Telecom requirements to be identified and analysed for AIDC implementation based on the Regional AIDC Plan.

CONCLUSION 24/2 E/CAR RADAR DATA SHARING IMPLEMENTATION	That considering the important operational benefits and safety improvements that will be obtained with the implementation of radar data sharing in the E/CAR area, the E/CAR Directors of Civil Aviation: a) approve the initial radar project schedule (as shown in Appendix B to WP/20); and b) request interested E/CAR States/Territories to confirm their Point-of-Contact for this implementation with the CNS Committee Rapporteur and ICAO by **30 November 2012**.	**COMPLETED** Activities defined and ongoing activities lay with radar data sharing PoCs.
CONCLUSION 24/3 PIARCO NOTAM/AIS CONTINGENCY PLAN	That: a) the E/CAR AIS Committee, in collaboration with the Trinidad and Tobago Piarco AIS Office, develop and circulate a draft Piarco AIS Contingency Plan to E/CAR States, ECCAA and ICAO by **26 April 2013**; b) E/CAR States, ECCAA and ICAO provide the E/CAR AIS Committee with c) comments on the draft PIARCO AIS Contingency Plan by **31 May 2013**; and d) the E/CAR AIS Committee Rapporteur or Trinidad and Tobago present the proposed PIARCO AIS Contingency Plan at the next E/CAR Civil Aviation Technical Group Meeting in 2013	**VALID** The AIS Committee Rapporteur informed that the definition of the AIS Contingency Plan is on-going and that Trinidad and Tobago is working on the documentation. The telecom requirements are expected to be identified and analysed for implementation by the first quarter 2014.

Agenda Item 2: E/CAR AFS Network

Network Performance Analysis and General Aspects

2.1 Under P/01, the ECAR AFS Network Service Provider, TSTT, provided an overview of the E/CAR Network performance since the E/CAR/NTG/3 Meeting (August 2012 to May 2013) highlighting the following agreements and updates:

a) Dominica informed the meeting that an Uninterrupted Power System (UPS) was installed and commissioned to eliminate power fluctuations
b) TSTT informed of damage to AFS equipment resulting from environmental negligence:
   - Anguilla - a UPS and a Cisco router
   - St. Kitts – a Cisco router

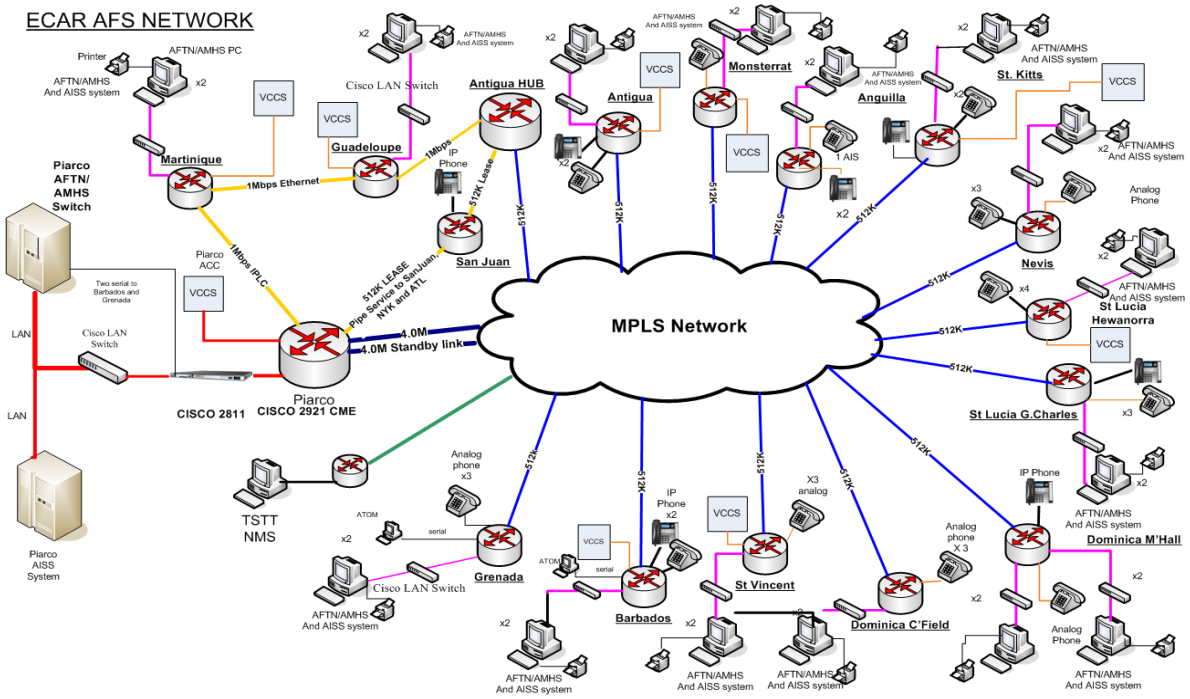
2.2 Under the terms of the Cisco Smartnet, equipment failure as a result of negligence is not warranteed. Damage due to environmental conditions is considered as negligence and is not covered under the Smartnet support replacement. Further to the final report of the E/CAR/WG/32 Meeting, paragraph 2.3.4.11 and WP/28, paragraph 2.8-2.12, States are responsible to replace any equipment damaged due to uncontrolled or adverse environmental conditions. While the Memorandum of Understanding (MoU) on environmental conditions has not yet been presented to States for signature, the general course of action was agreed by States. In this regard the meeting formulated the following:

DRAFT CONCLUSION
E/CAR/NTG/4/1 IMMEDIATE RESTORATION OF E/CAR AERONAUTICAL FIXED SERVICE (AFS) NETWORK NODE REDUNDANCY IN ANGUILLA AND SAINT KITTS

That Anguilla and Saint Kitts, as a matter of urgency and no later than **30 September 2013**, contact Trinidad and Tobago to agree on the necessary actions to restore the node redundancy for with replacement of the faulted equipment.

2.3 The Piarco-Martinique and Martinique-Guadeloupe International Private Leased Circuits (IPLCs) were implemented in July 2011. Legal connectivity issues delayed the final leg of the redundancy, namely the IPLC between Guadeloupe and Antigua. This IPLC was installed in March 2013.

2.4 In this regard, TSTT provided an update on the E/CAR AFS Network configuration after the changes to facilitate the AMHS/Aeronautical Information Services System (AISS) implementation, as detailed in the following configuration of the AFS Network to date:



2.5 The Meeting recalled that an internet portal, which can be used to monitor the performance of the network, was provided to E/CAR AFS users via http://tsttmetroe.tstt.co.tt for monitoring purposes. TSTT discussed the proactive monitoring in effect for the network via portal access, regional notifications and field forces.

2.6 Maintenance visits are scheduled for July-August 2013. E/CAR members will be informed at least two weeks in advance of these forthcoming maintenance visits.

2.7 TSTT reviewed the Service Level Agreement maintenance procedures in terms of initial feedback on fault, identification and isolation of faults and escalation conditions. The Meeting recalled the work assigned to the E/CAR/NTG Rapporteur for the maintenance procedures under Conclusion E/CAR/NTG 2/1 and agreed to supersede this conclusion with the following draft conclusion:

DRAFT CONCLUSION E/CAR/NTG/4/2 **E/CAR AFS NETWORK STANDARD OPERATING PROCEDURES (SOP): MULTI-PROTOCOL LABEL SWITCHING (MPLS) MAINTENANCE PROCEDURE AND SERVICE LEVEL OF AGREEMENT**

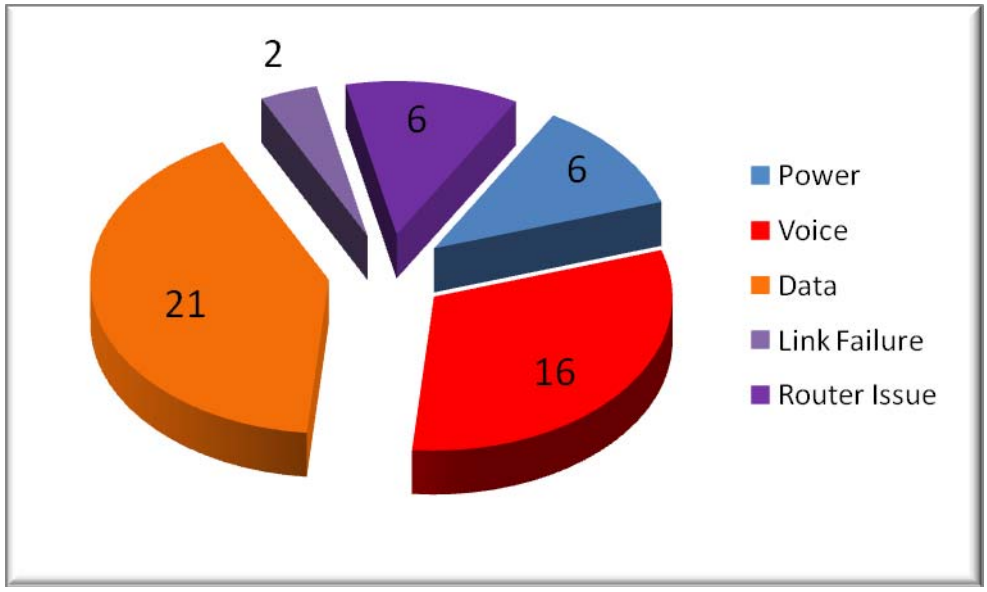
That**:**

a) The E/CAR/NTG Rapporteur draft and submit E/CAR AFS Network Standard Operating Procedures (SOP) including all maintenance and necessary network operation procedures as well as the MPLS Service Level Agreement (SLA) to the E/CAR/NTG Members by **30 September 2013**;

b) E/CARNTG members provide comments on the E/CAR AFS Network SOP by **31 October 2013**; and

c) E/CAR AFS Network members apply the E/CAR AFS Network Standard Operating Procedures (SOP), final version, by **31 December 2013**.

2.8 TSTT presented a 10 month performance evaluation of the ECAR/AFS Network MPLS showing consistently good performance and availability of the network. The failure reporting tickets registered from August 2012 to May 2013 highlighted that a total of 51 tickets were reported. As of May 2013, all 51 have been closed. Of the 51 failures, 2 were identified as link failures. The breakout of faults is illustrated as follows:



2.9 The following table shows the availability statistics per node:

Country	% Availability
Anguilla	96.0
Antigua	93.6
Barbados	99.4
Dominica - Canefield	93.4
Dominica - Melville Hall	99.1
Grenada	97.9
Guadeloupe	99.1
Martinique	99.3
Montserrat	99.0
Nevis	98.9
St Kitts	91.3
Saint Lucia -G F Charles	99.1
Saint Lucia- Hewanorra	97.8
St Vincent	99.0
Trinidad	99.7
Tobago	99.6
United States (San Juan)	93.2*

2.10 The Meeting noted that the availability figures need to reflect the actual time that the applications were available in addition to the network availability. Planned preventative maintenance time needs to be removed from the overall unavailability figures to reflect true availability. France requested that utilization figures be included in performance reports in addition to comparison figures for similar previous periods. The first such report on utilization, availability and comparison is to be presented on the NTG teleconference scheduled tentatively for 20 August 2013 at 15 UTC.

2.11 The Meeting emphasized that for civil aviation purposes, an availability figure of at least 99.9% is required, which shall be included in the E/CAR AFS Network SOP. In this regard the Meeting formulated the following draft conlusions:

DRAFT CONCLUSION
E/CAR/NTG 4/3 E/CAR AFS NETWORK AVAILABILITY IMPROVEMENT

That in order to improve E/CAR AFS Network availability:

a) the E/CAR AFS Network Service Provider, TSTT, analyse and identify any issues that can improve availability figures per node and inform the E/CAR/NTG Rapporteur by 30September 2013; and

b) E/CAR AFS Network Members be informed of the actions to be taken to improve the local node availability by the next teleconference (20 August 2013).

DRAFT CONCLUSION
E/CAR/NTG 4/4 E/CAR AFS NETWORK AVAILABILITY STATISTICS

That in order to improve the E/CAR AFS Network availability information reported and analyzed by the E/CAR AFS Network members, the E/CAR AFS Network Service Provider, TSTT:

a) calculate the network availability per node, identifying the preventive maintenance downtime;

b) provide a bandwidth utilization graphic with individual node presentation;

c) include a comparison to the previous Network report on the graphic updates in order to identify improvements; and

d) submit the new information to the E/CAR AFS Network members before the next teleconference (20 August 2013).

2.12 Under WP/07, France informed the Meeting that the E/CAR AFS Network (MPLS) is performing correctly globally and full architecture has been implemented. The web portal and email address are working correctly. TTCAA METRO supervision is quite useful and is functioning correctly. France commented that the Network is becoming more and more critical as more and more information is and will be transmitted via this Network, and noted that specific attention has to be addressed to performance monitoring and repair response when a failure occurs.

2.13 France noted that while the web portal tool is good, feedback related to failures should include causes and corrective actions. Information is required before any configuration change, even if no impact is foreseen. Cisco router software is a central point of the Network. If a problem occurs during a configuration change, the entire Network could be down and backup procedures should be ready, as well as information to end users. More effort is needed to respond and investigate more quickly when a problem is detected (MTTR has to be reduced). Communication with end users has to improve.

2.14 In light of the importance of the E/CAR/AFS Network and the current and future applications to be supported by the Network and further to the development of network contingency plans, a draft conclusion was proposed:

DRAFT CONCLUSION
E/CAR/NTG 4/5 E/CAR AFS NETWORK CONTINGENCY PROCEDURES

That France and United States develop network contingency procedures for the E/CAR AFS Network and present this document to the E/CAR/NTG/5 Meeting.

2.15 Under WP/05, Barbados informed that there has been an increased number of faults associated with the E/CAR AFS Network. During the period July 2012 to May 2013 there were five recorded failures associated with the voice network and seven failure reports associated with data services. The increased number of failures is mainly associated with data services. The pattern of voice failures with Martinique remained unchanged. However performance, is still reasonably good. Fault resolution and Network performance data needs to be analyzed to identify and address any apparent trends. Several voice failures with TFFF were identified and the following draft conclusion was formulated:

DRAFT CONCLUSION
E/CAR/NTG 4/6 VOICE FAILURES BETWEEN BARBADOS AND MARTINIQUE

That the E/CAR AFS Network Service Provider, TSTT, review the dial plan and any activity needed to resolve the voice communications between Barbados and Martinique before 30 June 2013.

2.16 Under WP/06, ECCAA in representation of the OECS States, informed on the performance of the Network. Some States reported that the services have been working well. Some States reported intermittent failures while others experienced major failures, which were attributed to end equipment problems that resulted in speech and data outages for extended periods. Lack of feedback continued to be a problem after faults were reported. The need for rapid resolution of problems was identified.

- **Anguilla** – Voice has been functioning satisfactorily. AFTN problems have been attributed to end-user equipment. Note: Anguilla is operating on one router. The second router is damaged due to environmental deterioration.
- **Antigua** – Voice has been functioning satisfactorily. AFTN problems have been attributed to end-user equipment.
- **Grenada** – Voice and data have been operating with few failures.
- **Dominica** - Both Data and Voice have been functioning satisfactorily at both airports over the past twelve months.
- **Montserrat**- Both Data and Voice lines have been serviceable over the past six months.
- **Saint Kitts and Nevis** - From all reports, both Data and Speech have been functioning satisfactorily. Note: Saint Kitts is operating on one router. The second router is damaged due to environmental deterioration.
- **Saint Lucia/George Charles** – Voice has been functioning satisfactorily.

- **Saint Lucia/Hewanorra** – Voice and AFTN at Hewanorra has been quite satisfactory as reported by the SATCO. There were no serious issues that required technical intervention.
- **Saint Vincent and the Grenadines** - ATCOs have been reporting intermittent dropouts of calls on the speech service. This has been an on-going problem for the past four months. The cause of the problem is currently under investigation. The AFTN has been functioning satisfactorily.

2.17 ECCAA reported that there appeared to be some conflict between TSTT and Jamaica, as LIME in Jamaica has been contacting Antigua and Saint Kitts and Nevis with regard to reported failures on the Network. This matter was reported to TSTT during the meeting.

2.18 The Meeting was informed that the Antigua and Barbuda radar is still in the process of full restoration. At present, ATS is awaiting the delivery of a new UPS for the radar site, as well as some modules for completion it. Once the UPS is installed, ATS Antigua should be able to use situational awareness. Restoration of the radar should be completed by the end of 2013. In this regard, the Meeting agreed on the following draft conclusion:

DRAFT CONCLUSION
E/CAR/NTG 4/7 ANTIGUA AND BARBUDA RADAR RESTORATION

That Antigua and Barbuda report the final status and planning for restoration of their radar system, including the necessary actions to start radar data sharing with Sint Maarten no later than **30 September 2013**.

