



International Civil Aviation Organization

NORTH AMERICAN, CENTRAL AMERICAN AND CARIBBEAN OFFICE

**Twenty-Seventh Eastern Caribbean Informal Working Group Meeting
(27TH E/CAR IWG)**

St. John's, Antigua and Barbuda, 21 to 25 July 2003

27TH E/CAR IWG-IP/06

22/06/03

Agenda Item 3: Specific Air Navigation Activities and Developments
3.6 Communications, Navigation and Surveillance (CNS)

REPORT OF THE E/CAR RADAR SHARING TASK FORCE

(Presented by France)

1. Introduction

1.1 This Paper presents the Report of the Second Meeting of the E/CAR Radar Sharing Task Force, held in Trois Ilet, Martinique from 13 to 15 November 2002, which is contained in the **Appendix** to this information paper.



27th E/CAR IWG
IP/06
Appendix



**INTERNATIONAL CIVIL AVIATION ORGANIZATION
NORTH AMERICAN, CENTRAL AMERICAN AND CARIBBEAN OFFICE**

**FINAL REPORT OF THE
SECOND MEETING OF THE EAST CARIBBEAN
RADAR SHARING TASK FORCE**

**E/CAR-RSTF2 MARTINIQUE,
13 – 15 NOVEMBER, 2002**

**INTERNATIONAL CIVIL AVIATION ORGANIZATION
(NORTH AMERICAN, CENTRAL AMERICAN AND CARIBBEAN OFFICE)**

**DIRECTION REGIONALE DE L'AVIATION CIVILE AUX ANTILLES
GUYANE**

INTERNATIONAL CIVIL AVIATION ORGANIZATION

**FINAL REPORT OF THE
SECOND MEETING OF THE EAST CARIBBEAN
RADAR SHARING TASK FORCE
(E/CAR-RSTF2, 13 – 15 NOVEMBER 2002, MARTINIQUE)**

Prepared by France

November 2002

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HISTORY OF THE MEETING

ii.1. Place and duration

The second meeting of the Radar Sharing Task Force was held at the Hotel CARAYOU, Trois Ilets, Martinique. The meeting started on the 13th November 2002 and ended 15th November 2002.

ii.2. Organization, Officers and Secretariat

Michel GRANDET, head of the Air Navigation Division of the Direction Régionale de l'Aviation Civile Antilles/Guyane (France) chaired the meeting.

Roger Gabriel PRUDENT, head of the ATS Studying, Training and Quality of Services acted as the secretary.

ii.3. Working Languages

The working language of the meeting was English. The documentation and the Report of the meeting were issued in English.

ii.4. Schedule and Working Methods

The meeting held its session as a whole from 0900 to 1600 hours with appropriate breaks.

ii.5. Attendance

The meeting was attended by 15 delegates from 6 States/Territories/Organizations of the Caribbean Region.

AGENDA

The following agenda was adopted

Agenda Item 6

Review of RSTF /1Cconclusions

Agenda Item 1

Review of GREPECAS Guidelines on radar data sharing

Agenda Item 2

Implementation of multiradar system in French Antilles (DACOTA)

Agenda Item 3

Specific needs : St Lucia

- 3-a) Letter of Agreement between French Republic and OECS regarding the remoting of radar data from Martinique St Lucia
- 3-b) Implementation program

Agenda Item 4

DACOTA image : Available means

- 4-a) Radar coverage
- 4-b) Radar references
- 4-c) Radar message format

Agenda Item 5

DACOTA image : Legal aspects

Agenda Item 7

Training aspects

- 7-a) Technical
- 7-b) ATC

Agenda Item 8

Other business

The meeting agreed to deal with Item 6 at the beginning of the session.

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V - LIST OF DOCUMENTATION

N°	Agenda Item	Title	Date	Presented by
WP 0		Revised Draft Agenda	18/10/02	France
WP 1.		Review of conclusion of the RSTF/1	18/10/02	
WP 2.	1	Review of GREPECAS Guidelines for Radar Sharing	19/10/02	France
WP 3.	3b	Implementation of radar remoting in St Lucia	18/10/02	France
WP 4	4a	Radar Coverage (To be provide at the meeting, information not received)		France
WP 5	4	Integration of a new radar In the DACOTA RDPS	14/11/02	France
WP 6	5	Protocol agreement and management Board regulation	18/10/02	France
WP 7	7a	Technical training	18/10/02	France
WP9	4b	Table of the technical elements of the radar heads in E/CAR	19/10/02	France
IP 0		Working documentation	19/10/02	France
IP 1	2	Status of the Radar data processing in French Antilles	18/10/02	France
IP 2	3a	Implementation of radar remoting in St Lucia	18/10/02	France
DP1	7b	ATC Radar Training	13/11/02	Barbados
DP2	1	Table Needs/Coverage	13/11/02	Trinidad & Tobago
DP3	1	WP10 ATM/CNS2	13/11/02	IACL
DP4	2	Aerospace Offer	13/11/02	Trinidad & Tobago

