



ICAO

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WORKING PAPER

E/CAR/DCA/26 — WP/12  
23/10/15

**Twenty-sixth Directors of Civil Aviation of the Eastern Caribbean Meeting (E/CAR/DCA/26)  
New Orleans, United States, 1 - 3 December 2015**

**Agenda Item 6: Air Navigation Matters**

- 6.3 Implementation of Air Navigation under the NAM/CAR Regional Performance Based Air Navigation Implementation Plan (RPBANIP)  
6.3.3 E/CAR Communications Network Performance and Radar Data Sharing Implementation

**E/CAR COMMUNICATIONS NETWORK PERFORMANCE AND SURVEILLANCE DATA SHARING IMPLEMENTATION**

(Presented by the E/CAR/NTG Rapporteur)

**EXECUTIVE SUMMARY**

This working paper presents an overview of the surveillance data sharing activities achieved and the need for the update of the implementation plan on this matter to encompass all the surveillance data related actions for informing the E/CAR Directors as mandated. The paper also provides an overview of the Eastern Caribbean (E/CAR) Aeronautical Fixed Services (AFS) Network.

|                              |   |
|------------------------------|---|
| <b>Action:</b>               | The suggested actions are detailed in section 3   |
| <i>Strategic Objectives:</i> | <ul style="list-style-type: none"><li>• Safety</li><li>• Air Navigation Capacity and Efficiency</li></ul>   |
| <i>References:</i>           | <ul style="list-style-type: none"><li>• Sixth Eastern Caribbean Network Technical Group (E/CAR/NTG/6) and Fourth Eastern Caribbean Surveillance Data Sharing Ad hoc Group (E/CAR/RD/4) Meetings, Miami, United States, 13 - 14 July 2015; and</li><li>• Twenty-fifth Meeting of Directors of Civil Aviation of the Eastern Caribbean (E/CAR/DCA/25), St. John's, Antigua and Barbuda, 3-5 December 2013</li></ul> |

**1. Introduction**

1.1 The agreement for a Central Radar Data server and the agreement for sharing and using the radar data among the E/CAR States and Territories represent an important improvement in safety and efficiency with notable improvements in Air Traffic Control Situational Awareness in the Region.

1.2 The radar data sharing activities represent the commitment of the Region for achieving the foreseen situational awareness improvements and to promote future improvements in air traffic control services. The E/CAR/DCA/25 Meeting took note of the radar data sharing Implementation Plan to be achieved and approved the progress achieved by the RDS Group:

- Implementation of the radar data server by Trinidad and Tobago
- Configuration of the E/CAR Aeronautical Fixed Services (AFS) Network infrastructure needed for this radar data exchange
- France gave a demonstration of their radar data display IRMA 2000 and differentiated the data displayed upon the selection of Martinique, Guadeloupe and Dacota in addition to the safety nets, zoom, maps and alerts capabilities
- Exchange of radar data coverages between France, Trinidad and Tobago, Barbados, Antigua - theoretical radar coverage (FL 50, 100, 150,200 and 300)
- Completion of radar questionnaire by all participating parties
- Trinidad and Tobago submitted the required information (ICD and the corresponding SIC/SAC codes) to French Antilles and the PIARCO radar merged data
- The installation of the International Private Leased Circuit (IPLC) between Guadeloupe and Antigua, effectively completing the agreed redundancy infrastructure of the network
- The commitment of Antigua and Barbuda, Barbados, Dominica, France, Grenada, Montserrat, Saint. Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago and United States, to be part of the radar data sharing project
- Update of the E/CAR radar sharing implementation Points of Contacts

## 2. Discussion

### *E/CAR Radar Data Sharing implementation activities*

2.1 The French Civil Aviation has donated and installed eleven computers (IRMA) as part of the Phase 1 implementation of Radar Data Display. The computers process only the French radars exported from Piarco over the E/CAR AFS Network, and are to be used by States to gain experience in a surveillance environment and for situational awareness. The following Table shows the status of the French IRMA computers and the comments made by States:

| State/Territory                  | No. of CPUs | Installation Date | Comments   |
|----------------------------------|-------------|-------------------|--|
| Antigua and Barbuda              | 2           | 19 March 2015     | Controllers report that the performance of the system is very good. The coverage is excellent and there is no overhead drop out. As a matter of fact, traffic is observed down to 200ft from the threshold. There is improved situational awareness.   |
| Grenada                          | 1           | 17 April 2015     | Display performance data is good. No coverage to the south. Coverage to the north above 5000' is good. It is a safety network. Traffic information is more accurate. It is an excellent tool for situational awareness.  |
| Saint Vincent and the Grenadines | 1           | 27 April 2015     | It has allowed ATCO to quickly get a picture of the traffic saturation. ATCO have been able to update their work plan prior to the coordination process. During a partial radio failure we were able to establish that the aircraft was still flying. During adverse weather conditions the extent of the diversions can be seen and plan for.<br><br>Phase 2 should allow better coverage in the Grenadines |

| State/Territory     | No. of CPUs | Installation Date | Comments   |
|---------------------|-------------|-------------------|--|
| Montserrat          | 1           | 18 May 2015       | System performance is very good. The coverage is more than adequate. Traffic is observed down to 300ft on the eastern side of the island. Coverage affected on western side by the 3 volcanic mountain ranges along the length of the island, as expected. 1,100ft on final. Situational awareness has improved.   |
| Dominica            | 1           | 15 June 2015      | The RADAR system was successfully installed on 15 June by the French Technicians. Since the installation, the system operated fully until it was disrupted by the damaged done to the E/CAR network by the flooding of the Douglas - Charles Airport in August. The system was transferred to the Canefield Airport where it is now operational.<br><br>(Honica Lawrence) would like to take this opportunity to thank all those who were instrumental in see this project through to fruition. We are extremely grateful.   |
| Barbados            | 1           | 18 June 2015      | a) It afforded ATCOs the opportunity to observe the radar data sharing process and to compare the local and 'shared' data in real time;<br><br>b) It allowed ATCOs to monitor activities beyond the scope of their operational requirements;<br><br>c) It provided a back-up system for surveillance only in case of a radar outage at TBPB; and<br><br>d) It provided the ATC Supervisor with an additional tool to assist with the monitoring of traffic operations both within and outside of the TBPB's airspace.<br><br>There has been no negative feedback and all reports indicate that the system is user friendly.<br><br>Phase 2 of the project will be beneficial for the reasons listed above (a-d). |
| Nevis               | 1           | 26 June 2015      | No comment   |
| Saint Kitts         | 1           | 26 June 2015      | This piece of equipment helps with the day to day operation of air traffic in Saint Kitts. Controllers are now aware of all aircraft in and out of our airspace at any given time it also aids in traffic information.   |
| Anguilla            | 1           | 5 November 2015   | No comment   |
| Trinidad and Tobago | 1           | 20 August 2015    | Effective for data and network performance evaluation and for monitoring of the exported data.   |

2.2 The Implementation Plan was updated based on the recent events in Radar Data Sharing matters, such as:

- The Request for Information (RFI) Process results
- The French donated CPUs implementation - hands-on experience and practical view for using radar data displays
- Availability of the radar data within the E/CAR AFS Network

- Availability of the MRT data in each user site
- Availability of RASA guidance on OECS States
- Review of radar data coverage in the area (Antigua, Barbados, Guadeloupe, Martinique, Sint Maarten and Trinidad and Tobago)
- Radar Data from United States sites
- Analysis of real radar coverage in States as done for Grenada and Saint Vincent and the Grenadines

2.3 Similarly, the Implementation Plan includes the actions for radar data exchange with the adjacent Flight Information Regions (FIRs) as part of the process to enhance the MRT data for the E/CAR users (San Juan, Sint Maarten and Venezuela).