2.19 United States confirmed that the network was performing very well.

2.20 The Meeting noted that many failures were a result of application failure, as in the case of the AMHS, and not necessarily Network failure.

2.21 Under WP/8, in the third quarter (June) of 2011, Trinidad and Tobago introduced an on-line web-based fault reporting and resolution application (Top Desk), which would allow users of the Eastern Caribbean AFS Network to log faults and receive timely resolution information. Passwords were assigned per State to ATC, AIS, Engineering/NOC and Administration departments, which allowed users the ability to enter a fault and view subsequent feedback information on resolution for their State/Territory. The application provides statistics and reports for all States/Territories. Reports and statistics may be generated per State, per period, per type of failure, etc. The process and usage of implementation of this application was informed to the E/CAR/NTG/3 Meeting.

2.22 At the E/CAR/NTG/3 Meeting, users were urged to utilize the Top Desk application as the primary means to log fault reports, and in this regard, the Meeting formulated Conclusion E/CAR/NTG 3/01 - *Use of Top Desk fault reporting application.* The Meeting was informed that additional one-on-one online training is available upon request. The Top Desk application is available at: www.caa.gov.tt. In this regard, the following draft conclusion was agreed:

DRAFT CONCLUSION
E/CAR/NTG 4/8 IMPROVEMENT TO FAILURE REPORT DESCRIPTION AND FEEDBACK

That since Trinidad and Tobago is responsible for the operation and outcomes of the Top Desk application:

a) clearly identify the type of failure (application or network) in its responses on Top Desk;

b) provide feedback to all failure reports; and

c) report these improvements at the next teleconference (20 August 2013).

2.23 Most of the OECS States have been utilizing the Top Desk reporting tool for documenting faults. In the OECS, ATC/AIS reports all faults to the ECCAA technical staff who in turn log the faults on Top Desk. In the States where there is no technical staff, the AIS officer logs the fault on Top Desk or reports directly via telephone to AIS/TTCAA. This is the case for Dominica. In this regard, the following draft conclusion was agreed:

DRAFT CONCLUSION
E/CAR/NTG 4/9 ECCAA AFS NETWORK PROCEDURE IMPROVEMENTS

That since ECCAA is the CNS Service Provider for the OECS States and that a minimum maintenance level review is made before issuing a failure report:

a) ECCAA review and update their maintenance reporting procedure with their ECCAA Members by the end of July 2013; and

b) Trinidad and Tobago provide Dominica online training for use of the Top Desk application.

2.24 To improve the performance of Top Desk, the following matters were noted:

a) Users should avoid multiple reports on the same problem.
b) TTCAA should manually enter the associated TSTT fault number to correlate to the State's report on Top Desk.
c) When a failure occurs, a State local technician should carry out verification checks on end-user equipment and other related equipment operating with the E/CAR AFS Network and after this verification coordinate the failure report with TTCAA.
d) Sometimes the Top Desk application stops responding. This has been reported to the provider of Top Desk. When this happens, the only solution is to exit and re-enter the application. Also, from the States´ point of view, one browser may work and another may not; Microsoft Internet Explorer works and Google Chrome may not. This changes from time to time as experience has shown.

e) States and users are urged to ensure dissemination of the username and password to all relevant personnel.

f) TSTT is urged to provide timely and meaningful resolution information.

Implementation of AMHS and AISS/Central FDP System

2.25 In keeping with ICAO Global Plan Initiative 18 (GPI-18) - *Aeronautical Information: To make available in real-time quality assured electronic information (aeronautical, terrain and obstacle)* and GPI-22 - *Communication Infrastructure: To evolve the aeronautical mobile and fixed communication infrastructure, supporting both voice and data communications, accommodating new functions, as well as providing the adequate capacity and quality of service to support ATM requirements and the ICAO Flight Plan 2012 requirement*, TTCAA embarked on two projects for the supply and installation of an AMHS and an AISS with COMSOFT and IDS Technologies, respectively.

2.26 The Thales AFTN terminals have been replaced by the AMHS User Agent (UA) terminals. Presently the UAs are operating in AFTN mode only. The AFTN terminals will be removed by the end of July 2013. The UAs are connected to the switching centre via the Multi-protocol Label Switching (MPLS) as the primary connection and via Virtual Permanent Network (VPN) as the secondary connection.

2.27 The AISS is designed to support several key applications including NOTAM, Flight Plan (2012), MET, charting, procedure design and electronic Aeronautical Information Publication (AIP). It has a central database built on the Aeronautical Information Exchange Mode (AIXM) 5.1 model. All flight plan, NOTAM and meteorological data received by the AFTN/AMHS switching centre are copied to the AISS for storage and can be accessed using Standard ICAO request proposal over the AFTN or by all directly connected AISS workstations. The primary connection for the AISS workstations on the E/CAR States is via the MPLS. Secondary connection is available via the Internet.

2.28 Trinidad and Tobago has a centralized database (SPATIA), which contains all FPLs entering and exiting the Piarco FIR thru which requests for copies of FPLs can be addressed. The address is TTPPAISS. The supplier of SPATIA is currently working on a solution for using a single address for FPL filing destined to States in the Eastern Caribbean. The solution would allow SPATIA to analyze the route of Flight and disseminate said FPL to the respective AFTN/AMHS terminals and all FDP systems of the E/CAR. This solution, which is expected by the end of September 2013, would eliminate the issue of missing and duplicate FPLs at the FDPs in the E/CAR. Testing and consultation with the E/CAR States is expected during the months of October/November 2013.

2.29 The AMHS UAs and the AISS workstations with the necessary training were completed during the period 4 January 2013 through 1 March 2013, as presented in **Appendix A** to this part of the report. **Appendix B** to this part of the report presents AMHS/AISS installation summary.

2.30 The following are comments by OECS States on the AFTN/AMHS/AISS:

- **Anguilla**: The AMHS/AISS have been functioning intermittently. The fault appears to be related to end equipment problems.
- **Antigua**: The AMHS/AISS has been very unstable, constantly requiring resetting.
- **Grenada**: 18 February 2013. The SPATIA system reported to be malfunctioning. The system was restored 20 February 2013.

- **Dominica**: AMHS/AISS have been satisfactory.
- **Montserrat**: The CADAS system has been unserviceable from the time of installation.
- **Saint Lucia: George Charles**: The AFTN/AMHS/AISS at George Charles has been experiencing problems over the past six months. There have been daily intermittent failures on the SPATIA Web system. Though not as frequent, the CADAS system has also had failures. However, during the past two weeks of May 2013 an improvement was noted in the serviceability of the equipment. The service interruptions are few especially on CADAS. The speech/voice components have been functioning effectively and do not appear to have serviceability issues at this point.
- **Saint Lucia: Hewanorra**: AFTN has been quite satisfactory as reported by the SATCO.
- **Saint Vincent and the Grenadines**: AFTN has been functioning satisfactorily.

2.31 Trinidad and Tobago requested that in order to improve the maintenance response, the on-site technical support should try to provide as much information as possible on AFTN/ANHS/AISS failures. States were encouraged to utilize the procedures that were provided during installation to check connectivity of CADAS and SPATIA with Piarco. Also, on CADAS there is the facility to do an alarm log query and then a screen shot. This can be saved as an image on a flash drive and attached to an email to be sent to Trinidad and Tobago. No procedure was provided for screen saving on SPATIA because it is Windows-based and a screen shot can be done using the 'prntscrn' key stroke. Subsequent to the installation, States were emailed to contact the TTCAA technicians on any issues encountered.

2.32 In IP/03, United States informed the Meeting with regard to the last AMHS workshop/meeting, which was hosted by United States/FAA, in coordination with ICAO, in Miami, Florida, from 11 to 13 April 2012. The workshop provided participants with a forum to exchange experiences, guidance on implementation of AMHS, as well as implementation activities and schedule updates. Since then, the pace of implementation of AMHS systems in the region has increased. Currently the FAA is working with six CAAs on the implementation of the circuits for interconnecting their AMHS systems.

2.33 The FAA is working with the CAAs of Curaçao, Dominican Republic, St. Maarten, Trinidad and Tobago, Turks and Caicos Islands, and COCESNA to migrate their AFTN connections to AMHS. The status of the various AMHS Implementation Projects are as follow:

- **Curaçao**: Interoperability testing is pending implementation of a MEVA II 64kbps IP circuit.
- **Dominican Republic**: Initial phase of interoperability Testing was performed through a VPN over the Internet. Subsequent phases were performed over a MEVA II 64kbps IP circuit. Interoperability testing is almost completed; the project is entering the Cutover Phase.
- **Jamaica**: The initial phase of interoperability testing will be initiated soon.
- **Sint Maarten**: Interoperability testing is pending implementation of a MEVA II 64kbps IP circuit.

- **Trinidad and Tobago**: Interoperability testing is pending, the physical interface for the FAA 64kbps IP circuit between the E/CAR AIFSS router in San Juan CERAP and Atlanta NEMC is still to be agreed.
- **Turks and Caicos Islands**: The initial phase of the interoperability testing will be performed through a VPN over the Internet. Subsequent phases will be performed over a 64kbps IP circuit between Grand Turks ATCT and Atlanta NEMC. Currently, Turks and Caicos Islands and the vendor are redesigning TCIAA's AMHS System (MTA and UAs).
- **COCESNA**: The initial phase of the interoperability testing will be performed through a VPN over the Internet. Subsequent phases will be performed over a MEVA II 64kbps IP circuit.

2.34 The next ICAO/FAA AMHS workshop is tentatively scheduled for September 2013 in Dominican Republic.

Participation in MEVA III RFI Process

2.35 Under IP02, the Meeting was informed of the E/CAR/NTG Rapporteur participation in the MEVA III RFI representing the E/CAR AFS Network in accordance with the Second Meeting of the E/CAR/NTG Decision E/CAR/NTG/2/10 - *Planning for the implementation of a Common Request for Information (RFI) document for the CAR Region telecommunication networks.* Also during this participation information was shared between the E/CAR NTG and the MEVA TMG on the separate planned renewal of the E/CAR AFS and the MEVA Networks.

2.36 The RFI document and the associated WBS Gant chart were presented to the 24th MEVA TMG Meeting, which was held in Mexico City, Mexico, from 21 to 23 August 2012. The Meeting reviewed and approved the telecommunication requirements to be covered by the interconnection of the MEVA II and E/CAR AFS Networks.

2.37 After coordination of the announcement, the RFI was issued by Trinidad and Tobago, United States and ICAO from 14 September 2012 through 4 December 2012. In preparation for vendor RFI responses, ICAO for request of the MEVA TMG, created a website called "MEVA III Activities" in order to make available all meeting results, task force deliverables, and provide a common reference point for all the MEVA Members to follow and discuss. Vendor responses were received and reviewed by the Task Force between 11 and 13 December 2012. Presentations were made by the qualified vendors at the 25th MEVA TMG Meeting, which was held in Mexico City, Mexico, from 8 to 11 January 2013.

2.38 Only members of the MEVA/TMG are included in the Replacement Flight Plan (RFP) process by Letter of Agreement; therefore, the MEVA/TMG/25 Meeting concluded that the mandate given to the Rapporteur of the E/CAR/NTG to ensure MEVA E/CAR interconnectivity requirements be included in the MEVA III.

E/CAR AFS Network Interconnection to MEVA

2.39 Under WP/10, the MEVA TMG Coordinator presented the progress and results of the work of the E/CAR/NTG and MEVA TMG regarding the E/CAR AFS – MEVA II Network interconnectivity and the progress of the E/CAR Radar sharing project. It was agreed that San Juan, Puerto Rico, would be the point of interconnection for both networks, since San Juan has both a MEVA node and an E/CAR AFS Network node. The interconnectivity would allow Sint Maarten to share their radar with Trinidad and Tobago as part of the radar feeds that will support the Radar Data Server Project to be implemented for E/CAR States/Territories, in addition to the exchange of radar between Sint Maarten and San Juan; therefore, Conclusion 25/09 - *MEVA II-E/CAR AFS Network Interconnection* was formulated.

2.40 The MEVA II – E/CAR AFS Network interconnection requirements discussed have been included in the MEVA III Tender Package version 1.0 for the MEVA III Tender process.

AMHS/AISS E/CAR INSTALLATION AND TRAINING FROM 4JANUARY TO 1 MARCH 2013

◄ Dec 2012 | ~ January 2013 ~ | Feb 2013 ►

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	**2**		**4** **Techs Arriving in Montserrat-**	**5** **AMHS AISS Installation-MNI**
6 Techs Training -MNI **AIS#1-Joseph Jaggan Montserrat**	**7** Techs Audit Eqpt & Depart to Antigua Arr:5:15pm Dep:5:35pm **AIS Training Day 1 -MNI**	**8** **Techs Audit Off-site Eqpt in Antigua** **AIS Training Day 2- MNI**	**9** AMHS/AISS Installation-Antigua **AIS Training Day 3- MNI**	**10** Techs Training- Antigua **AIS Depart to Antigua**	**11** Techs Audit Eqpt & Departure to Anguilla ANU-ANG Dep:430pm Arr:5:45pm **AIS Training Day 1-Antigua**	**12** AMHS/AISS Installation Anguilla **AIS Training Day 2-Antigua**
13 Rest Day	**14** Techs Training-Anguilla **AIS Training Day 3 & Depart to Anguilla Dep:5:00pm Arr:5:40pm**	**15** Techs Audit Eqpt in Anguilla **AIS Training Day 1-Anguilla**	**16** Techs Dept Anguilla to St.Kitts Dep:3:50pm Arr:8:00pm **AIS Training Day 2-Anguilla**	**17** AMHS/AISS Installation (SKB) **AIS Training Day 3**	**18** Techs Training (SKB) **AIS Depart to St. Kitts Dep:3:50pm Arr:8:00pm**	**19** Techs Audit Eqpt (SKB) & Depart to Nevis DeP:6:40pm Arr:6:55pm **AIS Training Day 1 -SKB**
20 AMHS/AISS Installation -Nevis	**21** Techs Training- Nevis **AIS Training Day 2 -SKB**	**22** Techs Audit Eqpt **AIS Training Day 3 & Depart to Nevis Dep:6:40pm Arr:6:55pm**	**23** Techs to depart from Nevis & to Dominica Dep:1:50pm Arr:3:50pm **AIS Training Day 1-Nevis**	**24** AMHS/AISS Installation-Dominica (DOM) Canefied **AIS Training Day 2-Nevis**	**25** Techs Training-DOM **AIS Training Day 3-Nevis & Depart to Dominica Dep:1:50pm Arr:3:50pm**	**26** Techs Audit Eqpt **AIS Training Day 1 –DOM / Canefield**

~ January 2013 ~

◄ Dec 2012 | Feb 2013 ►

Sun	Mon	Tue	Wed	Thu	Fri	Sat
27 Rest Day Techs Depart to Meville Hall	**28** AMHS/AISS Installation-Meville Hall **AIS Training Day 2-Canefield**	**29** Techs Training-Melville Hall **AIS Training Day 3-Canefield & Depart to MevileHall**	**30** Techs Audit Eqpt- & depart to St. Lucia Dep:9:20pm Arr:10:00pm **AIS Training Day 1-MelvilleHall**	**31** AMHS/AISS Installation St.Lucia-George Charles (SLU) **AIS Training Day 2-MelvileHall**	**Notes: Color Code** **Red-Technicians** **Black Bold –AIS** **Green –Extra day to accommodate off site Audit**	

April

~ February 2013 ~

◄ Jan 2013 | Mar 2013 ►

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1 Techs Training-SLU **AIS Training Day 3-MelvilleHall & Depart to POS** **Dep: 5:40pm** **Arr:7:35pm**	**2** **Techs Audit Eqpt off Site with Cable Wireless**
3 Rest Day **AIS #2-Ricky Bissessar Arriving St.Lucia** **Dep:1:45pm** **Arr:2:50pm**	**4** Techs Audit Eqpt -SLU **AIS Training Day 1-George Charles**	**5** AMHS/AISS Installation-Hewanorra **AIS Training Day 2-SLU**	**6** Techs Training-Hewanorra **AIS Training Day 3-SLU**	**7** Techs Audit Eqpt & Depart to St. Vincent (SVD) Dep:10:20pm Arr:10:50pm **AIS Training Day 1-Hewanorra**	**8** AMHS/AISS Installation-SVD **AIS Training Day 2-Hewanorra**	**9** Techs Training –SVD **AIS Training Day 3-Hewanorra & Depart to St. Vincent** **Dep:10:20pm** **Arr:10:50pm**
10 Rest Day	**11** Techs Audit Eqpt **AIS Training Day 1-SVD**	**12** Depart from SVD to Fort de France (FOF)-Martinique Dep:6:00am Arr:10:20am **AIS Training Day 2-SVD**	**13** AMHS/AISS Installation-FOF **AIS Training Day3-SVD (FOF)**	**14** Techs Training-FOF **AIS Depart from SVD to Fort de France-(FOF)-Martinique** **Dep:6:00am** **Arr:10:20am**	**15** Techs Audit Eqpt & Depart to Guadeloupe (PPR) Dep:7:45pm Arr: 8:30pm **AIS Training Day 1-FOF**	**16** AMHS/AISS Installation-PPR **AIS Training Day 2-FOF**