1 - Agenda Item 6 : Review of RSFT/1 Conclusions

According to the time elapsed since the first RSTF, the meeting agreed to review 2 documents before actual discussion :

- The WP1 : commenting the conclusions of first RSTF and,
- The revised résumé of actions , document annexed to the invitation letter and attributing the different tasks.

The status of these conclusions are shown in appendix 1 to this report.

STATUS OF PREVIOUS CONCLUSIONS

STATUS

CONCLUSION 1/1 WORK PROGRAM (RSTF/1, §1)

The work program of the RSTF was amended by addition of an item 11 : Training aspects (operational and technical) of radar dissemination.

COMPLETED

CONCLUSION 1/2 HOSTING (RSTF/1, §1-3)

The venue of the second meeting should be Trinidad and Tobago, subject to Aviation Authorities approval to be confirmed by mid August 1999. In case of impossibility, Antigua and Barbuda could be considered, subject to Aviation authorities approval to be confirmed by the end of September 1999.

If none of this propositions could be realized, France could host the meeting.

COMPLETED

CONCLUSION 1/3 RADAR COVERAGE (RSTF/1, § 2-2)

Considering that many of the potential users of the radar image handle approach units, the meeting agreed that there was need to draw at least four coverage charts at 3000, 5000, 10 000 and 20 000 ft, an optional 15 000 ft being interesting.

Barbados, OECS for Antigua and Trinidad and Tobago commit themselves to try to provide the appropriate charts. The task force recognize the high interest to have available digitized terrain for all the E/CAR islands (St. Lucia, Martinique, Dominica and Guadeloupe already exist)

ON GOING

CONCLUSION 1/4 COLLECTION OF THE RADAR REFERENCES (RSTF/1, § 2-3)

Following a proposal from the FAA, it was agreed by the meeting that each radar station operator shall provide the characteristics of their equipment

ON GOING

CONCLUSION 1/5 RADAR MESSAGES FORMAT (RSTF/1, § 2-4)

It was agreed that, DACOTA software being developed to support ASTERIX cat 001 and cat 002 for input and cat 030 for output, the first implementation will use these categories.

However, the meeting agreed that there is need to support ASTERIX cat 034 and 048.

It was reported that French technical experts have planned to upgrade the DACOTA software to support cat 034 and 048.

France will provide the meeting with a schedule for this software upgrade as soon as it is available.

STATUS)

CONCLUSION 1/6 FIRST STAGES OF REMOTING (RSTF/1, § 3-1)

The meeting agreed to adopt a method similar to the French one before the implantation of radar approach services.

TO BE REVIEWED BY THE RSTF/2

For the calculation of the MRSAs, there is need to utilize digital mapping of the islands. Presently only Guadeloupe, Dominica, Martinique and St. Lucia digital charts are available. The meeting agreed that each State/Organization to make available the appropriate data for its country.

ON GOING

ON GOING

CONCLUSION 1/7 SAINT LUCIA (RSTF/1, § 3-2-1)

a) It was also recognized that direct French/St. Lucian (with OECS) contact could help in the resolution of this item, all technical progress being reported to the task force.

b) OECS and St. Lucia will provide the detailed technical and operational requirements to France.

ON GOING

COMPLETED

CONCLUSION 1/8 TRINIDAD AND TOBAGO (RSTF/1, § 3-2-2)

The task force agreed that based on the versatility and all the technical capabilities of PC based displays, it would be advantageous for Trinidad and Tobago to consider implementing this technology as soon as possible.