2.4 Due to the longer time taken for the request and installation of the displays and considering an appropriate time for the States to become familiarized with the Phase I Radar display, the original implementation plan has been updated. Similarly, the E/CAR RDS participants recognized the need to confirm the commitment of the States for Phase II of the implementation for the tender and acquisition of the final Radar Displays, as reflected in the following conclusion:

#### **CONCLUSION**

**E/CAR/NTG/6-RD/4/9**

#### **NEW E/CAR RADAR DATA DISPLAY ACQUISITION RFP MILESTONES**

That, in order to allow the E/CAR States/Territories involved in the Radar Data Display RFP process to include their end-user requirements and express their formal commitment:

- a) ECCAA coordinate with their OECS States/Territories for a formal commitment and process chosen for conducting the RFP process and inform the E/CAR/RD and ICAO by **30 October 2015** of this commitment;
- b) Trinidad and Tobago conduct teleconferences with each involved OECS State/Territory for explaining the radar data display and the end user requirements to be defined starting 1 August 2015; and
- c) E/CAR States/Territories involved in the Radar Data Display RFP process to conduct the RFP process with the following new milestones:
  - E/CAR Radar Display Tender- preparation of RFP: October 2015 - January 2016
  - E/CAR RD Tender- process: March - June 2016
  - E/CAR RD Selection: July 2016
  - E/CAR RD Implementation: October 2016-March 2017

2.5 In this regard the following revised milestones are presented in the Implementation Plan as shown in **Appendix**:

- Integration of Barbados Radar: January - March 2016
- Integration of Antigua and Barbuda Radar: June - December 2016
- Integration of Sint Maarten Radar: January - October 2016
- Evaluation of integrating United States radars: January-August 2016

- Other radar integration (Venezuela): December 2015 - December 2017
- ECAR Radar Display Acquisition Tender - preparation of RFP: February - March 2016
- ECAR RD Tender- process: March – April 2016
- ECAR RD Implementation: July - December 2016
- Preparation for ADS-B trials: October 2015 - November 2016

2.6 From the familiarization gained with the IRMA computers, States were asked to submit to the E/CAR/RD group users' requirements in order to prepare the Request for proposal (RFP) document. Failure to provide the information in a timely manner will affect the scheduling of activities.

#### *E/CAR AFS Network Overview*

2.7 Users agreed that the network was globally compliant with consistently good performance and availability. Feedback on faults has been excellent, which has provided a high level of confidence in the network. The following equipment failures are noted with concern:

- **Saint Kitts and Nevis** - One of the redundantly configured Cisco routers failed in January 2013 due to damage caused by exposure to adverse environmental conditions. The router was replaced at Saint Kitts and Nevis cost on 6 November 2015. The second router and the Redundant Power Supply (RPS) also need replacing, having been exposed to the same conditions that caused the failure of the first router. Saint Kitts and Nevis was provided with a cost to replace the damaged equipment and advised that if environmental conditions remain unchanged, the new equipment could be similarly affected.
- **Anguilla** - The routers and the Uninterruptible Power Supply (UPS) that were damaged as a result of unsuitable environmental conditions were replaced at Anguilla's cost on 26 July 2015. The equipment rack was relocated to another position in the same equipment room but the environmental problem still exists, which may result in a similar failure in the future. The RPS for the routers which was serviceable at the visit prior to the replacement has since failed. The replacement cost has been provided to Anguilla.

2.8 The new dedicated MEVA circuit required for the radar exchange between San Juan and Sint Maarten, and the voice circuits to Anguilla, Antigua and Saint Kitts and Nevis are already installed. The configuration of the E/CAR/AFS router in San Juan is completed. The wiring, interconnection and testing is scheduled for 30 November – 5 December 2015.

**3. Suggested Action**

3.1 The Meeting is invited to:

- a) Take note of the E/CAR Radar Data Sharing achieved activities and recent progress;
- b) confirm commitment and approve the update to the E/CAR Radar Data Sharing Implementation Plan to reflect the future actions;
- c) take note of the importance in maintaining the equipment under optimum environmental conditions; and
- c) take any other action as deemed necessary.