◄ Jan 2013 | **~ February 2013 ~** | Mar 2013 ►

Sun	Mon	Tue	Wed	Thu	Fri	Sat
17 Rest Day	**18** Techs Training-PPR **AIS Training Day 3 & Depart to Guadeloupe-PPR** **Dep:7:45pm** **Arr:8: 30pm**	**19** Techs Audit & Depart to Barbados (BGI) Dep:4:30pm Arr:10:20pm **AIS Training Day 1-PPR**	**20** AMHS/AISS Installation-BGI **AIS Training Day 2-PPR**	**21** Techs Training –BGI **AIS Training Day 3 & Depart to Antigua & Overnight** **Dep:8:00pm** **Arr:8:30pm**	**22** Techs Audit Eqpt -BGI Arriving Barbados Arr:8:00am **AIS Training Day 1 -BGI**	**23** **Techs Audit Eqpt Off-site with Cable& Wireless & Depart to Grenada (GND)** **Dep:6:30pm** **Arr:8:00pm** **AIS Training Day 2-BGI**
24 Rest Day	**25** AMHS/AISS Installation-GND **AIS Training Day 3-BGI**	**26** Techs Training –GND **Depart from BGI to Grenada (GND)** **Dep:12:**	**27** Techs Audit Eqpt GND and Depart to POS Dep:8:45pm Arr:9:25pm **AIS Training Day 1-GND**	**28** **AIS Training Day 2-GND**	**March 01** **AIS Training Day 3-GND & Depart to POS** **Dep:8:15pm** **Arr:8:55pm**	

LOCATION	STATUS OF INSTALLATION	FOLLOW UP FOR STATE	FOLLOW UP FOR TTCAA/COMSOFT/IDS
Anguilla	Completed	None	1. The CADAS-ATS printer form feeding after one message is printed; 2. Alarm log reporting a loss of connection with the server.
Antigua	Completed	None	1. The CADAS-ATS printer form feeding after one message is printed; 2. Alarm log reporting a loss of connection with the server.
Barbados	Completed	None	CADAS-ATS printer form feeding after one message is printed
Dominica-Canefield	Completed	None	CADAS-ATS printer form feeding after one message is printed
Dominica-Melville Hall	Completed	None	CADAS-ATS printer form feeding after one message is printed
Grenada	Completed	To provide internet not going through a proxy server in order to connect the CADAS AMHS system	CADAS-ATS printer form feeding after one message is printed
Guadeloupe	Completed	To provide internet not going through a proxy server in order to connect the CADAS AMHS system	1. CADAS-ATS printer form feeding after one message is printed 2. Changing the CADAS system to a French Keyboard
Martinique	Completed	To provide internet not going through a proxy server in order to connect the CADAS AMHS system	1. CADAS-ATS printer form feeding after one message is printed 2. Changing the CADAS system to a French Keyboard
Montserrat	Completed	None	CADAS-ATS printer form feeding after one message is printed
Nevis	Completed	None	1. CADAS-ATS printer form feeding after one message is printed 2. Alarm log reporting a loss of connection with the server
St. Kitts	Not Completed	**1.** To install the CADAS-ATS system in the tower St. Kitts will need to install a modem to provide Ethernet connection over the copper cable that connects the AIS and the Tower). **2.** Until connection can be established between the two buildings to extend the network St. Kitts will relocate the CADAS-ATS to the AIS office. The output trunk connection from TSTT will now have to be	CADAS-ATS printer form feeding after one message is printed

LOCATION	STATUS OF INSTALLATION	FOLLOW UP FOR STATE	FOLLOW UP FOR TTCAA/COMSOFT/IDS
		connected to the modem supplied by the Airport's technical department and the LAN switch relocated to the AIS office to accommodate the CADAS and AISS. **3.** Local technical staff to relocate the CADAS-ATS hardware from the tower to the AIS office and make the necessary connection to the AFS network.	
St. Lucia-George Charles	Completed	The COMSOFT CADAS workstation's VPN connection could not be established via proxy server. Comsoft has recommended a dedicated DSL line be provided for this connection.	CADAS-ATS printer form feeding after one message is printed
St. Lucia-Hewanorra	Completed	The COMSOFT CADAS workstation's VPN connection could not be established via proxy server. Comsoft has recommended a dedicated DSL line be provided for this connection.	CADAS-ATS printer form feeding after one message is printed
St. Vincent	Completed	**1.** To provide appropriate Internet connection **2.** ECCAA technicians to install a separate AC supply on an independent breaker for the AMHS/AISS	CADAS-ATS printer form feeding after one message is printed

Agenda Item 3: Radar Data Sharing Activities

Radar Data Agreement and Teleconference Follow-Up

3.1 Under WP/12, the Meeting was informed of the progress of the radar data server, the infrastructure needed for radar data exchange and the offer made by France regarding system tracks from the radar sensors of Martinique and Guadeloupe to E/CAR States in addition to the radar data server in Trinidad and Tobago.

3.2 The Meeting took note that from the E/CAR radar data sharing teleconferences, the following results were achieved:

a) exchange of radar data coverage between Antigua, Barbados, France, Trinidad and Tobago, and United States - theoretical radar coverage (FL 50, 100, 150,200 and 300);
b) completion of radar questionnaire by all participating parties;
c) Trinidad and Tobago reported progress and results of coverage tests to ICAO and the States. Provisional testing was carried out on 20 to 21 September 2012 with Grenada and Saint Vincent and the Grenadines. Trinidad and Tobago reported planning and results of the coverage tests to ICAO and the States;
d) Trinidad and Tobago submitted the required information (ICD and the corresponding SIC/SAC codes) to French Antilles and the PIARCO radar merged data;
e) France conducted testing of their radar displays. In this regard, it was informed that TSTT is working with SNA/AG on the resolution of the telecom issues for radar data delivery from PIARCO to Martinique; and
f) ECCAA confirmed the commitment that Grenada, Montserrat, Saint Kitts and Nevis, and Saint Vincent will be part of the Radar Data Sharing Project. Antigua, Barbados, Dominica, France, Saint Lucia, Trinidad and Tobago, and United States also committed to the project. Completion of E/CAR member use of the radar data and the quantity of CPUs by each State/Territory is provided below:

State / Territory	Use of radar Data	Remarks
Anguilla	Situational awareness	
Antigua and Barbuda	Situational awareness/ Radar Control	
Barbados	Radar Control	ATC System on site
Dominica	Situational awareness	
French Antilles	Radar Control	ATC System on site
Grenada	Situational awareness	
Montserrat	Situational awareness	
Saint. Kitts and Nevis	Situational Awareness	
Saint Lucia	Situational awareness	
Saint Vincent and the Grenadines	Situational awareness	
Trinidad and Tobago	Radar Control	ATC System on site

g) France provided Saint Lucia and ECCAA operational guidance on the use of radar data as situational awareness based on their experience with procedures used in Cayenne;

h) ECCAA agreed to coordinate with their members participating in the radar data activities to determine the operational requirements to implement and use the radar data for situational awareness; and

i) the updated list of Points-of-Contact for E/CAR radar sharing implementation was completed as shown in **Appendix A** to this part of the report.

3.3 During the fourth and the fifth E/CAR radar data sharing teleconferences the implementation plan and the radar technical specifications were updated as shown in **Appendix B** and **C** to this part of the report, respectively.

Operational Requirement Review

3.4 France provided a demonstration of their radar data display, IRMA 2000, and differentiated the data displayed upon the selection of Martinique, Guadeloupe and Dakota in addition to the safety nets, zoom, maps and alert capabilities. The Meeting congratulated France on the usefulness of the demonstration.

3.5 The Meeting was informed on Antigua and Barbuda, Barbados, Guadeloupe, Martinique, Sint Maarten and Trinidad and Tobago radar coverage, the benefits of specific overlap coverage from the radars, and identified States that could benefit from either single radar or multiple radars. These coverage are shown in **Appendix D** to this part of the report.

3.6 Under WP/14, ECCAA provided operational requirements for providing situational awareness and recalled the information exchange for operational experiences in situational awareness conducted between France, Saint Lucia and ECCAA. In this regard, the Meeting formulated:

DRAFT DECISION
E/CAR/NTG 4/10 REVIEW OF OPERATIONAL GUIDANCE MATERIAL FOR SITUATIONAL AWARENESS

That ECCAA, in collaboration with France and Saint Lucia, review the operational guidance material for using radar for situational awareness purposes and present a final draft to the Radar Sharing Rapporteur no later than 31 July 2013.

Radar Display Trial Results-France

3.7 Under WP/13, in order to promote the use of radar within E/CAR for testing available radar coverage and radar services in E/CAR area, France proposed to test compatibility between IRMA2000 V7 (last version) and TTCAA MRT.

3.8 IRMA/2000 trials were supposed to be conducted on live traffic. Different solutions were studied to bring the data to Martinique - via E/CAR Network or via IPLC radar link (direct link from Piarco to Martinique). The action carried out was to open a virtual circuit from the TTCAA MRT through the E/CAR AFS Network to the AISS/AMHS switch. Unfortunately, no data was received. During a visit to Trinidad and Tobago in April 2013, France obtained a recorded file with TTCAA MRT data from TTCAA. The data was replayed on France's test network. Data was not correctly displayed fully on the French system, i.e., information was not fully decoded and displayed. Further investigation is on-going in Toulouse by radar engineers where that last version of IRMA/2000 V7 is being developed. IRMA/2000 surveillance display is not capable, in its present State, to correctly process TTCAA MRT data. There is no assurance that the problem could be solved by Toulouse technical service in charge of the software due to other priorities. In this regard, monoradar data from Barbados and from TTCAA will be analyzed by France for display in the IRMA/2000 CPUs.

Analysis of Radar Coverage in Grenada and Saint Vincent

3.9 Under WP/16, the composite radar data from the Guadeloupe, Martinique and Trinidad and Tobago radars was analyzed by TTCAA for the TMAs of Saint Vincent and the Grenadines and Grenada. The results of these observations have been tabulated and a report is shown in **Appendix E** to this part of the report.

3.10 Trinidad and Tobago provided a demonstration of the actual coverage recorded. It is expected that as soon as the Barbados radar feed is integrated into the Piarco ATM System; that this analysis will be conducted again, and the report will be adjusted to reflect the findings. The Meeting congratulated Trinidad and Tobago for this demonstration.

3.11 Over the next three months, Trinidad and Tobago intends to continue analysis of the usability of the composite radar data for all States within the E/CAR area.

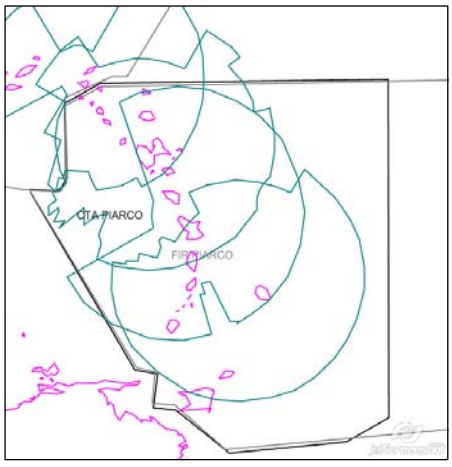
Implementation of radar data sharing tasks

3.12 The agreement for a central radar data server and the agreement for sharing/using the radar data among the E/CAR States and Territories represent an important improvement to safety and efficiency with notable improvements in ATC situational awareness in the region. The efforts with exchanging radar data as France-Trinidad and Tobago and Barbados-Trinidad and Tobago also contributes to improving the accuracy and redundancy of radar service in the E/CAR area.

3.13 The implementation of the Multi-protocol Label Switching (MPLS) Network and automated level of systems by Trinidad and Tobago has enabled radar data with the adjacent FIRs as follows:

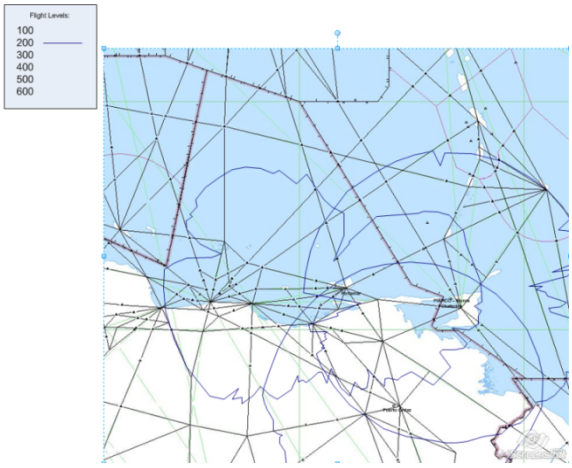
Trinidad and Tobago - Sint Maarten (under the MEVA II- ECAR interconnection)

- four teleconferences
- Radar Data requirement included in E/CAR AFS Network and MEVA Network
- Radar data coverage exchange



- Sint Maarten Radar provides improved low-level coverage and redundancy feed
- Review of technical requirements: ongoing
- Agreement for administrative issues: ongoing

Trinidad and Tobago-Venezuela Radar Exchange



- four Teleconferences
- Radar data communication can be achieved through REDDIG Network
- Radar data coverage exchange (two radar coverages of interest to PIARCO: Porlamar and Puerto Ordaz)
- Radar feed provides radar coverage to PIARCO FIR and redundancy feed
- Bilateral meeting planned between Trinidad and Tobago and Venezuela
- Technical and administrative matters to be agreed

3.14 Under DP/01, the Meeting debated on the different activities to consider in the radar data sharing action plan update such as:

a) Medium-term solution for radar data sharing (new dedicated radar display using MRT radar data)
b) Short-term solution using of French donated CPUs as an introduction to radar display; this implementation to be separated as Phase 1 for using Dakota Radar Data and Phase 2 for those displays using monoradar data
c) MRT radar data test;
d) Monoradar radar data test
e) RFI process to search market potential radar data display for long-term solution
f) E/CAR AFS Network configuration for radar data activities

3.15 France recalled the capability of displaying Dakota data on their IRMA/2000 CPUs and on availability of 10 computers (CPU, keyboard, pointer device, no monitor) that can be donated and delivered to States for trials. A demonstration was provided to the Meeting. These computers and IRMA/2000 software would be delivered free of charge, but States must provide and connect a VGA screen/monitor. The demonstration showed that any commercial COTS monitor could be used with standard video interface as shown in the following photos:

VGA –connector (DE-15)

Commercial monitor

CPU (keyboard, mouse and IRMA software)

Backplane of the CPU with VGA connector
(blue connector)

Complete Radar Data Display: CPU and monitor

3.16 In this regard, several members of the Radar Data Sharing Ad hoc Group expressed their commitment to move on with the implementation of the CPUs donated by France considering their geographical situation within the French radar coverage of Dakota radar data. These members committed to acquire the necessary monitor for the CPU, local environmental conditions and last mile interconnectivity:

a) Anguilla: 1 CPU;
b) Antigua and Barbuda: 2 CPUs for Antigua;
c) Barbados: 1 CPU;
d) Dominica: 1 CPU for Melville Hall;
e) Montserrat: 1 CPU; and
f) Saint. Kitts and Nevis: 1 CPU for Saint. Kitts

3.17 Grenada and Saint Vincent and the Grenadines will also commit pending the successful outcome of the monoradar radar data tests.

3.18 France indicated that no specific maintenance is needed for the CPUs being donated and some corrective maintenance assistance may be provided. France also commented on the actions needed to proceed with the arrangement for the use of these CPUs. In order to facilitate this procedure, the Meeting agreed to the following draft decision

DECISION
E/CAR/NTG 4/11 SUBMISSION OF PROCEDURE TO REQUEST CPU DONATED BY FRANCE

That in order to facilitate the procedure for obtaining the CPUs donated by France, France submit a template with the necessary requirements and conditions to formalize the request for these CPUs, including the required environmental conditions to the E/CAR/NTG Rapporteur and ICAO no later than **30 June 2013**.

3.19 Due to these commitments, the following draft conclusions were formulated:

DRAFT CONCLUSION
E/CAR/NTG 4/12 IMPLEMENTATION OF RADAR DATA DISPLAYS WITH CPUS PROVIDED BY FRANCE

That in order to facilitate the implementation of the Radar Data Displays based on the France provided CPUs:

a) Trinidad and Tobago arrange for implementation of the radar data feed to each corresponding node for operation of each radar display no later than end of September 2013;

b) Anguilla, Antigua and Barbuda, Barbados, Dominica, Montserrat and Saint Kitts and Nevis proceed with the acquisition of the necessary monitor and local power conditioning requirement for the CPU by the end of September 2013; and

c) all participants in items a) and b) provide progress to the E/CAR/DCA/25 Meeting.