ON GOING

CONCLUSION 1/9**OTHER UNITS NEEDS (RSTF/1, § 3-3)****STATUS**

- a) OECS indicated that the method of implementation described for St. Lucia could be applied to any other interested OECS State.
- b) The task force agreed to analyze at its next meeting the most efficient way to provide Grenada and St. Vincent with radar coverage.
- c) It was agreed by the task force that any interim installation should be compatible with the final radar and display system.
- d) The US representative underlined that FAA is continuing international discussions to determine if a requirement exists to use E/CAR radar data for ATC purposes.
- e) However, the task force was indicated that there was already a requirement for transmission of flight plan data and updated position reports on airborne flights, to be used for ATM purposes (i.g. Flow control management).

REFUSED

ON GOING

ON GOING

ON GOING

ON GOING

CONCLUSION 1/10**FINAL GOAL (RSTF/1, § 3-4)**

- a) The final goal is to build a common seamless image for the E/CAR region. This multiradar image will be processed by the DACOTA Surveillance Data Processing and Distribution (SDPD) with the information received under ASTERIX format from any available antenna of the region (Trinidad and Tobago, Barbados, Martinique, Guadeloupe, Antigua and Barbuda, St. Martin and Puerto Rico).
- b) The result of this processing will be made available under ASTERIX format, through the new IACL digitized network, to any interested ATS unit of the E/CAR region.

ON GOING

ON GOING

CONCLUSION 1/11**OPERATIONAL TRAINING (RSTF/1, § 3-5-1)**

The task force underlined also the need to implement periodical medical checks. OECS recommended the need to have training available in the region. Trinidad and Tobago indicated that they will investigate the possibility of providing radar training.

ON GOING

CONCLUSION 1/12**TECHNICAL TRAINING (RSTF/1, § 3-5-2)**

All implementation of new equipment should be done with the appropriate support training.
The task force also agreed to the need for ASTERIX training.

COMPLETED

CONCLUSION 1/13**STATES AGREEMENTS (RSTF/1, § 4-1)****STATUS**

- a) *It was agreed by the task force that agreements committing Radar antenna operators to provide their radar data to the DACOTA system will be needed prior to define the final architecture of the E/CAR radar system.*
- b) *Barbados, Netherlands Antilles for St. Martin, OECS for Antigua and Barbuda, Trinidad and Tobago and United States of America shall provide the addresses of their respective appropriate authority.*
- c) *The task force identified the need for a legal entity to coordinate and operate this radar system. This issue will be discussed at the next meeting of the task force and a proposal submitted to the E/CAR DCAs.*

ON GOING

ON GOING

ON GOING

CONCLUSION 1/14**LOAs (RSTF/1, § 4-2)**

Participants will review the proposed draft LOA and present their draft version to the next meeting. Three of them are expected :

- * Legal entity / Trinidad*
- * Legal entity / Barbados*
- * Legal entity / Antigua*

ON GOING

2 - Agenda Item 1 :

Review of GREPECAS Guidelines

At the last ECWG meeting (Barbados, 3rd – 7th June 2002), it was recommended that the RSTF review the work already done by the other contributing bodies of the GREPECAS.

WP2 presented by France introduced the Draft Initial Regional Guidelines on Radar Data Sharing approved by GREPECAS 10 (Canarias Islands, 2001).

Note : the last version amended by the ATM/CNS/2 (Rio, 16th – 20th September) was also taken into account.

During the review of these Guidelines on Radar Sharing, it was agreed that Trinidad & Tobago and OECS were to work together in order to submit to the meeting a table showing elements of assessment of the equipment requested by the paragraph One of the Guidelines.

This table was reviewed by the meeting and is shown in appendix 2 of this report.

It aims at representing a correspondence between the operational needs and the available radar coverage as requested by Item 1 of the Guidelines.

Furthermore, it was agreed that the compliance of the work of the RSTF with 19 other paragraphs were either contained in this table or dealt with other items of the agenda of this RSTF 2.

CONCLUSION 2/1

That the meeting comply with the amended Guidelines.

ITEM 1 - APPENDIX 2**Benefits that may be realized by E/CAR states with radar sharing**