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APPENDIX

| ID | Task Name  | Start        | Finish       | Half 2, 2015                       |      | Half 1, 2016                          |      | Half 2, 2016 |      |
|----|--|--------------|--------------|------------------------------------|------|---------------------------------------|------|--------------|------|
|    |  |              |              | 3Q15                               | 4Q15 | 1Q16                                  | 2Q16 | 3Q16         | 4Q16 |
| 1  | Integration of Barbados MLAT and ADS-B and Radar into Piarco's MRT             | Mon 04/01/16 | Wed 23/03/16 |                                    |      | Trinidad and Babados                  |      |              |      |
| 2  | Integration of Sint Maarten's radar  | Mon 04/01/16 | Thu 31/03/16 |                                    |      | Trinidad,United States and St Maarten |      |              |      |
| 3  | Evaluation of integrating United States radars                                 | Mon 05/01/15 | Fri 22/04/16 | United States,Trinidad,France,ICAO |      |                                       |      |              |      |
| 4  | Other radar integration (Venezuela, Aruba, Curacao)                            | Wed 09/12/15 | Fri 14/10/16 | ICAO (NAC)                         |      |                                       |      |              |      |
| 5  | <b>Acquisition of new Radar Data Displays</b>                                  | Wed 01/07/15 | Fri 30/12/16 |                                    |      |                                       |      |              |      |
| 6  | Obtain user requirements from States   | Wed 01/07/15 | Mon 30/11/15 | E/CAR Members                      |      |                                       |      |              |      |
| 7  | Draft specifications for review by ICAO, ECCAA, France and Trinidad and Tobago | Mon 04/01/16 | Thu 31/03/16 | E/CAR Members                      |      |                                       |      |              |      |
| 8  | Finalization of Committee members/Selection of Chairperson                     | Wed 01/01/14 | Fri 10/01/14 |                                    |      |                                       |      |              |      |
| 9  | Finalization of complete tender documents                                      | Thu 25/02/16 | Fri 11/03/16 | Committee                          |      |                                       |      |              |      |
| 10 | Obtain quotations from selected vendor from RFI process for estimation         | Wed 23/03/16 | Fri 29/04/16 | E/CAR Members                      |      |                                       |      |              |      |

|   |                    |  |                       |  |                 |  |
|---|--------------------|--|-----------------------|--|-----------------|--|
| Project: Apn WP12<br>Date: Thu 19/11/15 | Task               |  | Inactive Task         |  | Start-only      |  |
|   | Split              |  | Inactive Milestone    |  | Finish-only     |  |
|   | Milestone          |  | Inactive Summary      |  | Deadline        |  |
|   | Summary            |  | Manual Task           |  | Progress        |  |
|   | Project Summary    |  | Duration-only         |  | Manual Progress |  |
|   | External Tasks     |  | Manual Summary Rollup |  |                 |  |
|   | External Milestone |  | Manual Summary        |  |                 |  |

| ID | Task Name                                       | Start               | Finish              | Half 2, 2015 |      | Half 1, 2016 |      | Half 2, 2016 |      |
|----|---|---------------------|---------------------|--------------|------|--------------|------|--------------|------|
|    |   |                     |                     | 3Q15         | 4Q15 | 1Q16         | 2Q16 | 3Q16         | 4Q16 |
| 11 | Start procurement process as a regional project | Mon 29/02/16        | Wed 04/05/16        |              |      |              |      |              |      |
| 12 | <b>Delivery and Installation of equipment</b>   |                     |                     |              |      |              |      |              |      |
| 13 | Delivery  | Mon 04/07/16        | Fri 29/07/16        |              |      |              |      |              |      |
| 14 | Installation- with local technicians            | Wed 03/08/16        | Fri 23/09/16        |              |      |              |      |              |      |
| 15 | Training  | Wed 03/08/16        | Fri 30/09/16        |              |      |              |      |              |      |
| 16 | Commissioning and operational readiness         | Mon 03/10/16        | Thu 15/12/16        |              |      |              |      |              |      |
| 17 | <b>ADS-B</b>                                    | <b>Wed 21/10/15</b> | <b>Wed 30/11/16</b> |              |      |              |      |              |      |
| 18 | Preparation for ADS-B trials                    | Wed 21/10/15        | Wed 30/11/16        |              |      |              |      |              |      |

|   |                    |  |                       |  |                 |  |
|---|--------------------|--|-----------------------|--|-----------------|--|
| Project: Apn WP12<br>Date: Thu 19/11/15 | Task               |  | Inactive Task         |  | Start-only      |  |
|   | Split              |  | Inactive Milestone    |  | Finish-only     |  |
|   | Milestone          |  | Inactive Summary      |  | Deadline        |  |
|   | Summary            |  | Manual Task           |  | Progress        |  |
|   | Project Summary    |  | Duration-only         |  | Manual Progress |  |
|   | External Tasks     |  | Manual Summary Rollup |  |                 |  |
|   | External Milestone |  | Manual Summary        |  |                 |  |