DECISION
E/CAR/NTG 4/13 RADAR TECHNICAL SPECIFICATION REQUEST FOR INFORMATION

That in order to provide an accurate scenario for the implementation of the radar display for the medium-long term solution, France and Trinidad and Tobago:

a) complete the radar technical specifications update;

b) assisted by ICAO, conduct a Request for Information for radar technical specifications to determine the best technical solution for radar data display for situational awareness considering the current radar requests; and

c) inform the E/CAR/DCA/25 Meeting on the progress and results of these actions.

DECISION
E/CAR/NTG/4/14 UPDATE TO RADAR DATA SHARING IMPLEMENTATION ACTION PLAN

That, in order to update the implementation activities of the Radar Data Sharing Action Plan, Trinidad and Tobago:

a) update the Radar Data Sharing Action Plan to include all actions and activities discussed and agreed at the E/CAR/NTG/04 Meeting in terms of long and short- term solution actions, States/Territories implementation radar displays in Phases 1 and 2, etc.;

b) present this update at the next Radar Data Sharing Ad hoc Group teleconference on 20 August 2013, for approval; and

c) present the final update to the E/CAR/DCA/25 Meeting.

3.20 Further to discussions on the details required for implementation of the radar sharing as proposed with donated computers provided by France, the Meeting formulated

DRAFT CONCLUSION
E/CAR/NTG/4/15 LOCAL TELECOM INFRASTRUCTURE

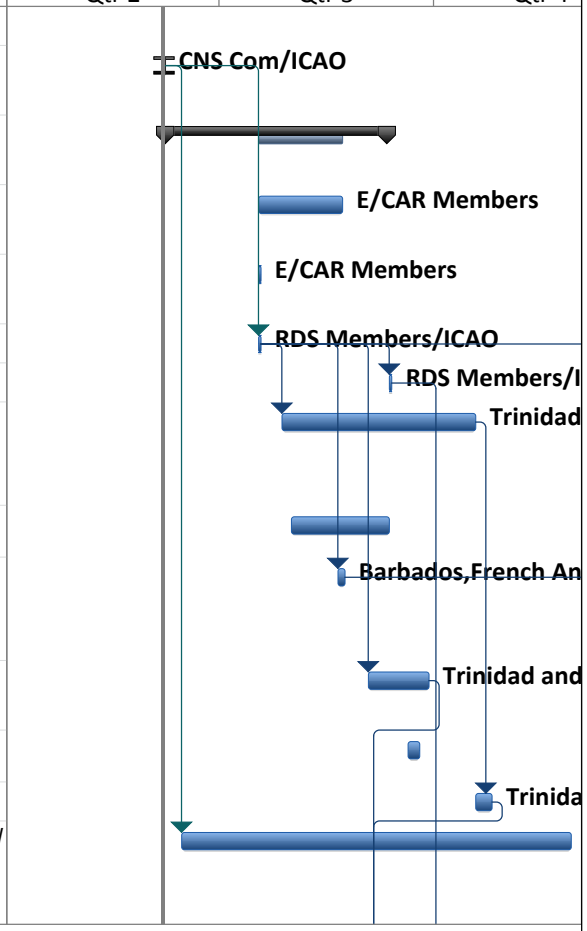
That the E/CAR States/Territories implementing radar displays in the short-term, implement the necessary local telecommunications infrastructure to complete connectivity of the circuits provided by the E/CAR AFS Network from the demarcation point of the E/CAR AFS Network router.

3.21 The Radar Data Sharing Ad hoc Group agreed to hold a follow-up teleconference to review and approve the E/CAR/NTG/04 reports and other activities for implementation of the short-term actions. This fifth teleconference is scheduled for 27 June 2013, at 15 UTC.

State	Name	Contact Information
Anguilla	Lindon G. Hodge	Lindon.Hodge@gov.ai
Antigua	Shenneth Phillips	shennethp@yahoo.com
Barbados	Suzanne Griffith	Suzanne.Griffith@barbados.gov.bb
Dominica	Jean Williams	melvillehallairportmanager.daspa@cwdom.dm
France	Jean Jacques Deschamps	jean-jacques.deschamps@aviation-civile.gouv.fr
Grenada	Roselyn Charles	rcharles@mbiagrenada.com
Montserrat	Denzil Jones	jonesd@gov.ms
St Kitts + Nevis	Elsworth Warner	elsworth.warner@scaspa.com
Saint Lucia	Michael Lee	Michael.Lee@slaspa.com
Saint Vincent	Corsel Robertson	crobbie63@gmail.com
Sint Maarten	Raul Van Heyningen	rvanheyningen@sxmairport.com
Trinidad and Tobago	Veronica Ramdath	vramdath@caa.gov.tt/vramdath@gmail.com (Rapporteur)
United States	Dulce Roses	dulce.roses@faa.gov
ECCAA	Rudyard Ashe	rashe@eccaa.aero

- APPENDIX B -

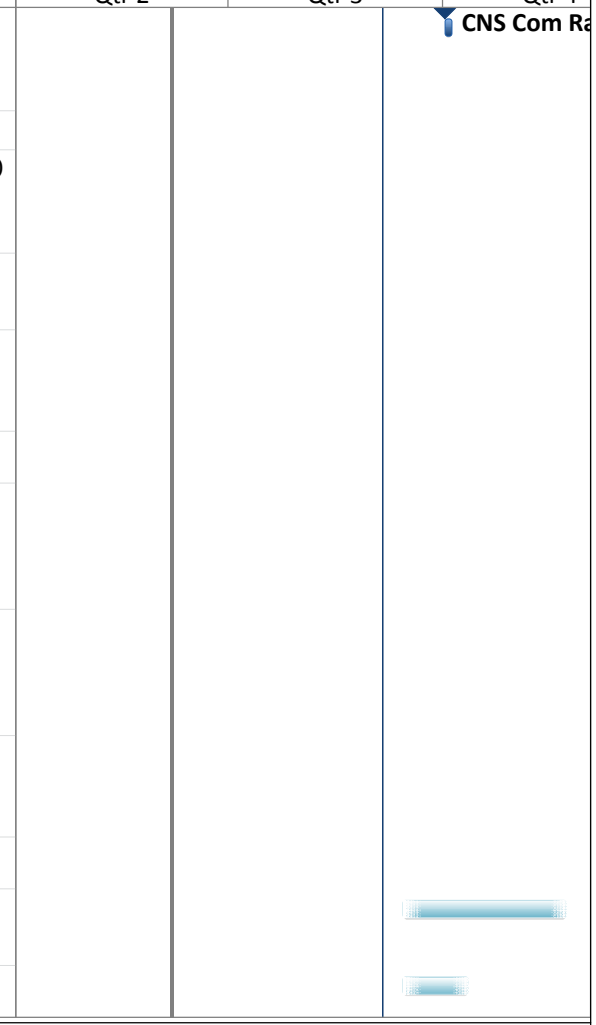
ID	Task Name	Duration	Start	Finish	Predecessors	Responsible
1						
2	First meeting to discuss the project (E/CAR/WG/33)	1 day	Thu 6/7/12	Thu 6/7/12		CNS Com/ICAO
3	Identify States that will be part of the project: Expression of interest	68 days	Fri 6/8/12	Mon 9/10/12		
4	Identify the intended usage of the composite radar image	27 days	Wed 7/18/12	Wed 8/22/12		E/CAR Members
5	Identify number of displays and site of displays	1 day	Wed 7/18/12	Wed 7/18/12		E/CAR Members
6	1st Radar teleconference	1 day	Wed 7/18/12	Wed 7/18/12	2	RDS Members/ICAO
7	2nd Radar teleconference	1 day	Wed 9/12/12	Wed 9/12/12	6	RDS Members/ICAO
8	Develop test procedure, identify resources to conduct actual coverage checks	60 days	Sat 7/28/12	Thu 10/18/12	6	Trinidad and Tobago
9	Coordinate tests with Grenada and St Vincent	30 days	Wed 8/1/12	Tue 9/11/12		
10	Provide theoretical radar coverage (Barbados, French Antilles, Trinidad, Antigua, United States)	3 days	Tue 8/21/12	Thu 8/23/12	6	Barbados,French Antilles,Trinidad and Antigua,United
11	Combine the theoretical radar coverage into one composite image	20 days	Mon 9/3/12	Fri 9/28/12	6	Trinidad and Tobago
12	Actual coverage checks with Grenada and St Vincent	3 days	Thu 9/20/12	Mon 9/24/12		
13	Coordinate tests with States	5 days?	Fri 10/19/12	Thu 10/25/12	8	Trinidad and Antigua
14	Analyze network against the need for additional hardware/configuration, if any and implement additional requirements	120 days	Fri 6/15/12	Wed 11/28/12	2	Trinidad and Antigua/ ECARNTG



Project: ECAR RADAR DATA PROJE
Date: Thu 7/4/13

Task	External Milestone	Manual Summary Rollup	
Split	Inactive Task	Manual Summary	
Milestone	Inactive Milestone	Start-only	
Summary	Inactive Summary	Finish-only	
Project Summary	Manual Task	Deadline	
External Tasks	Duration-only	Progress	

ID	Task Name	Duration	Start	Finish	Predecessors	Responsible
15	Make recommendations to E/CAR/DCA/24 on Radar Data Sharing Project-implementation and procurement	3 days	Tue 10/2/12	Thu 10/4/12	7	CNS Com Rapporteur
16	Have Barbados Radar in Trinidad	180 days	Thu 3/28/13	Wed 12/4/13		
17	Develop technical specifications needed to implement the radar display for situational awareness.	320 days	Thu 1/10/13	Tue 4/1/14	6	Ad-Hoc Group/ICAO
18	Send Piarco's MRT to Martinique/ recorded data only		Wed 4/10/13			
19	Conduct actual coverage checks with Antigua, Dominica, montserrat, St. Kitts, St. Lucia	15 days	Mon 6/17/13	Fri 7/5/13		
20	Integrate Barbados radar into Piarco's MRT					
21	Trials to determine whether the composite image can be displayed on the displays available by French Antilles	27 days	Thu 4/11/13	Fri 5/17/13		
22	Trials to determine whether the composite image can be displayed on the existing displays in Saint Lucia	27 days	Tue 6/25/13	Wed 7/31/13		
23	3rd Radar Teleconference: Present findings to radar sharing group	1 day	Fri 3/15/13	Fri 3/15/13		
24	If success results, carry out MOU signatures	40 days	Mon 7/8/13	Fri 8/30/13		
25	Transportation, training and final setup of the displays in agreed sites	50 days				
26	Commissioning and operational readiness	20 days				



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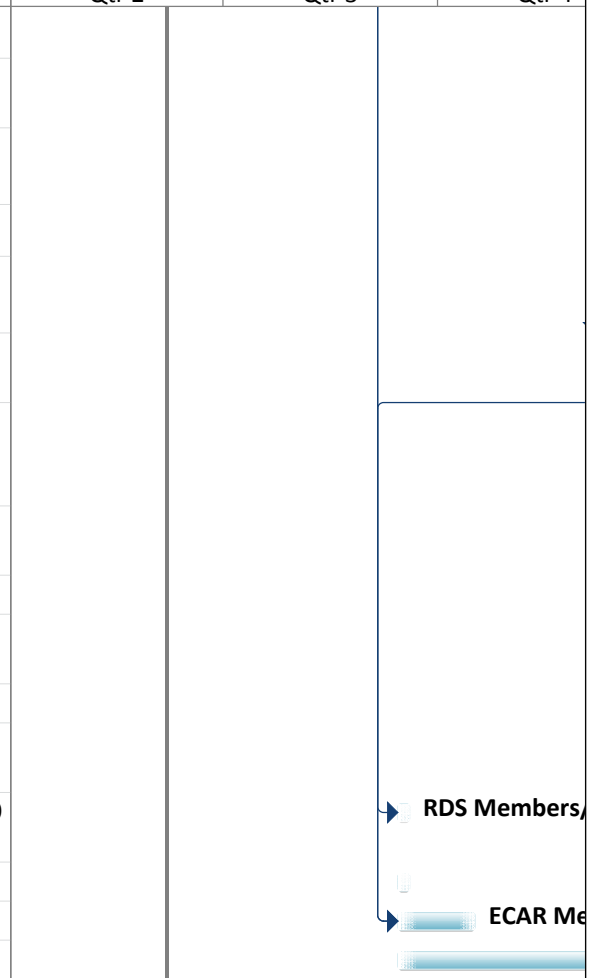
Split	Inactive Task	Manual Summary	
Milestone	Inactive Milestone	Start-only	
Summary	Inactive Summary	Finish-only	
Project Summary	Manual Task	Deadline	
External Tasks	Duration-only	Progress	

ID	Task Name	Duration	Start	Finish	Predecessors	Responsible
27	4th Radar Sharing Teleconference	1 day	Tue 5/21/13	Tue 5/21/13		
28	OP2: Acquisition of new Radar Data Displays	172 days	Fri 11/1/13	Mon 6/30/14		OP2: New Display
29	Draft specifications for review by ICAO, ECCAA, France and Trinidad and Tobago					
30	Finalization of Committee members/Selection of Chairperson					
31	Finalization of complete tender documents					
32	Obtain quotations from selected vendors for estimation	27 days	Wed 4/2/14	Thu 5/8/14	17,10	E/CAR Members
33	Start procurement process as a regional project (tender/evaluation/selection)	48 days			32	E/CAR Members
34	Delivery and Installation of equipment	81 days				
35	Delivery	30 days			33	Provider
36	Installation- with local technicians	23 days			35	E/CAR Members
37	Training	3 days			36	Trinidad
38	Commissioning and operational readiness	25 days			37,36	E/CAR Members
39	Radar Meeting for procurement OP2/preparation of OP1	3 days			32	RDS Members/ICAO
40	CATG/2	3 days				
41	Conduct tests	23 days			13,11	ECAR Members
42	OP1: Use of 10 existing displays oferred by France	137 days				OP1: Use Existing Displays



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Split		Inactive Task		Manual Summary	
Milestone		Inactive Milestone		Start-only	
Summary		Inactive Summary		Finish-only	
Project Summary		Manual Task		Deadline	
External Tasks		Duration-only		Progress	

ID	Task Name	Duration	Start	Finish	Predecessors	Responsible
43	E/CAR/WG/34 Meeting	3 days	Tue 7/1/14	Thu 7/3/14	28,42	E/CAR Members