STATE	ATC UNIT SERVED	PSR	SSR	ADS	USABLE COVERAGES OR POTENTIAL REDUNDANCY IMPROVEMENTS
Antigua *	TAPA / APP	-	A/C	-	Guadeloupe data
Barbados	TBPB / APP / TWR		A/C		Martinique and Trinidad data
Guadeloupe	TFFR / APP	-	A/C	-	Antigua and Martinique data
Dominica **	TDPD / TWR	-	-	-	Guadeloupe and Martinique data
Martinique	TFFR / APP	-	A/C	-	Guadeloupe and Barbados data
St Vincent	TVSV / APP	-	-	-	Barbados and Piarco data
Grenada	TGPY / APP	-	-	-	Piarco and Barbados data
Trinidad & Tobago	Piarco APP	-	A/C	-	Barbados data
Trinidad & Tobago	Crown Point TWR				Piarco and Barbados data
Trinidad & Tobago	Piarco ACC		A/C		Barbados, Martinique, Guadeloupe and Antigua data
St Kitts	TKPK / APP	-	-	-	Antigua and Guadeloupe data
St Lucia	TLPL / APP	-	-	-	Barbados and Martinique data
St Lucia	TLPC / TWR	-	-	-	Barbados and Martinique data

* TNCM (Juliana) has not been excluded but should be kept as supplementary source of data for further implementation

** There is no controlled Airspace in Dominica

3 – Agenda Item 2 :

Status of the DACOTA in the French Antilles

3.1. France presented IP1 reporting the progress of the implementation of DACOTA in the French Antilles.

The meeting was informed that the DACOTA image should be effective at Fort-de-France APP by the first quarter of 2003.

3.2. A presentation of DACOTA was made by the representative of the Service Technique de la Navigation Aérienne.

3.3. Trinidad and Tobago representative informed the meeting of the existence of a preliminary study realized by AEROSPACE ENGINEERING AND RESEARCH ASSOCIATE INC. at their request.

After a long discussion, where it appeared that the project could create redundancy of efforts for Radar Sharing, the meeting decided to create an ad hoc group to analyze the Aerospace document. The ad hoc group was composed of Trinidad and Tobago, France, Barbados and OECS representatives and reported to the plenary through DP4.

After an in-depth discussion and considering the explanation given by the delegates of Trinidad and Tobago, the meeting agreed that Trinidad and Tobago was presenting their specific needs (for instance FPPS, Oceanic Situation Display, data transformation for radar display...) that do not preclude the necessity for all the E/CAR states to implement DACOTA Project.

As a consequence, the meeting confirms the continuation of the work on the DACOTA E/CAR implementation as mandated by the E/CAR DCAs.

CONCLUSION 2/2

That the TASK FORCE carries on its task as mandated by the DCAs.

4 – Agenda Item 3 :

4-1. Specific needs : Radar remoting in Saint-Lucia

Referring to conclusion 1/7 (§3.2.1. of RSTF 1 Report), the status of the progress of the remoting of the Martinique Radar image to Saint Lucia airports was presented in IP2.

The meeting was informed that the LOA between France and OECS was about to be signed.

Furthermore, WP3 presented the draft agenda of the process of implementation of the radar image. It was discussed and amended as shown in appendix 3 of this report.

CONCLUSION 2/3

That any State/Territory/Organization shall assess the needs related to personnel and training in the view to implement radar services.

4-2. Specific needs : other airports

Several delegates reminded the meeting to keep under study the needs already expressed by Grenada and Saint Vincent.

France representative informed the meeting that it was not planned to repeat the cooperation action decided for St Lucia to another state. However, the meeting agreed that it could be of great interest to take any available experience from this specific remoting in order to work on radar remoting implementation in other locations.

It was noted by the meeting that the assessment of personnel and training needed for radar services implementation in Saint Lucia should also be conducted in these islands with appropriate anticipation.

4-3. Specific needs : Barbados

The delegate of Barbados reported that the assessment of the Barbados radar coverage had shown the existence of a blind area in the NW of ADAMS below FL 70, area correctly covered by Martinique Radar.

ITEM 3 – APPENDIX 3

St-LUCIA REMOTING RADAR DATA : DRAFT AGENDA

Task	Target Completion Date
1- Approval of the LOA between OECS and France	Last quarter of 2002
2- Bid.	First quarter of 2003
3- Assessment of necessary personnel, training needs	First quarter of 2003
4- Designation of the implementation Company	Second quarter of 2003
5- Detailed survey for the implementation of equipment in St-Lucia	Third quarter of 2003
6- Production of a detailed quotation	Last quarter of 2003
7- Implementation of equipment in St-Lucia	2 nd quarter of 2004
8- Training of maintenance staff	2 nd quarter of 2004
9- Technical tests	3 rd quarter of 2004
10-Survey for the operational aspects : - - MSRA - Procedures - Airspace classification - Structure of airspace - Type of radar services	3 rd quarter of 2004
11-Training of ATC staff	3 rd and 4 th quarter of 2004
12-Assessment of the radar image, fine tuning and certification	4 th quarter of 2004 & 1 st of 2005
13- Amendment of LOAs between : St-Lucia and Fort-de-France St-Lucia and Piarco St Lucia and Barbados	1 st quarter of 2005
14-Amendment to the E/CAR AIP	1 st quarter of 2005
15-Effective radar services in St-Lucia	2 nd quarter of 2005

5 – Agenda Item 4 :

Available means

5.1. Radar coverage

France presented WP4 in which it appears that the elements transmitted to construct a global radar coverage of the region were not sufficient.

CONCLUSION 2/4

That Trinidad and Tobago and OECS (and Barbados partially) commit themselves to transmit missing data by the end of February 2003 as requested in Conclusion 1/3 (§ 2.2. of RSTF 1 Report).

5.2. Radar References

France presented WP9, through a table summarizing the information available on the five radars to be considered for the seamless image.

The table was amended and completed and is shown in Appendix 4 to this report.

CONCLUSION 2/5

That Trinidad and Tobago transmit their antenna coordinates in WGS84 and integrate GPS stamping in their equipment.

5.3. Integration of a new radar in the DACOTA RDPS

France presented WP5 describing the prerequisite for the integration of a radar in the DACOTA.

Needs to know in advance technical characteristics and operational performances were explained.

Elements like data format, data transmission, accuracy were underlined.

The appropriate methodology is described in WP5 herewith attached as Appendix 4 to this report.

CONCLUSION 2/6

That State/Territory/Organization comply with elements included in appendix 4 to this report.

5.4. Documentation and data to be provided

Furthermore :

- French STNA should provide a detailed list of the requirements relevant to the radar data recording.
- Antigua / OECS should mandate French Technical Services vis à vis ALENIA to request appropriate information
- Barbados and Trinidad and Tobago should provide contact of their respective technical experts
- Antigua and Barbados should provide the technical documentation of their radar interfaces
- Barbados, Trinidad and Tobago, Antigua/OECS should provide a block diagram of the global architecture including Radar head and data distribution to display a processing system. The requested diagram should contain :
 - main functional block with their description
 - data link between blocks with details of format and communication protocol.

CONCLUSION 2/7

That the requirements, contacts, documentation and block diagrams hereabove quoted be transmitted not later than February 2003.

Finally, Trinidad and Tobago provided an electronic version of their Interface Control Document to be analyzed by the French Technical Services.

France was tasked to provide a quotation for the installation of such an equipment in a second physical location. However, the meeting was warned in advance of the difficulty to assess and integrate the costs involved by the associated human resources.

CONCLUSION 2/8

That a cost/benefit analysis concerning the implementation of an alternate DACOTA be done by the French STNA.

ITEM 4 - APPENDIX 4

INTEGRATION OF A NEW RADAR IN THE DACOTA RDPS

This document describes the activities for the integration of a new radar in the DACOTA Radar Data Processing System (RDPS).

Differences between radars are (among others) :

- data format (ASTERIX, AIRCAT...)
- implementation of ASTERIX format may vary
- special purpose item
- data transmission (are plots and service messages sent together ?
Communication protocol ?)
- Performance (accuracy in position and time stamping, probability of detection, validity of mode A and C, etc...)

Methodology

Therefore, while studying the integration of a new radar, the following phases should be performed :

Phase 1a : Monoradar evaluation

The purpose of this phase is to know all details of the interface (format, protocol). At the end of this phase, the differences with standard radar should be pointed out to evaluate the impact on DACOTA.

Requirements :

- Technical documentation on radar output (format, other documentation may be useful).
- Radar data recording (HDLC or Ethernet, with a PC based software tool).

Phase 1b : Multiradar evaluation

The purpose of this phase is to assess the precision of the radar.

Requirements :

- Recording simultaneously data from the radar to be assessed and also from other radars in order to build a reference.

Phase 2 : Software adaptation

The purpose of this phase is to make the necessary changes in DACOTA software to be able to process data provided by the radar.

The development of a converter is necessary when data is provided in a non ASTERIX format.

Requirements :

- Live data distribution to validate the software modifications at STNA.
- A temporary remoting of radar data to STNA should be installed.

Phase 3:

To remote radar to Fort-de-France (final remoting architecture).

Phase 4:

Site validation at Fort-de-France.