	Qtr 2	2nd Half Qtr 3	Qtr 4

Project: ECAR RADAR DATA PROJE
Date: Thu 7/4/13

Task		External Milestone		Manual Summary Rollup	
Split		Inactive Task		Manual Summary	
Milestone		Inactive Milestone		Start-only	
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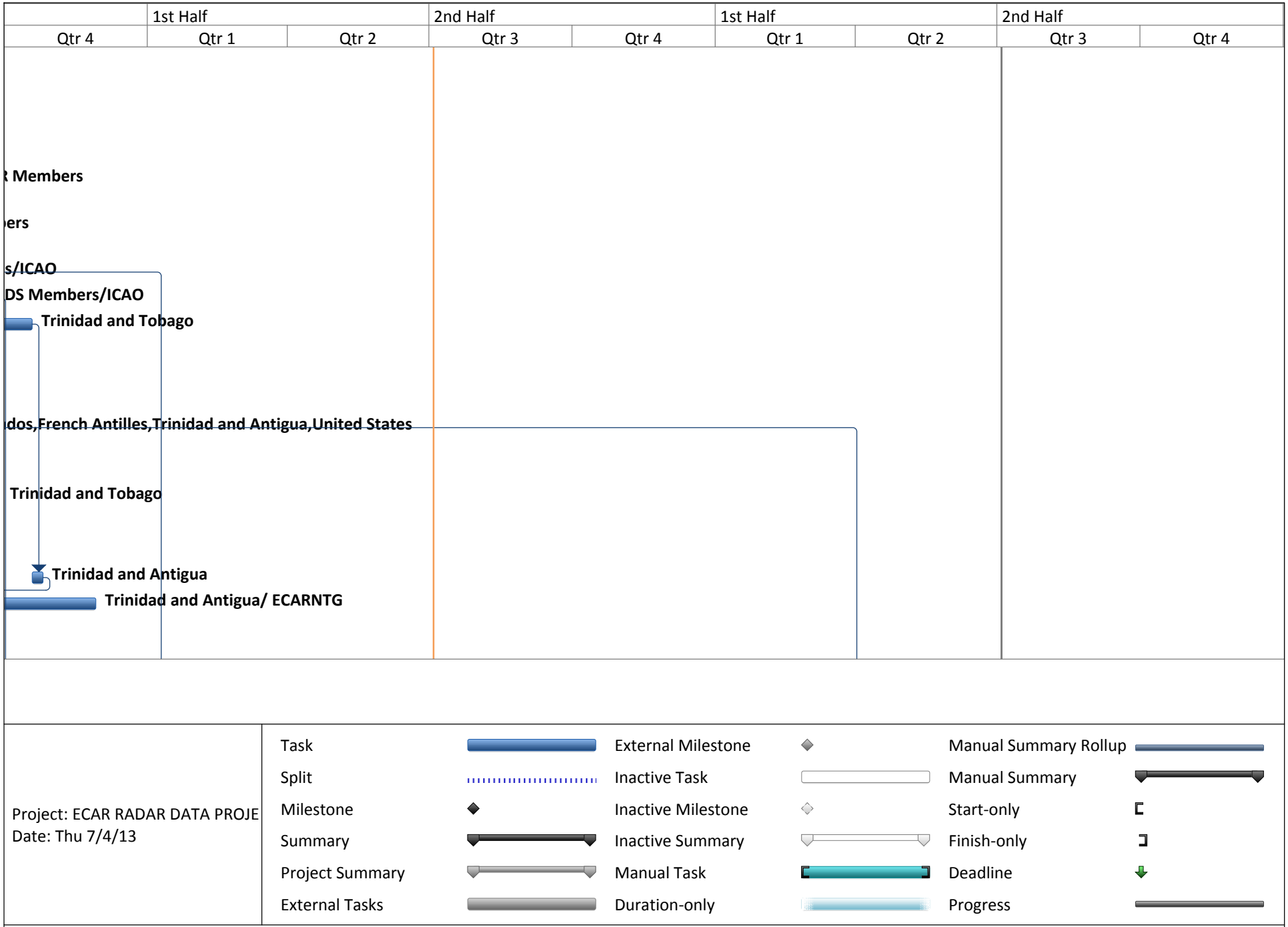
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Trinidad and Antigua/ ECARNTG
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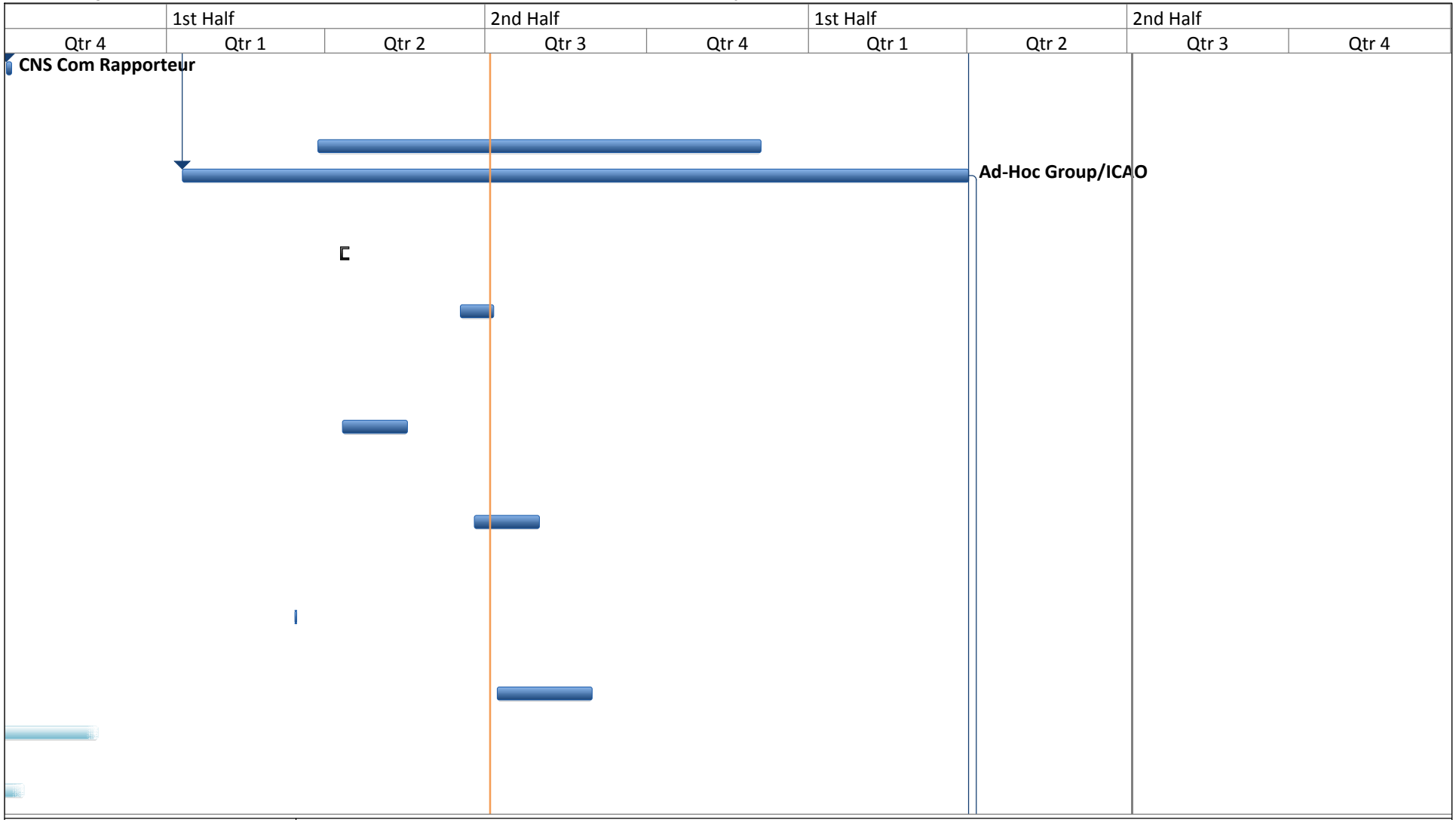

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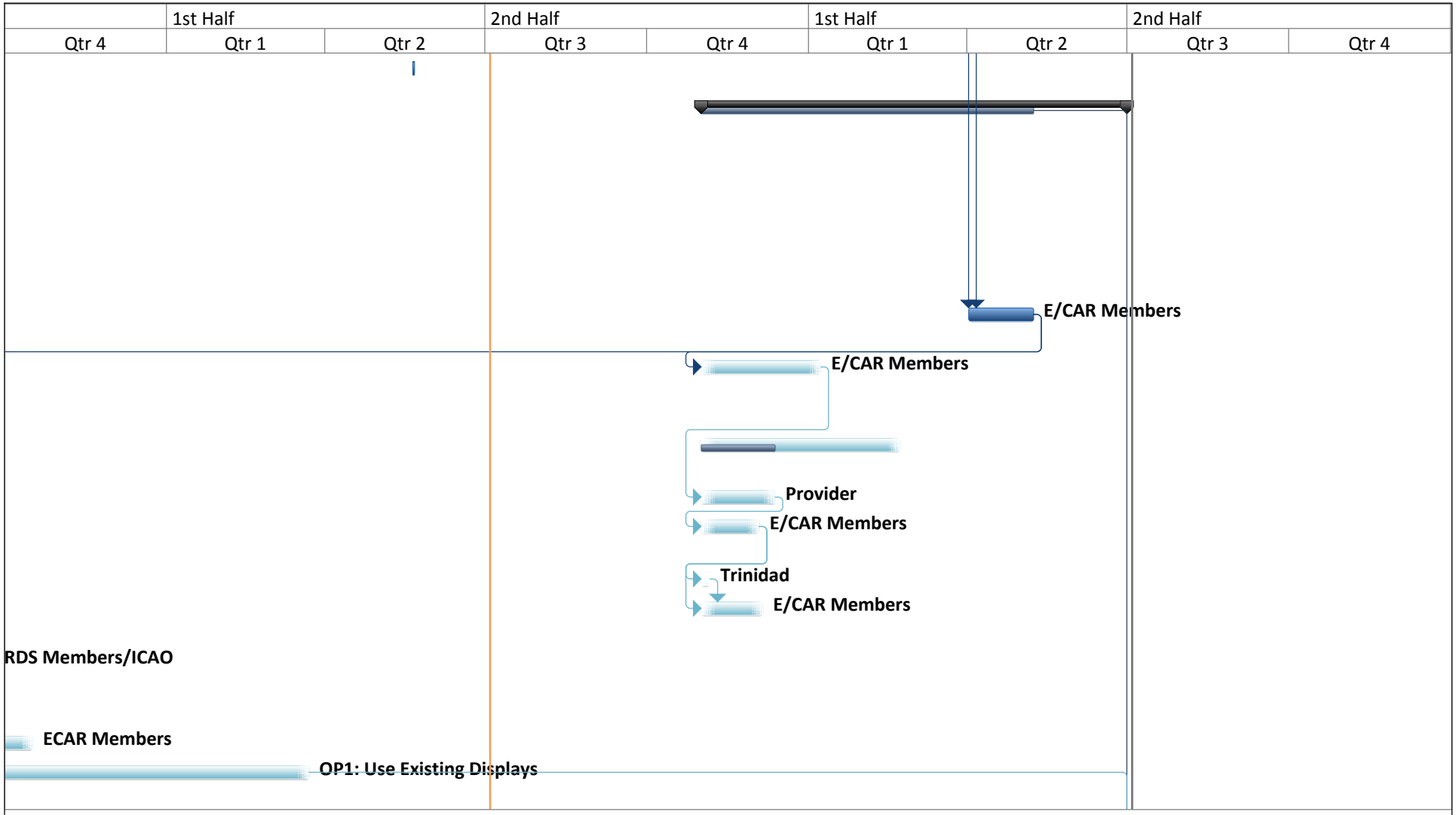

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Split		Inactive Task		Manual Summary	
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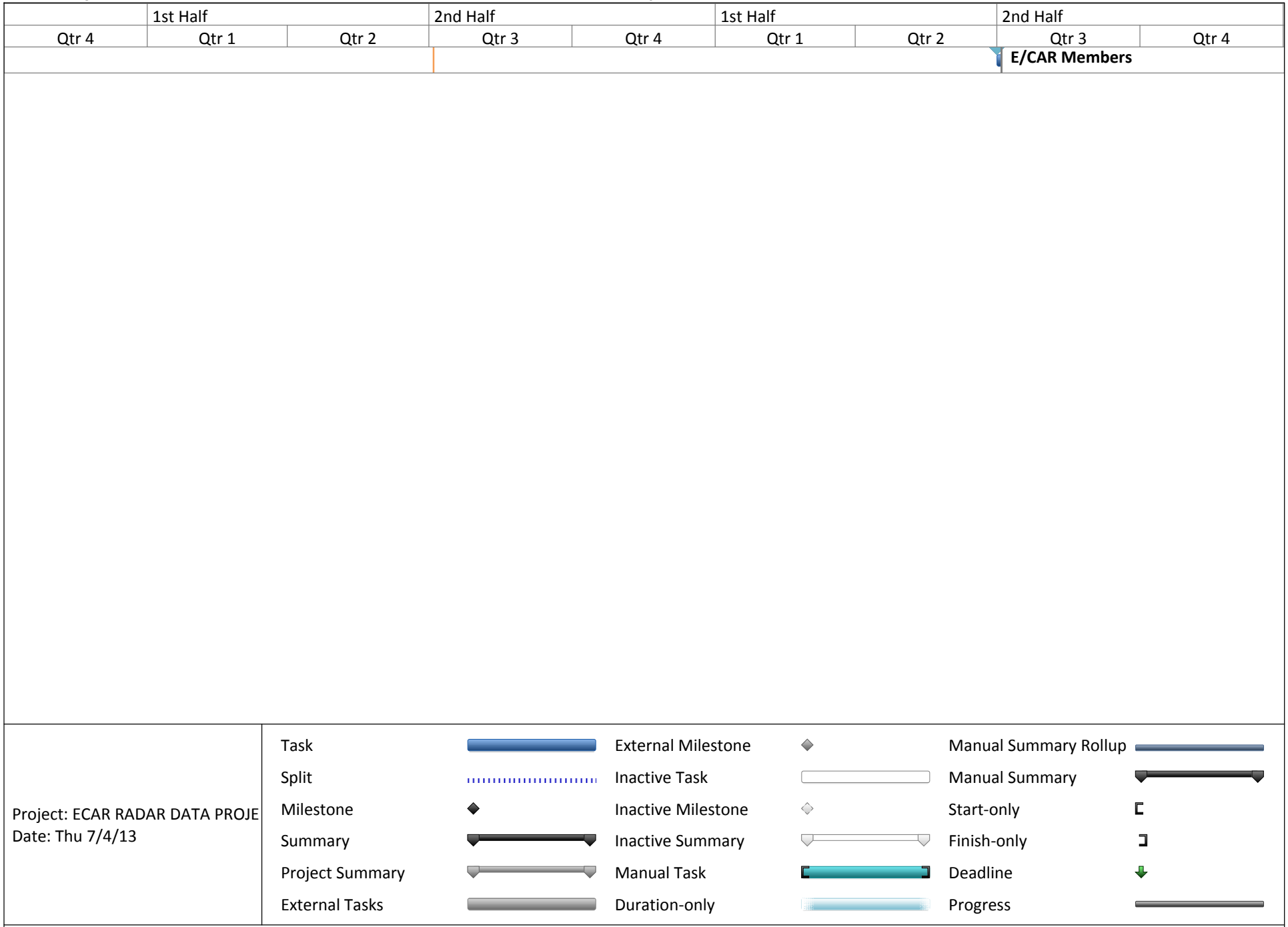
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E/CAR Members
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RADAR TECHNICAL SPECIFICATIONS

1. Introduction

1.1 Radar data sharing provides many operational benefits to aircraft operations, air traffic management and safety improvements. Radar data sharing will bring to the air traffic environment benefits such as increased surveillance coverage which directly impacts on airspace utilization and efficiency by permitting a reduction in aircraft separation and improve safety of operations. It will provide redundancy within areas where nearby Radar systems overlap, cost benefits to airline operators due to improved service and optimum flight performance. It will also reduce traffic congestion or efficiency manages traffic in busy ATC environments and homogeneity in ATC operations between neighbouring states.

1.2 The Radar Data sharing activities in the E/CAR Region has been discussed since the first meeting of the E/CAR/DCAs and E/CAR/WG Meetings. During the Fourth Meeting of the PIARCO FIR Policy Group (PIARCO/FIR/PG/4), it was accepted the initiative of Trinidad and Tobago to provide the radar data server for the sharing/exchange/remoting of radar data in the Eastern Caribbean (Ref. conclusion PIARCO/FIR/PG/1/2).

1.3 The radar data sharing tasks are assigned to be follow-up by the E/CAR CNS Committee.

1.4 To achieve this initiative, Trinidad and Tobago will collect the surveillance information (radar feeds) from the Martinique and Guadeloupe radars (monoradar and multiradar), Barbados and Trinidad, Tobago and any other available useful radar feed, process the information via multi sensor fusion on the PIARCO Air Traffic Management (ATM) system and then disseminate the data to the E/CAR states on the new E/CAR AFS network via a Cadmos ST media switch unit to all E/CAR States/territories that request this information.

1.5 The PIARCO ATM system is able to provide a maximum of twenty-four (24) (serial) outputs or multiple outputs via LAN with IP addresses. The data will be provided as System Track (ASTERIX Category 62 standard) data format. For this purpose, a gateway comprised of dual Dell servers is integrated into the system. The surveillance data output will be centered on the same system centre of the PIARCO ATM system. The gateway will provide the output through a serial line, which will be split by means of a passive data distributor.

1.6 During the E/CAR/NTG Meetings, it was noted that in the existing E/CAR AFS Network, the MPLS Network, several radar data circuits had been planned but also it was concluded the MPLS Network has sufficient capacity and flexibility to satisfy any new radar data requirement.

1.7 Following the Radar Data Server initiative, a teleconference was held in 18 July, 2012 between the interested E/CAR States (Anguilla, Antigua and Barbuda, Barbados, Grenada, Saint Lucia, Saint Vincent, Sint Maarten, United States, Trinidad and Tobago and ECCAA) and an Ad-hoc Group was formed (Saint Lucia, ECCAA and Trinidad and Tobago, ICAO) to search for potential system display equipment compatible to display the merged radar image and/or process other ASTERIX categories of data.

2. Scope and Objective of This Document

2.1 The scope and objective of this document is to provide the minimum technical/operational features (Design, Supply, Delivery, Installation, Testing and Commissioning) and characteristics of the radar display to be implemented as end-user equipment. The local site requirements shall be defined based on each site specific environment.