TABLE – INFORMATION REQUIRED ON THE SECONDARY SURVEILLANCE RADAR (SSR) FOR RADAR DATA SHARING

EXPLANATION OF THE TABLE

Column

- 1 The name of the radar facility from which the radar service is provided.
The name of the State from which the radar antenna is located
- 2 ATS Unit served by the radar facility of column 1.
- 3 WGS-84 Coordinates –
Note: if the WGS-84 coordinates are not available, please provide the geographical coordinates with ou asterisk
- 4 Elevation of the terrain in meters./ Focal height of radar antenna in meters.
- 5 SSR equipment manufacturer
- 6 SSR equipment model
- 7 Certified SSR coverage in Nautical Miles (NM).
- 8 SSR data format
- 9 SSR modes used
Example : A and C (A/C).
- 10 Type of SSR service or functions (en route/terminal) as listed below:

<i>ACC-SR-I</i>	<i>Area radar control service up to FL250</i>
<i>ACC-SR-U</i>	<i>Area radar control service up to FL450.</i>
<i>APP-SR-I</i>	<i>Surveillance radar approach control service up to FL250.</i>
<i>APP-SR-L</i>	<i>Surveillance radar approach control service up to FL120.</i>
<i>APP-SR-U</i>	<i>Surveillance radar approach control service up to FL450</i>
- 11 Last update of SSR equipment
- 12 ASTERIX (AST) compatibility (COMP) or capability (CAP)
- 13 Rotation speed
- 14 Time stamping

TABLE – INFORMATION ON THE SECONDARY SURVEILLANCE RADAR (SSR) FOR RADAR DATA SHARING

STATE	ATS Unit served	Coordinates (degrees/minutes/seconds WGS 84	elevation/ focal height [m]	manufacturer	model	certified SSR coverage [NM]	Data format	modes	type [en- route/terminal]	last update	Asterix	Rotation speed	Time stamping
1 F.W.I Martinique	2 Fort de France APP Le Raizet APP Fort de France TWR	3 14°31'38,0 N° 60°53'55,2" W	4 364 m / 30 m	5 THALES (THOMSON CSF)	6 MSSR	7 250	8 Asterix cat1 pour les plots pistés Asterix cat 2 pour les tops nord et fins secteur	9 A and C	10 APP-SR-I	11 1997	12 COMP	13 4s / 15 rpm	14 GPS
F.W.I. Guadeloupe	Le Raizet APP Fort de France APP Le Raizet TWR	16°17'13,01" N 61°27'10,85" W	96 m / 33 m	THALES (THOMSON CSF)	MSSR	250	Asterix cat1 pour les plots pistés Asterix cat 2 pour les tops nord et fins secteur	A and C	APP-SR-I	1999	COMP	4s / 15 rpm	GPS
ANTIGUA ¹	Antigua App	17°18'48,4"N 061°49'02,8"W	153.6 m (503 ft) / ?	ALENIA	MSSR SIR-M	180	Asterix for plots and track Cat 1 and 2	A and C	APP-SR-I	Operational since 11/2000	COMP Output radar data HDLC, RS 232	4s / 15 rpm	GPS

Remarks (includes note on availability of graphic SSR coverage information)

¹ **ANTIGUA** Additional info : - Azimuth Accuracy: Better than 0.07 deg rms., - North alignment : Magnetic., - Range Accuracy: Better than 0.05 NM., - Operational output format: Plots with mode C., - Asterix format: plots and tracks., - PRF: 285 Hz., - Stagger: Off.
- IISLS: Not Available (The SSR can be upgraded to IISLS)., - Responsible entity for the maintenance of the radar: Aeradio Staff., - Contact person for additional technical information: Maurizio Marazzotti
(e-mail address. mmarazzotti@amsjv.it)

STATE	ATS Unit served	Coordinates (degrees/minutes/seconds WGS 84	elevation/ focal height [m]	manufacturer	model	certified SSR coverage [NM]	Data format	modes	type [en- route/terminal]	last update	Asterix	Rotation speed	Time stamping
1	2	3	4	5	6	7	8	9	10	11	12	13	14
BARBADOS ²	Adams Control Terminal Control Unit Adams TWR	13°05'13.285" N 059°29'02.215" W	88.05 m AMSL 21.18 m AGL	RAYTHEON	MSSR CONDOR MK2D	250	Asterix CAT 1, 2 and 34	A and C	APP-SR-I	Installation 10/2001	COMP	6s / 10 rpm	GPS
TRINIDAD	Piarco ACC	10°42'46" N 061°37'59" W **	568 m AMSL 18 m AGL	COSSOR	MSSR	230	Asterix **	A and C	ACC	90	TBD	6s / 10 rpm	Internal clock ***
St MAARTEN	Juliana APP												
USA/ Pico del Este, Porto Rico				RAYTHEON	FPS 57 (PSR)SS R	200	CD-2						
USA St Thomas , VI				TEXAS INSTRUMENT	ASR -8 (PSR)SS R	80 Primary 185 SSR	CD-2						

² **BARBADOS** Additional info : - Controlling Agency : Ministry of International Transport, Technical Director Aviation., - Serial N° N°00003/808136/007/003., - Line type : RS-232.

* Coordinates non WGS84

** To be precised

*** To be upgraded

6 - Agenda Item 5 :

Legal aspect

France presented WP6 proposing an organization of the Radar Sharing in the E/CAR :

- one draft main protocol organizing the creation of the CARIB Radar
- one draft regulation organizing the internal management board functioning

These documents were discussed and amended and are shown in appendices 6 and 7 to this report.

CONCLUSION 2/9

That the attached documents be presented for the approval of the DCAs.

ITEM 5 – APPENDIX 6

DRAFT

PROTOCOL

between (see the list)
regarding the establishment of Seamless
ATS Radar
environment in the E/CAR sub region

Preamble

With compliance to the ICAO Standards and Recommended Practices, the signatories of this document decide to implement up a seamless radar environment in the E/CAR sub region for the benefit of every ATC unit of this sub region.

This implementation contains the collection of the Radar data, their processing and the dissemination after processing.

List of signatories :

BARBADOS, FRANCE, TRINIDAD and TOBAGO, OECS⁽¹⁾

⁽¹⁾ OECS : Organization of Eastern Caribbean States

Article 1

The signatories agree to create “CARIB RADAR” which is the legal entity to coordinate and operate the DACOTA System, to collect the radar data and to disseminate the radar information.

DACOTA System is the Radar Data Process System (RDPS) located in France and managed by France.

The French Government agrees to provide the DACOTA System to Carib Radar free of charge.

Article 2

Every Air Traffic Service provider receiving radar information from the DACOTA shall only use the provided data to ensure efficient and safe operations of Air Traffic.

Article 3

Every radar antenna operator signatory of this protocol agrees to provide their radar data to the RDPS.

Article 4

- The provision of radar data to and from the RDPS shall be free of charge
- The processing of the radar data shall be free of charge
- The transportation of radar data shall be done via the Regional E/CAR AFS network at no charge. In case of failure of the network, the cost incurred by any alternate means shall be the responsibility of the provider of the network.

Article 5

- Every radar antenna operator signatory of this protocol shall ensure that radar data are not corrupted when departing from his site.
- Carib Radar shall endeavor to provide an efficient service to every ATS unit, but will not be responsible, in any case, for any breakdown in the transmission of the radar data, for the quality or accuracy of the radar data, or for misinterpretation of the same.
- Every ATS unit shall be responsible for ensuring that the incoming data is of sufficient quality and accuracy to be exploited.

- Carib Radar shall not accept liability for any loss, damage or injury suffered by any ATS unit or by any other person or organization, arising from the use of the said data.
- According to the regulation in force in each country, each country shall certify the use of the processed radar data and shall define the standards to be complied with.
- Each country shall be responsible for the assessment of ATC and Maintenance staff skills and rating or licensing if necessary.

Article 6

When needed specific technical, operational or financial procedures concerning each domain of Air Traffic Services shall be described in appropriate letters of Agreement.

Article 7

The managerial aspects shall be established and described in a different document called “CARIB RADAR Internal Management Board Regulation”.

Article 8

- This protocol shall remain in force for one year in the first instance, and thereafter until modified or cancelled.
- The parties can modify and cancel this protocol by mutual written agreement.
- This protocol can also be cancelled by any party by written notification to the other parties with an effective date twelve months after their receipt of the notification unless agreement of all the signatories.

Article 9

The present protocol becomes effective on the date of the signature by the parties.

In Fort-de-France
on behalf of Barbados

In Fort-de-France
on behalf of Trinidad & Tobago

In Fort-de-France
on behalf of France

In Fort-de-France
For the OECS

ITEM 5 – APPENDIX 7

DRAFT

**CARIB RADAR
INTERNAL MANAGEMENT BOARD
REGULATION**

Article 1

The Management Board of Carib Radar is composed of the Directors of Civil Aviation from Barbados, France, Trinidad & Tobago, OECS or their representatives duly nominated.