2.2 The radar displays will serve as a support to the air traffic control operation, as a radar monitor, and not for actual radar control at the following locations:

State/Territory	No. of Data Displays	Site
Anguilla	1	Airport Control Tower
Antigua & Barbuda/ECCAA	2	Antigua: Airport Control Tower and Approach Control Room
Dominica	1	Melville Hall: Airport Control Tower
Grenada	2	Maurice Bishop: Airport Control Tower and Approach Control Room
Montserrat	1	Airport Control Tower
St. Kitts	1	Airport Control Tower
Saint Vincent and the Grenadines	1	Airport Control Tower

2.3 The display will present the multiradar system information from PIARCO ACC where correlated (flight Plan information) and non-correlated radar tracks will be available.

2.4 The radar shall use the E/CAR AFS Network as the medium of transportation. The interface to the AFS Network at each User State shall be via TCP/IP on an IP port of the AFS Cisco router. Router configurations, if any, shall be under the responsibility of the TTCAA.

2.5 The project will be implemented as a turn-key regional project with on-site installation support provided by the local technicians and management of the project by a committee to be composed of User States.

3. General Requirements

3.1 This system shall have an open architecture design and high performance characteristics. Key requirements are its adaptability and scalability to suit any air traffic management environment. The system shall provide a cost effective and low-risk solution for the air traffic management automation needs.

3.2 All designs, materials, manufacturing techniques and workmanship shall be in accordance with the highest accepted international standards for this type of equipment.

3.3 The eventual winning tenderer (hereafter referred to as the Supplier) shall be responsible for the installation and commissioning of all the equipment and elements covered by this specification, including all accessories, cables, cabinets, supports and other necessary installation materials/elements. The Supplier shall also provide the manpower, technical administration, materials, equipment and special tools needed to complete the work.

3.4 The System hardware shall be based on COTS (Commercial Off-The-Shelf) hardware components, available on the market place, and already used for similar critical systems.

4. Project Services

4.1 Project services shall include but not be limited to the following:

a) Project and Quality Management;
b) Factory Acceptance;
c) Delivery of equipment;
d) Site installation, Interoperability and Acceptance Tests;
e) Training; and
f) Warranty Services.

4.2 Risk Management

4.2.1 The Supplier will establish as part of the Project Management Plan a risk management process to manage risks throughout the program and addressing risk identification, risk assessment, risk avoidance and/or mitigation and risk control. Risk assessment shall be monitored during Progress Meetings.

4.3 Progress Reviews and Reports

4.3.1 Progress reviews will be held once every month. If needed, Customer participation will be requested via phone or videoconference methods. A Progress Report will be issued after each Progress Review. It will keep track of major project events and of the decisions agreed between the Project Managers.

4.4 Custom Clearance and Packaging

4.4.1 International Commercial Terms

4.4.1.1 The equipment shall be delivered according to DAP conditions (Incoterms 2011 - Delivered at Place) to the end user (list attached as App 1). (Seller bears cost, risk and responsibility for cleared goods at named place of destination at buyer's disposal. Buyer is responsible for unloading. Seller is responsible for import clearance, duties and taxes.)

4.4.2 Packaging

4.4.2.1 The goods to be delivered shall be new, manufacturer's original and compliant with the specifications and indicated tolerances herein.

4.4.2.2 The Supplier shall bear responsibility that the delivered goods shall be packed and sealed and clearly marked with sufficient details for their identification. The packaging shall provide guaranteed protection of the equipment against unfavourable weather conditions and other factors that might affect the quality of the equipment even for prolonged storage periods. Regardless of the form of shipment, all indispensable facilities for the proper handling of the packages shall be provided.

4.4.2.3 The packaging to be used for the transport of the equipment and/or materials from the factory to the port of entry into the user states shall follow standard factory practices for long-distance carriage.

4.4.2.4 Prior to packing, the goods shall be subjected to the necessary factory acceptance tests to verify the quality and compliance with the technical requirements.

4.4.2.5 The spare parts shall be supplied in their original packing, duly protected against humidity with dehydrating or silica elements. Each set of spare parts shall be labelled with the part number and denomination of the item, with an indication of the quantity in each package.

4.5 System Installation

4.5.1 The Supplier shall describe briefly the site layout he foresees in his proposal, taking into account the necessary room for access of the hardware maintenance team. Environment conditions required and power consumption of the whole system shall be stated.

4.5.2 The Supplier shall state clearly which part of the installation he will be responsible for, and which responsibility is expected to be taken by the User State regarding installation matters.

4.5.3 The Supplier shall clearly state the preparation activities that need to be performed by User State prior to installation.

4.6 Work Statement

4.6.1 Notwithstanding the information supplied in this document, the Supplier shall conduct a site visit, at his own expense, to determine the appropriate locations of all systems involved and shall provide the User States with a site survey report and adequate illustrations and drawings. Not conducting a site visit does not diminish the responsibility of the Supplier from fulfilling all the conditions of this document.

4.7 Maintenance Procedures and Standards

4.7.1 The Supplier shall submit with his proposal his regular procedures and methodologies for maintenance of the equipment. The procedures shall be in accordance with established standards and shall include administrative procedures and method of spare parts management.

4.8 Redundancy, Fault Tolerance and Recovery

4.8.1 One of the major requirements of the System is to guarantee continuous processing. High availability equipment is required.

4.8.2 The Supplier shall explain how the hardware fault-tolerant feature is assured and state how redundancy, fault tolerance and recovery will be achieved to protect against service degradation.

4.8.3 Fault tolerant shall be understood as a group of similar entities equipped with automatic mechanisms that support each other in case of failure and/or when any element of the group is out of service, with the purpose of providing continuity in the operation of services provided. The operation of these mutual support mechanisms should not produce any interruption in the operation or in the services provided.

4.8.4 Redundant shall be understood as the implementation of the fault tolerance measures employing identical entities.

4.8.5 Independent entities (for example: equipment, ports, circuits etc.) shall be understood as entities that are physically independent of each other and that do not use a common element.

4.8.6 Redundant equipment shall be understood to be a physical entity supplied in a common chassis that has redundancy in its common parts and that permits change of common parts without disruption in service.

4.8.7 Simple equipment shall be understood as a physical entity supplied in a common chassis that do not have redundancy in its common parts.

4.8.8 In the instance that some components of the Systems are not hardware fault-tolerant the impact on operation of the failure of such components shall be described including the procedures to restore the components to operation.

4.8.9 In the event that the System includes hardware fault-tolerant units (typically the servers) and unit of active/standby configuration, the requirements stated above shall apply to only the functions supported by the units concerned.

4.8.10 The Supplier shall propose a design with no **single point of failure** (SPOF) and systems shall have high availability architecture (excluding software).

4.8.11 The configuration of the system shall permit planned periodical tests of the backup equipment or in the duplicated part of the redundant equipment for the purpose of verifying its operability. These tests shall not adversely affect the service of the System.

4.9 System Reliability, Availability and Maintainability

4.9.1 System Reliability

4.9.1.1 The System will be considered to have failed when it does not give any support for the execution services, such operational inactive mode being not the result of a deliberate maintenance action.

4.9.1.2 Itemised reliability figures of the critical hardware components (MTBF and MTTR) shall be provided.

4.9.1.3 The Supplier shall describe the scenario where the System cannot restart automatically following a System failure, for example: Failure of the power supply; or A software error that prevents the System from restarting, and describe specifically how the System can be restarted.

4.9.1.4 The User States intend to place a two –year maintenance contract with the Supplier. Therefore, the Supplier shall declare his willingness to support a maintenance contract after the warranty has ended.

4.9.2 Hardware Maintainability

4.9.2.1 The Supplier shall describe how the hardware and software maintenance will be conducted during the warranty period. When submitting this plan, the Supplier shall bear in mind that the User States shall carry out first-line hardware maintenance, including Line Replaceable Unit (LRU) swapping. The appropriate training shall be provided.

4.9.2.2 The Supplier shall propose a list of spare parts he estimates necessary to keep the System at the level of availability stated above.

4.9.2.3 The Supplier shall state the turn-around time of failed hardware components during the warranty period. It shall be detailed whether the time stated is valid during week-ends and holidays.

4.9.3 Software Maintainability

4.9.3.1 The Supplier shall give a detailed description on:

a) The services offered for software maintenance during the warranty period (e.g. how a software problem can be investigated, fixing of bugs, System restart with a new application software release);
b) The availability of those services (office hours, at night, during the week-end); and
c) The split of responsibility between the Supplier and the User States.

4.9.3.2 The Supplier shall include in his proposal the facility to provide remote maintenance support. This may consist for instance in accessing the System over the Internet to log into the system and perform investigation of software faults as if the supplier was on site.

4.9.4 Notification

4.9.4.1 Supplier shall propose a SMS text message notification to predefined mobile telephone numbers for major faults and catastrophic failures. Tenderer shall describe his interpretation of major faults and catastrophic failures.

5. Technical Specifications

5.1 The radar displays shall be supported by a state-of-the-art COTS computer, and a high resolution Traffic Situational Flat Panel colour monitor of raster scan type non-interleaved, for monitoring traffic at and in the vicinity of the airfield, having as a minimum 1024 X 1024 pixels, typically 21 inches, with accompanying keyboard and mouse or track ball.

5.2 The workstation computers, as a minimum, shall consist of a state of the art processor (3GHz), be equipped with an 80GB hard drive, a DVD drive, 2 GB of RAM.

5.3 Latest commercially available equipment with special emphasis on locally acquirable within or close to the E/CAR region

5.4 Interfaces: Serial interface (HDLC) as well as Ethernet (UDP/IP) should be available for data acquisition.

5.5 The equipment shall have a menu to allow the operator to modify the different parameters such as brightness, tones, range, label size, colour, content of the information presented in the zones of general and specific information.

5.6 The equipment shall be capable of the following:

- Multi-layer color map
- Adaptable map projection
- Center, offset, pan and zoom
- Flight position from surveillance or flight plan
- Adaptable flight position symbols that depict flight attributes
- Adaptable multi-page flight data tag (full, limited, basic)
- Automatic tag relocation to avoid overlap
- Predicted track line
- Flight position history
- Range rings
- Lat/Long grid
- Special use airspace dynamic display
- RADAR coverage volume dynamically displayed

5.7 Basic software features:

- Presentation zooming
- Windows management
- Data storage and export options
- Operable with Windows operating system or compatible

5.8 Display information from SSR Mode A, Mode C and Mode S

5.9 Display RADAR Map information

5.10 Display Reserved SSR codes including 7500, 7600 and 7700, SPI/operation of IDENT, safety-related alerts and warnings as well as information related to automated coordination etc., in a clear and distinct manner

5.11 Capability to display ADS-B Asterix Category 21 data.

5.12 The workstation(s) shall be provided with English characters to input the commands included in the operational software.

5.13 The following features (minimum requirements) shall be available on the RADAR Display:

a) RADAR track identification and display;
b) RADAR data monitoring;
c) Aircraft identification, automatic and manual SSR code correlation ;
d) Graphic tools interaction;
e) Alarms and warnings (STCA, MSAW, DAIW, RVSM, MTCD, etc.);and
f) Operational data management;

5.14 When power is restored after a power failure, the display system shall present the information with the last configuration parameters.

5.15 The appropriate RADAR maps for RADAR display overlays shall be provided. These would have a wide range of user functions including user-configurable range features. When such source data is available, all maps shall apply the accepted world standard, WGS-84 earth-centred coordinate system.

5.16 Maps provided shall at least meet the following minimum requirements:

a) The ability to overlay specific maps and routes on a global digitized map;
b) Ability to plot new air routes; and
c) Maps to cover extrapolated flight following and conflict prediction information areas.

5.17 The RADAR displays shall indicate MSSR information and extrapolated tracks displayed in different colours to demark the difference between actual RADAR airspace and extrapolated airspace based on flight plan and other input information.

5.18 A redundant GPS based master clock with multiple input system to enable system time coordination and to synchronise all equipment provided in this document.

5.19 The facility for the input for artificial RADAR targets shall be provided.

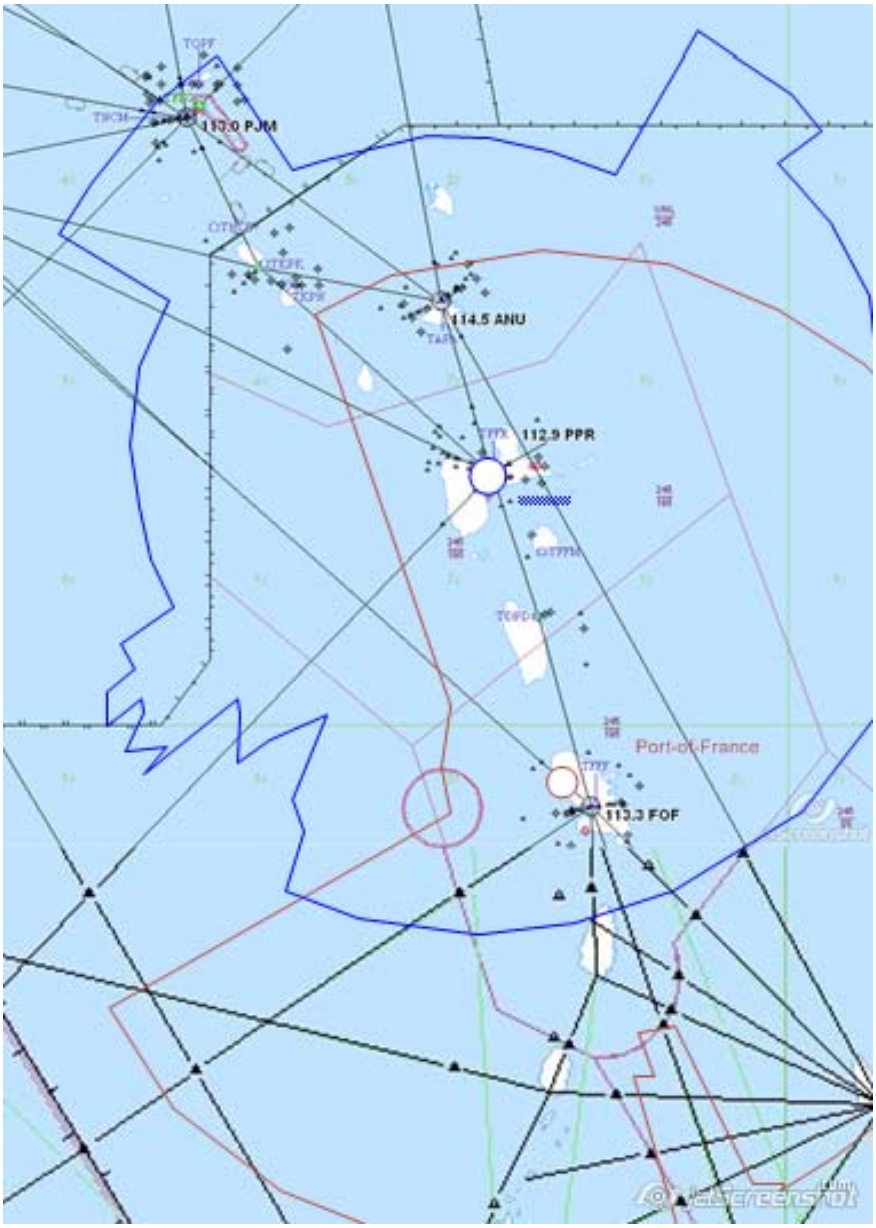
5.20 Aircraft positions on track labels display, either RADAR data, or ADS, or flight plan data shall contain information/data about that aircraft position accordingly, and to be continuously displayed by numerical characters in the predefined formats suitable for air traffic control and management. The movement of track labels position shall assure that:

- Two overlapping labels if any, shall automatically separate when controllers select automatic function (auto rotation); or
- Controllers shall be able directly change track label position by clicking/releasing the mouse-buttons (manual rotation); and
- Controller shall be able to change flight plan data by using track labels. In order to perform the data changes easily and quickly, the system shall provide proper options correlating to this function under the "Pop up menu" form and shall allow controllers to run the options by using mouse.

Radar Coverage in the E/CAR Region

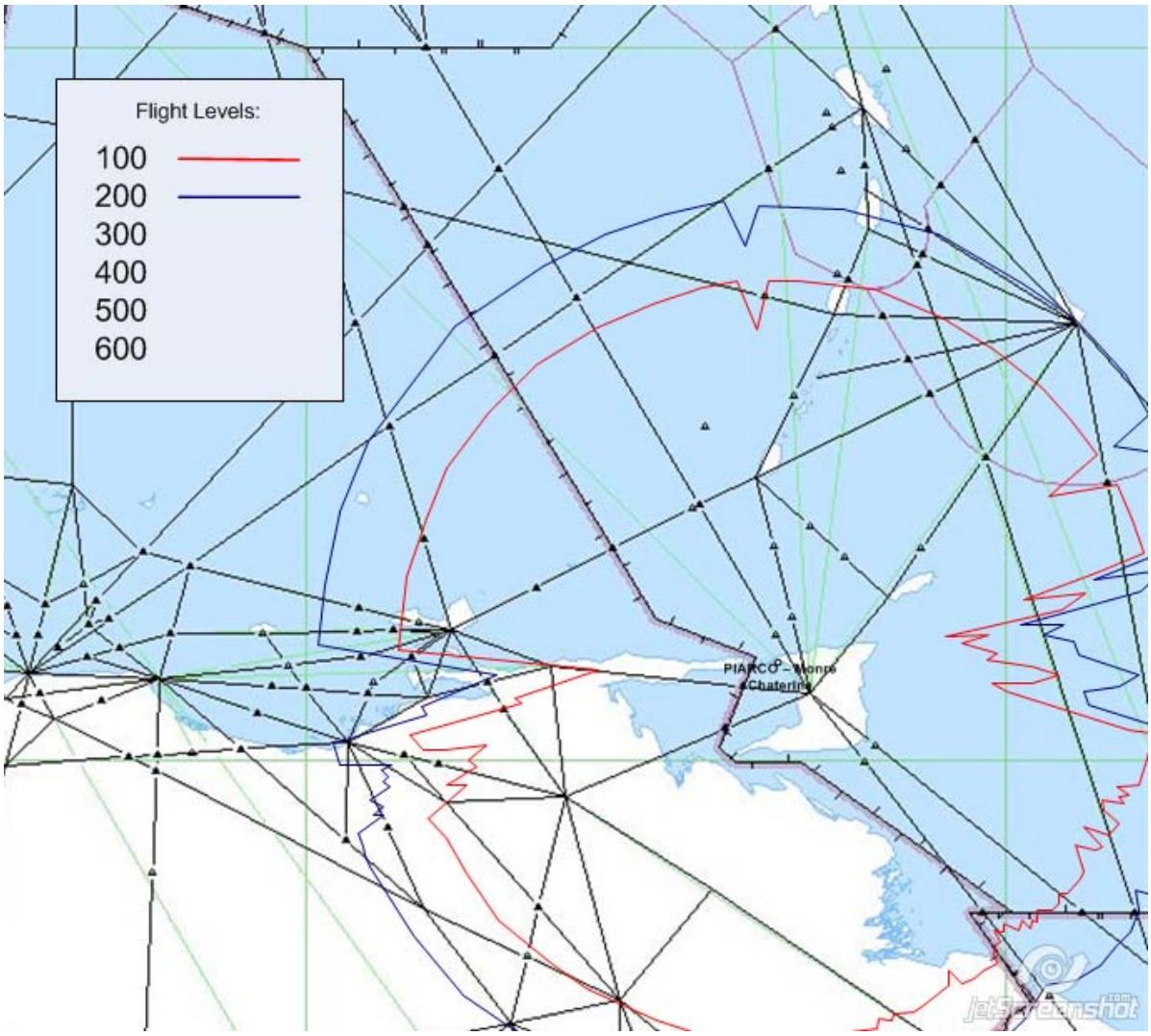
DAKOTA RADAR: FL 200 (MRT Data)

Coverage up to St Lucia/Barbados and Sint Maarten, covering St. Kitts, Antigua and Dominica.