Article 2

The Chairman of the Board is elected by the members of the Board to serve for a period of two years. However, he or she shall not serve for more than two consecutive terms.

Article 3

In case of voting, the voting power shall be as following :

- one vote for each antenna operator
- one vote for the RDPS manager

A simple majority is required in all cases.

In the event of a tie, the Chairman holds a casting vote.

Article 4

- The board shall hold at least one meeting each year.
- The secretary for each meeting, shall be chosen on a rotational basis.
- The site and the date of the meeting shall be decided by the board, the site being chosen on an rotational basis.
- Any member can appoint expert(s) when needed but shall advise the Chairman and the receiving State.

Article 5

Any dispute which may arise between the parties in connection with the agreement and which has not been amicably settled shall go to arbitration and if still unsettled shall be finally resolved by a French court

Article 6

This internal regulation document shall be approved during the first meeting of the board.

Any modification can be made if mutual consent is reached and formal acceptance is notified.

In XXX

Barbados delegation

Signed by(function),
..... (name) with due
authority for and on behalf of
the Ministry of Tourism and
International Transport (BARBADOS)

In XXX

Trinidad and Tobago delegation

Signed by(function),
..... (name) with due
authority for and on behalf of
the Trinidad and Tobago

In XXX

French delegation

Signed by(function),
..... (name) with due
authority for and on behalf of the
Direction Générale de l'Aviation Civile

In XXX

OECS delegation

Signed by(function),
..... (name) with due
authority for and on behalf of the
Organization of East Caribbean
States Civil Aviation Authority

7- Agenda Item 7 :

Training Aspects

7-a- Maintenance Training

France presented WP7 describing a synopsis of modular training for maintenance staff.

The choice of the different modules should be linked to the assessment of technical training needs.

This synopsis is shown in appendix 8 to the report.

7-b- ATC training

Barbados presented DP1 describing the Barbadian offer for the ATC Radar Training.

It was confirmed that they are expecting to offer Standard Training Packages (STP) and the instructors could come from Barbados or Trinidad and Tobago.

These courses are currently offered at no charge, last about 12 weeks (theory and simulation) and are supposed to be followed by approximately 4 months of OJT (On The Job training).

CONCLUSION 2/10

That Barbados provide the TASK FORCE with the radar courses outlines and duration.

ITEM 7 – APPENDIX 8

SYNOPSIS FOR TECHNICAL TRAINING

PREAMBLE

This proposition is based on a Training “by module” conception.

The training is dedicated to technical officers working in civil aviation, which supposes some basic knowledge already possessed by the trainees.

Several modules are proposed, three basic refresher courses and four advanced ones.

According to the knowledge of each officer, one or more basic refresher can be avoided.

THE TRAINING PROPOSITION

Basic refresher courses

- Radar and Data display
- Network (Data transmission and transmission protocols)
- Windows NT and /or 2000 (Administration of the network)

Advanced courses

- Network (High layers, TCP/IP...)
- Network (Configuration of a hub, network monitoring)
- ASTERIX¹ + DACOTA² + ELVIRA³ (Categories, content and description of the messages and the fields, sequence replay)
- IRMA⁴ NT/2000 + CONDOR⁵ (Software configuration and monitoring)

Each module is designed to be given on a five day basis in English language.

Some of them can be provided on the facility in the Caribbean, some others need to use the simulator of our technical department of the Ecole Nationale de l'Aviation Civile, our academy in Toulouse, France.

A rough quotation is about 6250 € + instructor transportation to the island for the “on the site” week course and about 4500 € plus accommodation and travelling costs for the training week at Toulouse, ENAC.

¹ ASTERIX : All purpose **ST**ructured **E**urocontrol **R**adar **I**nformation **eX**change

² DACOTA : **D**ispositif d' **A**ssociation, de **C**orrélation et de **T**raitement radar pour les **A**pproches (Association, correlation and processing system for radar in approaches)

³ ELVIRA : **E**nregistrement, **L**ecture, **V**isualisation **I**nformation **R**adar, (Recording and replay of radar sequences).

⁴ IRMA : **I**ndicateur **R**adar de **M**ouvement d' **A**vion (Radar display)

⁵ CONDOR : **C**ONvertisseur de **D**onnées **R**adar (Converter from radar antenna to DACOTA and sometimes from DACOTA to radar display).