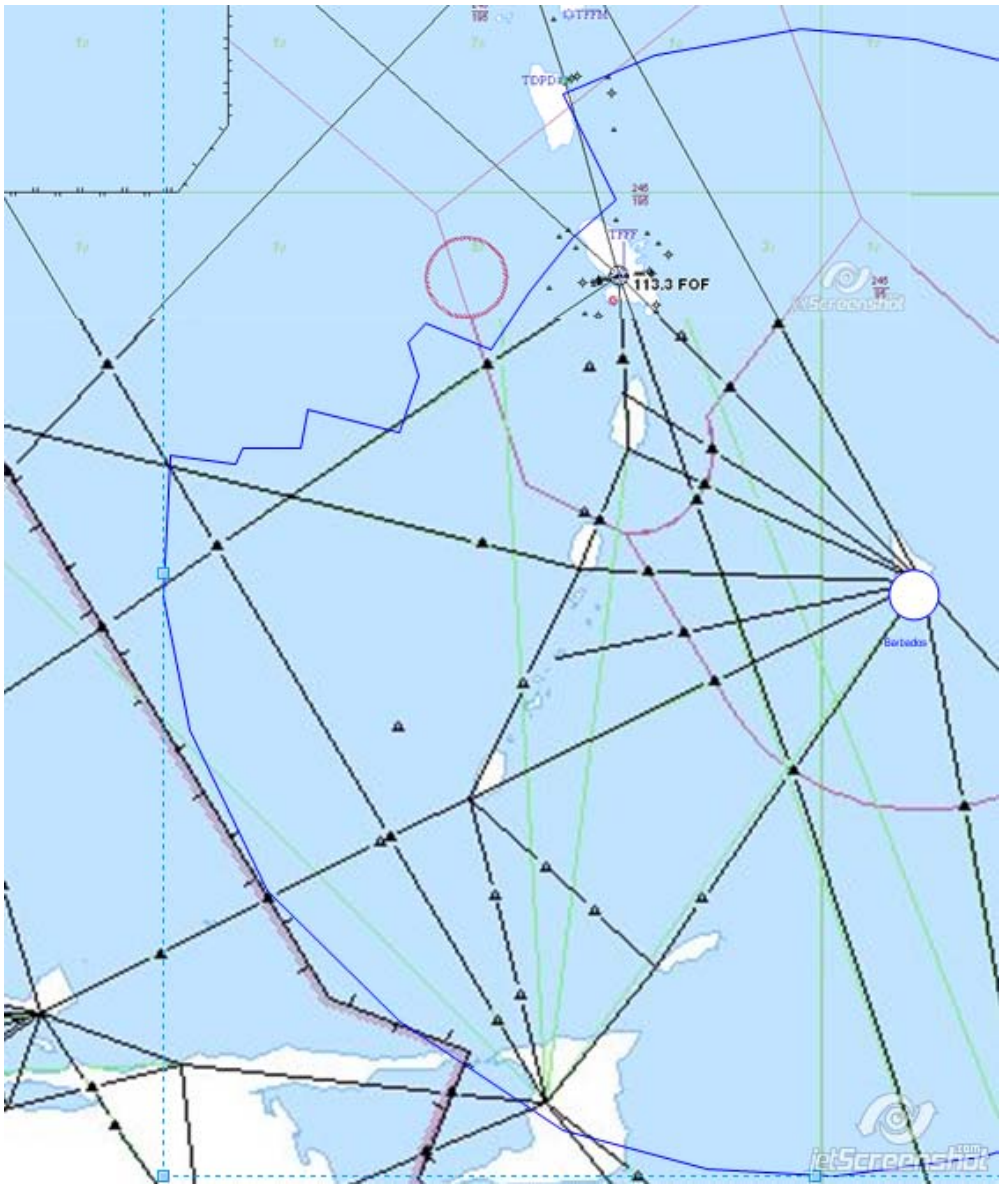
PIARCO RADAR: FL 100 and 200

Coverage up to St Lucia and Barbados, covering Grenada and Saint Vincent



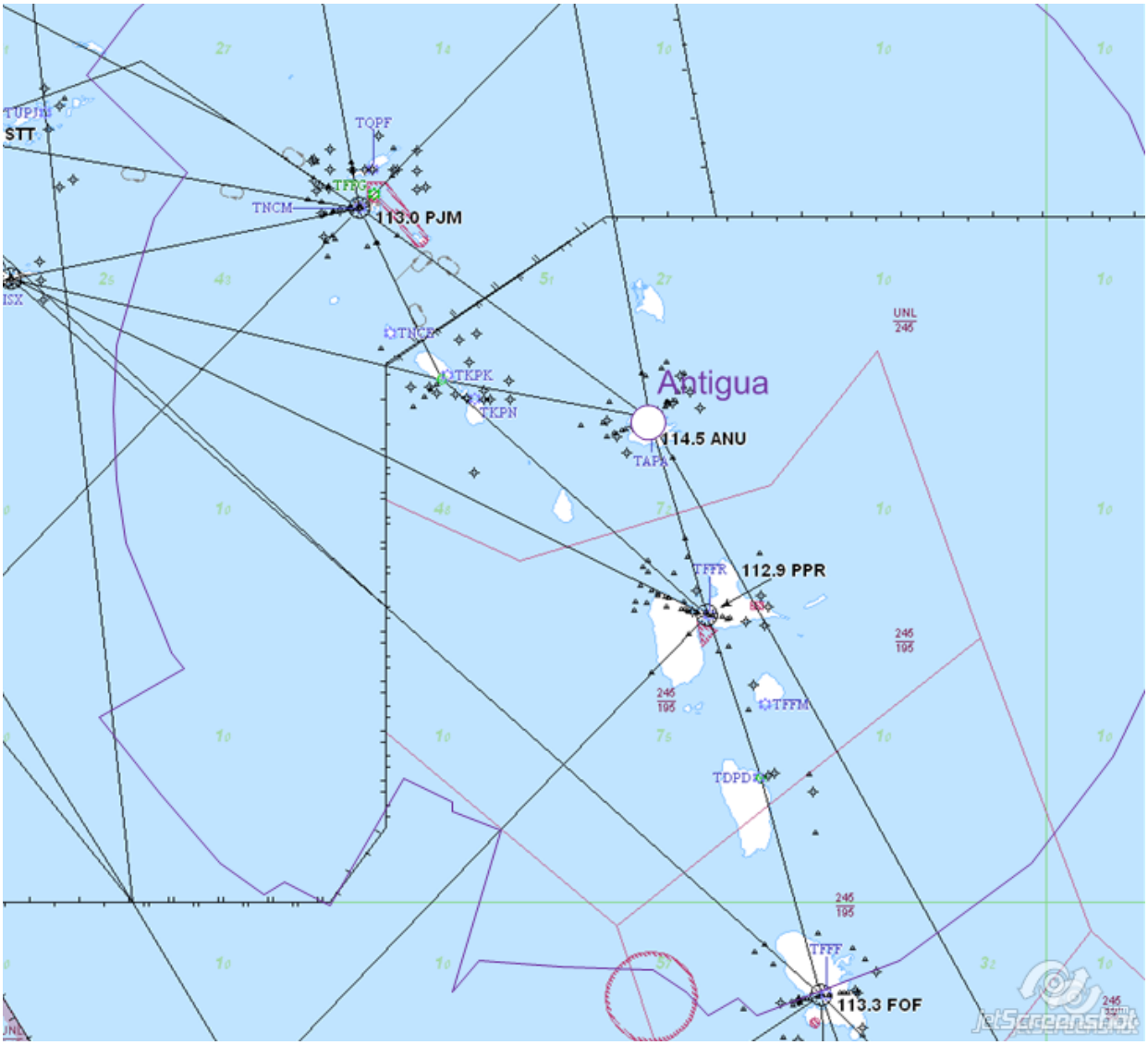
Barbados RADAR: FL 200

Coverage up to Martinique, covering St. Vincent and, Grenada



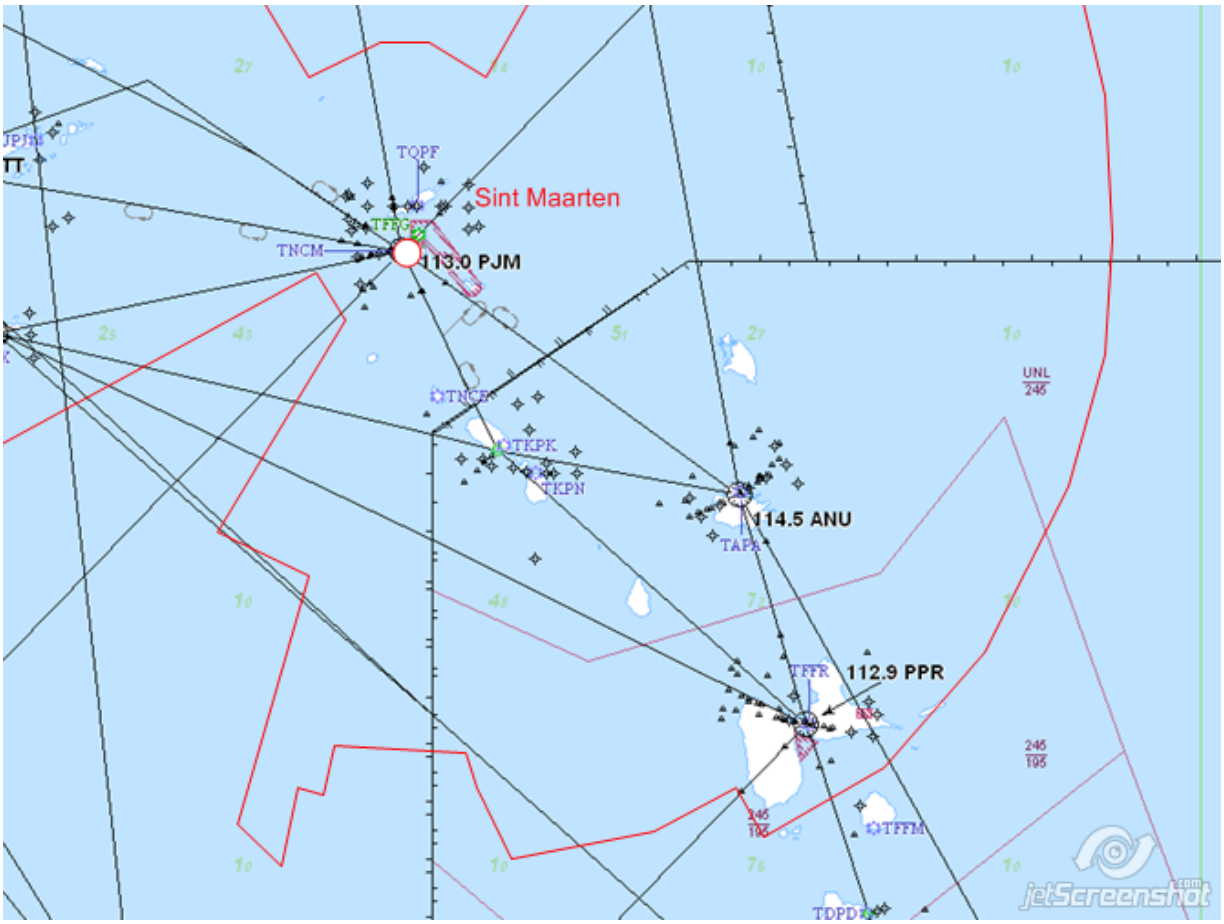
ANTIGUA RADAR: FL 200

Coverage up to Martinique, covering Guadeloupe, St. Kitts, Dominica and Anguilla



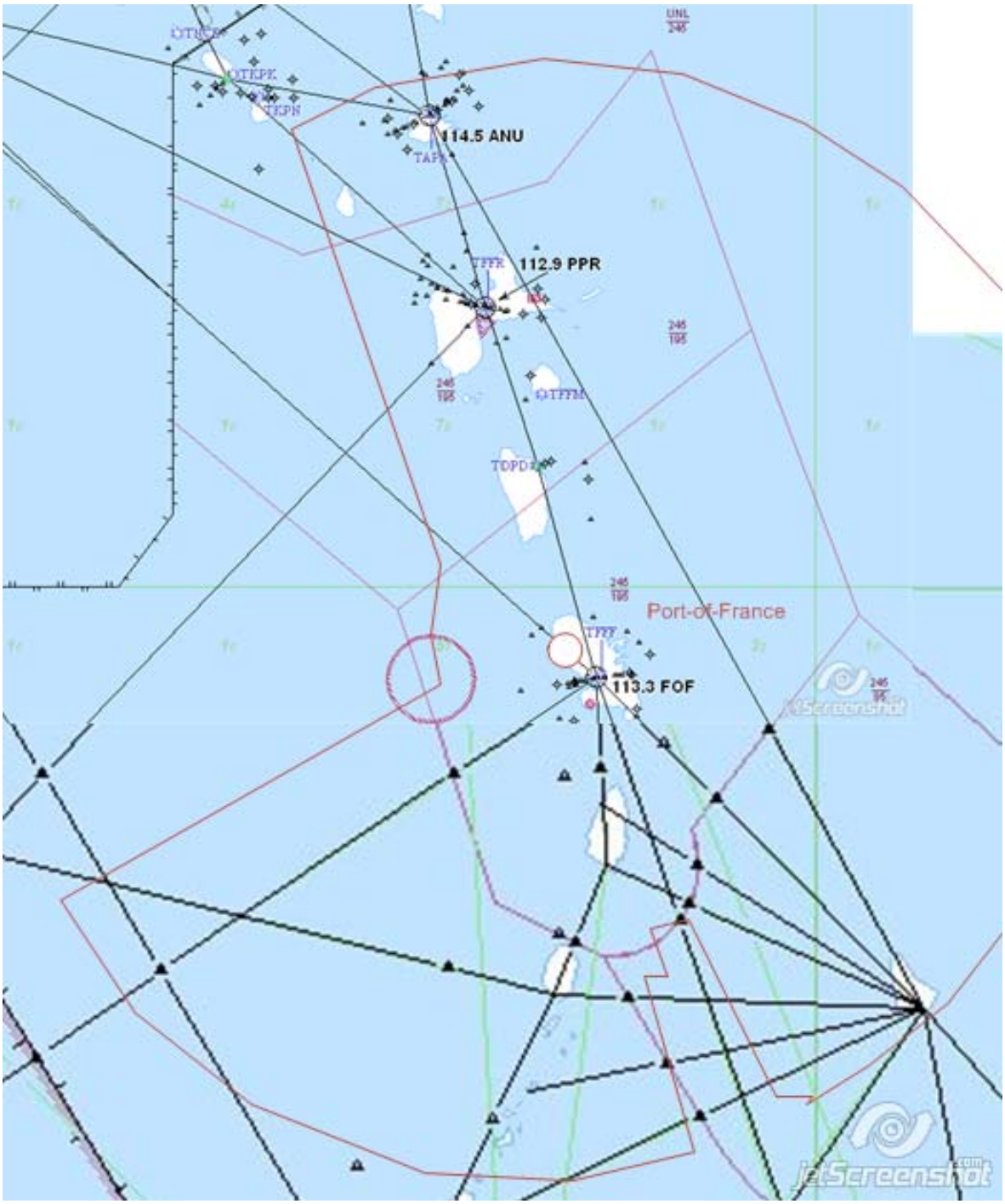
Sint Maarten RADAR: FL 200

Coverage up to Guadeloupe, covering St. Kitts, Antigua and Anguilla



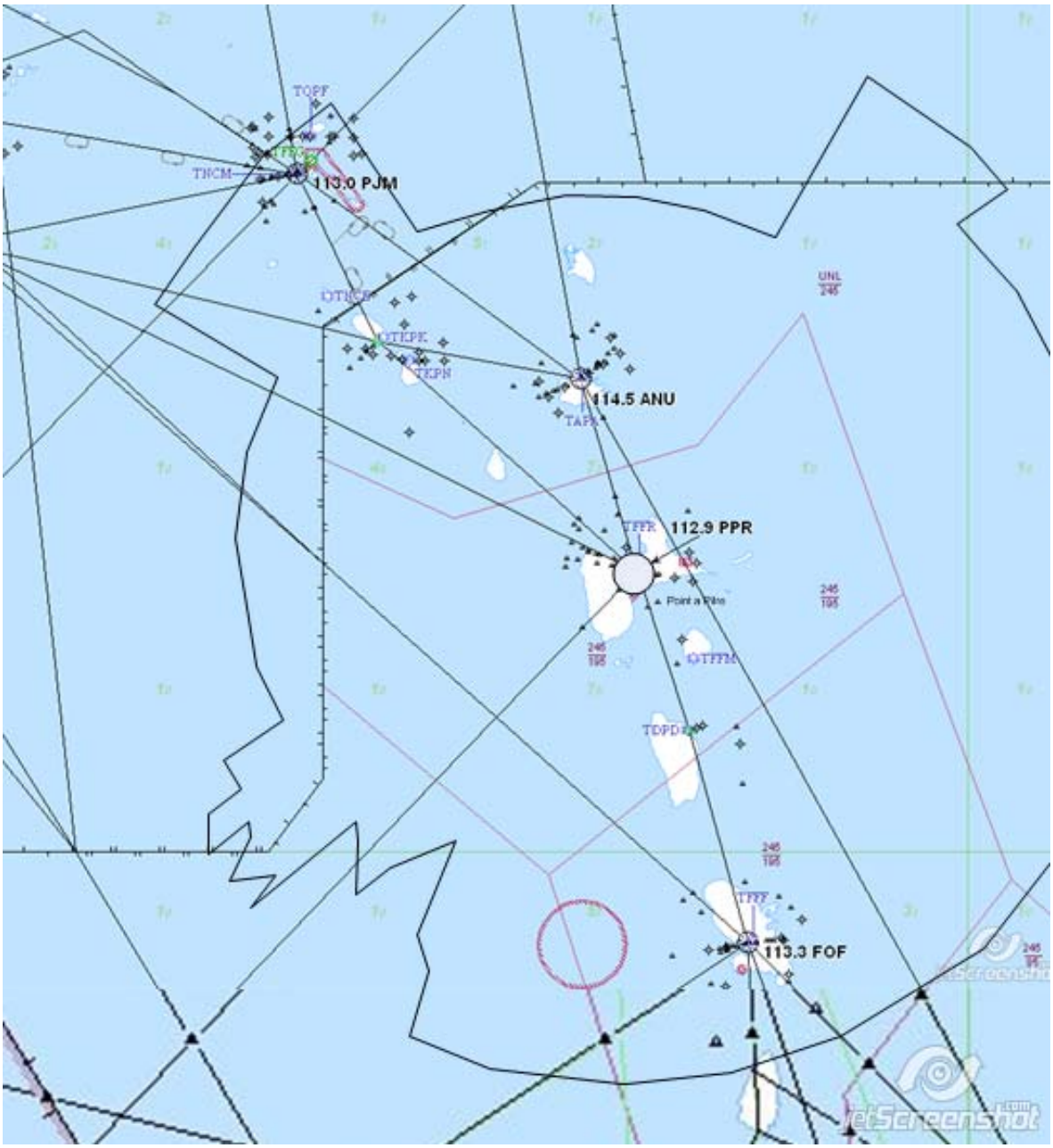
Martinique RADAR: FL 200

Coverage up to Antigua, covering Dominica, Saint Lucia and Barbados



Guadeloupe RADAR: FL 200

Coverage up to Sint Maarten, covering St. Kitts, Antigua and Dominica



Report on observed RADAR coverage of St. Vincent and Grenada TMAs

This report is generated based on actual observation of RADAR targets both within the lateral limits of the Grenada and St. Vincent TMAs, and up to 30 NM outside of the lateral limits.

The study was conducted with the TTPP, TFFF and TFFR RADAR sources available.

Findings

1. TVSV

1.1 Analysis of the data basically showed that for approximately 7-10 NM around the SV, there is no radar coverage below 2000 feet. The area of no coverage below two thousand feet is more pronounced to the south of the SV.

1.2 There is an area approximately 20 NM around the SV, where the radar coverage between 1000 feet and 2500 feet is variable. (Targets were observed to be dropping and reappearing).

1.3 There is another area stretching from about 10 NM SE of SV to the SE of Canouan, where there is no RADAR coverage below 3000 feet.

1.4 Throughout the rest of the St. Vincent TMA (with the exception of the areas identified above), there is reliable RADAR coverage above 1500 feet.

2. TGPY

2.1 The RADAR coverage observed around Grenada is significantly better than that around St. Vincent. The data showed that targets of arriving traffic were reliable up to approximately 500 feet within 0.5 NM of the GND. Departure targets were usually observed between 500 feet and 1000 feet within one (1) mile of the GND.

2.2 The area extending from within the St. Vincent TMA to the SE of Canouan also affects the Grenada TMA.

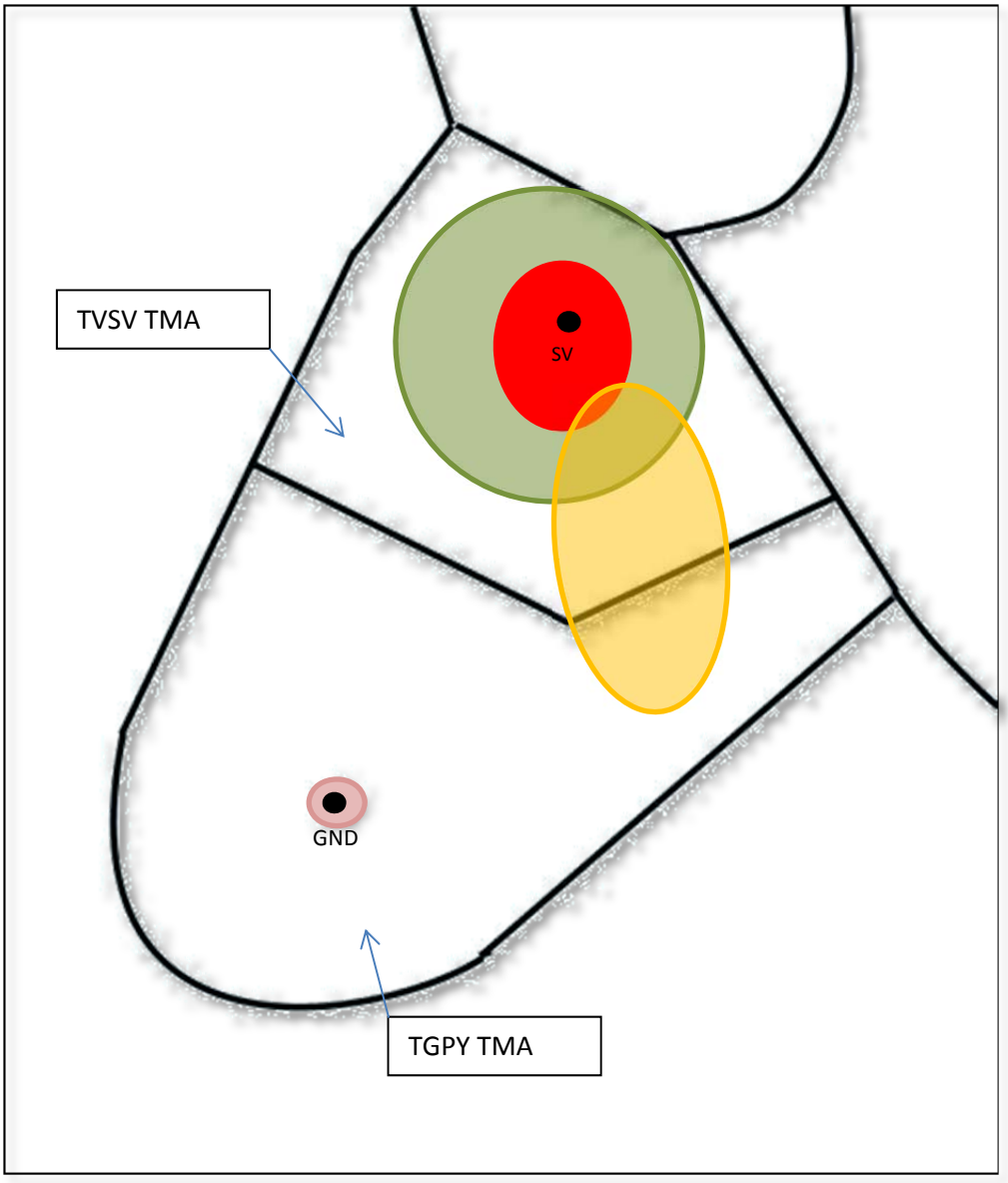
2.3 Apart from the two areas mentioned around the aerodrome, the RADAR coverage in the Grenada TMA appears to be reliable above 1000 feet.

3. 30 NM outside of the two TMAs

3.1 There is reliable RADAR coverage above 2000 feet both south and west of the Grenada TMA. To the EAST, in the TBPB TMA, the coverage is reliable above 3000 feet.

3.2 There is reliable RADAR coverage above 2000 feet both north and west of the St. Vincent TMA. To the east, in the TBPB TMA, the coverage is reliable above 3000 feet.

The diagram below gives a visual representation of the observed data.



	2000 feet and below – No coverage
	3000 feet and below – No coverage
	1000 feet – 2500 feet – Variable coverage
	500 feet and below – No coverage

Agenda Item 4: Other Business

E/CAR/NTG Future Meetings

4.1 Under WP/11, the annual E/CAR/NTG meetings have proven to be very productive and effective, rapidly solving problems like the original E/CAR AFS Network issues; implementation of the MPLS Network; implementation of failure reporting features; coordination on new services implementation; and establishing awareness on Network health, changes and expansion.

4.2 The Meeting recognized the challenges faced by States to fund participation at meetings and recalled that the last two NTG meetings were combined with E/CAR/CATG-WG meetings, as the current NTG/4 meeting. The combination of meetings seems to be very cost-effective for delegates to participate. However, no E/CAR/CATG meeting was scheduled for 2014 because a NACC/WG meeting is planned for 2014.

4.3 The Meeting recognized that for 2014, due to the expected improvements in Network performance, reporting and interconnection matters, and radar data sharing activities, a face-to-face meeting was needed after teleconference coordination in preparation for these improvements. Therefore the Meeting agreed that the next E/CAR/NTG meeting, E/CAR/NTG/5, shall be carried out in conjunction with the Radar Data Sharing Ad hoc Group Meeting.

4.4 In addition to the annual meetings, the E/CAR/NTG will hold periodic teleconferences hosted by the E/CAR AFS Network provider, TSTT, with support of the ICAO NACC Regional Office.

4.5 In this regard, the Meeting agreed to request support from the E/CAR DCAs to host the next E/CAR/NTG/05 and III Radar Data Sharing Ad hoc Group Meetings and agreed to formulate the following draft conclusion:

DRAFT CONCLUSION
E/CAR/NTG/4/16 HOSTING OF THE E/CAR/NTG/5 AND III RADAR DATA SHARING AD HOC GROUP MEETINGS

That in order to conduct the next E/CAR/NTG/05 and III Radar Data Sharing Ad hoc Group Meetings to discuss and agree on the matters related to the expected improvements in the network performance, reporting and interconnection, as well as the result on radar data sharing activities, the E/CAR/NTG Rapporteur prepare the necessary request through a working paper for the DCAs at the forthcoming E/CAR/DCA/25 asking for States to host these meetings.

Update to E/CAR/NTG Terms of Reference (ToR)

4.6 The Meeting recalled that the existing valid E/CAR/NTG ToRs were approved by the E/CAR/DCA/22 Meeting, Decision 22/6, to accomplish the following main objectives:

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 existing E/CAR AFS Network replacement.

4.7 Considering the progress and achievements of the E/CAR/NTG with the new MPLS Network, improvements in the reporting methodology, changes to the E/CAR/NTG membership, and other changes like the E/CAR/WG to E/CAR/CATG a review and update of the ToRs and work programme of the E/CAR/NTG were made for approval by the E/CAR DCAs. The revised ToRs are shown in **Appendix A** to this part of the report.

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, to accomplish the following main objectives:

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) stud, 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

2.1 In order to address the E/CAR AFS Network issues, the following activities are to be developed by the E/CAR/NTG:

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) study and assist the E/CAR AFS Network members in measures of a technical character, in order to facilitate the transition of the E/CAR AFS Network towards the ATN infrastructure and its air-ground and ground-ground sub-networks of the air navigation services, according to GREPECAS Conclusions and Recommendations, ICAO SARPs and technical guidance and the E/CAR AFS Network Members ‘expectations;
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;

d) study and propose to the E/CAR AFS Network Members 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; and

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

3.1 See attached work programme.

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 WG and maintain close coordination among the existing entities 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 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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E/CAR/NTG WORK PROGRAMME

No.	Activities	Objectives	Responsible	Deliverables
1	To assist the E/CAR AFS Network Members in coordination for the solutions to problems presented in this operation, and in the implementation of services and parts.	Keep E/CAR AFS Network SLA levels	NTG	E/CAR AFS Network assistance
2	To study and implement technical/operational measures that may be agreed upon to improve the operation and implementation of E/CAR AFS Network services, and that do not impact significant cost, investments and objectives of the Network.	Satisfactory operation and service levels	NTG	Implementation of Network improvements
3	Keep E/CAR AFS Network Members aware of the status of the E/CAR AFS Network performance and conditions of operation.	E/CAR AFS NETWORK Network awareness	NTG	• Reliable E/CAR AFS Network website • Network Performance revision
4	Maintain valid and up-to-date E/CAR AFS Network Contingency Procedures, taking into consideration the contingency plans of each E/CAR AFS Network Member and of the Service Provider and in keeping with the CAR Region General Contingency Plan.	Readiness for contingencies	NTG	E/CAR AFS NETWORK Contingency Procedures
5	To assist the E/CAR AFS Network Members, in finishing the data and voice circuits implementation, according to the requirements shown in the ANP CAR/SAM.	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	To review the RFP and the terms of the Services Agreement, based on the new ICAO requirements for the transitioning towards the ATN, as well as on the experience achieved, with the purpose of using them in a new Services Agreement for the E/CAR AFS Network.	Network improvements	Taskforces	Effective and efficient E/CAR AFS NETWORK Transition Process
8	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