



**Agenda Item 4: Assessment of operational requirements to determine the implementation of improvements in communication, navigation and surveillance (CNS) capabilities for operations in route and terminal area**

**FOLLOW-UP TO REDDIG II PERFORMANCE AND ACTIVITIES**

(Presented by the Secretariat)

<b>SUMMARY</b>	
This working paper presents information on the performance and activities carried out in the SAM Digital Network – REDDIG, since the Twenty-second workshop/meeting of the SAM Implementation Group (SAM/IG/22).	
<b>References:</b>	
<ul style="list-style-type: none"><li>- REDDIG Contract 22501200;</li><li>- Report of the Twenty-second meeting of the REDDIG Coordination Committee - RCC/22 (Lima, Peru, 5-7 March 2019); and</li><li>- Twenty-second workshop/meeting of the SAM Implementation Group – SAM/IG/22 (Lima, Peru, 19-23 November 2018).</li></ul>	
<b>ICAO strategic objectives:</b>	<ul style="list-style-type: none"><li><i>A – Safety</i></li><li><i>B – Air navigation capacity and efficiency</i></li></ul>

**1. Background**

1.1 The SAM/IG/22 meeting reviewed the performance and implementation of activities of REDDIG II since the SAM/IG/21 meeting, and took special note of the increased availability of REDDIG II as reported to the RCC/21 meeting of Technical Cooperation Project RLA/03/901, showing an availability of the network above 99.99%.

**2. Discussion**

2.1 The main activities carried out in REDDIG II during 2019 are presented below, together with an analysis of its operational performance since the SAM/IG/22 meeting. The description mainly covers the following aspects:

- a) REDDIG II training programme
- b) Preventive maintenance programme
- c) REDDIG II operation and analysis of the implementation of new services.

## **REDDIG II training programme**

2.2 The following training activities are scheduled for 2019:

- a) Recurrent training on REDDIG II operation and maintenance;
- b) Seminar/workshop on the basics of services provided through REDDIG;
- c) Course on security policies and firewall configuration;
- d) Advanced course on firewall management and monitoring; and
- e) Training for the Manaus NCC staff on analysis of IP packages with sniffer (radar, AMHS, etc.).

### *Recurrent training on REDDIG II operation and maintenance*

2.3 This training is addressed to the technical staff responsible for the operation and maintenance of a REDDIG station. Some of the issues to be covered are the new implementations, the preventive maintenance work plan, use of WUG tools, troubleshooting of station components and with other stations, aspects to be taken into account in case of new developments. This training is to be conducted during the scheduled visits by the REDDIG Administrator throughout the year.

### *Seminar/workshop on the basics of services provided through REDDIG*

2.4 This workshop is addressed to the technical personnel that operate the REDDIG stations. It will focus on the basics of the services provided through REDDIG II, such as: RADAR, AMHS, AIDC, CPDLC, ADS-C, ADS-B, etc.

2.5 The objective is to develop the capability of analysing voice and data packages carried over the network in each node, using technological software tools available for that purpose, which will permit a better analysis of problems that may arise during the provision of network services.

2.6 The workshop will last three days and will be offered by the REDDIG Administrator during the course of the RTO/08 meeting (Santiago, 30 September - 4 October 2019). For this event, there will be two participants from each REDDIG node and simultaneous interpretation services will be provided.

### *Course on security policies and firewall configuration*

2.7 Subject to the acquisition of the firewall equipment, training would be provided to the technical staff of the REDDIG nodes, NCC personnel and the Administrator.

2.8 Training will seek, in a first stage, to introduce the staff to security policies and, in a second stage, to allow participants to configure the equipment installed in each node.

2.9 The cost involved in the conduction of the course will be included in the purchase of the equipment, while scholarships will be covered by Project RLA/03/901.

2.10 As stated before, this training will be subject to the definitive acquisition of the equipment, reason why it might be postponed until 2020. The SAM Regional Office has already submitted the documents required for the *Technical Cooperation Bureau* (TCB) in Montreal to start the acquisition process.

*Advanced course on firewall management and monitoring*

2.11 This course will be addressed to NCC personnel and the REDDIG Administrator. It is directly related to the “Course on security policies and firewall configuration”, and will thereby be subject to the conduction of the former, since it is a continuation thereof.

2.12 A space will be reserved for the Administrator, one for the Manaus NCC and one for the Ezeiza NCC. Costs involved in the conduction of the course will be included in the purchase of the equipment, while scholarships will be covered by Regional Project RLA 03/901.

*Training for the Manaus NCC staff on analysis of IP packages with sniffer (RADAR, AMHS, etc.)*

2.13 This training is addressed to staff working at the Manaus NCC, tasked with supporting the network and ensuring data transport and integrity.

2.14 It will be carried out throughout the year, starting with theoretical training, and then, using the tools provided, conducting analyses for the assessment, identification and, eventually, resolution of the various issues that may arise in data transmission.

2.15 This training will not entail any spending and will be conducted by the network Administrator.

PREVENTIVE MAINTENANCE PROGRAMME

2.16 As was done in 2018, the REDDIG Administration has scheduled a preventive maintenance programme for 2019 for all REDDIG II teams at the NCCs and REDDIG II nodes.

*Visit to REDDIG nodes*

2.17 The REDDIG Administration, as part of the maintenance and training activities in REDDIG II, has agreed on the need for the REDDIG Administrator to visit two nodes per year to conduct a full assessment of the node and conduct general update training addressed to the staff responsible for node maintenance. The Secretariat of the RCC/22 will decide which nodes will be visited in 2019. Visits will last one week.

REDDIG II OPERATION AND ANALYSIS OF THE IMPLEMENTATION OF NEW SERVICES

*Transfer of the REDDIG II node of Bogota and implementation of a new node in Ezeiza*

2.18 On 23 April 2018, a teleconference was held to approve Amendment VII to contract No. 22501200 between the TCB and INOE/ENGIE, for the transfer of the REDDIG II of Bogota and the implementation of a new node in Ezeiza. **Appendix A** to this working paper contains a summary of the aforementioned teleconference.

2.19 Given the uncertainty regarding the completion of works at the new control tower of Ezeiza, the representatives of Argentina (EANA) requested that the two activities be separated into two amendments, maintaining the transfer of the Bogota node in Amendment VII and holding the implementation of the new Ezeiza node for a future amendment.

2.20 It was noted that, for a new amendment, the process of implementation of the new node of Ezeiza would have to start all over and that a new quote would be required, with the possibility that previously quoted costs might change.

2.21 In accordance with the procedure established during the teleconference, EANA sent a letter formalising the separation of both activities. This was immediately communicated to the TCB by the ICAO South American Regional Office, as shown in the document contained in **Appendix B** to this working paper (English only).

2.22 Accordingly, only the activities for the transfer of the Bogota node are now included in Amendment VII to contract No. 22501200, pending indication by Argentina of the initiation of a new process for conducting the activities for the implementation of the new Ezeiza node.

#### *REDDIG II security analysis*

2.23 During the RCC/22 meeting, the Coordination Committee of Regional Project RLA/03/901 formulated Conclusion RCC/22-4, Acquisition of firewall equipment for REDDIG II, as follows:

<b>Conclusion</b> <b>RCC/22-4</b>		<b>ACQUISITION OF FIREWALL EQUIPMENT FOR REDDIG II</b>	
<b>That the Secretariat:</b> a) At the request of REDDIG member States, and together with the ICAO TCB, purchase firewall equipment for REDDIG II; b) The initial budget assigned for this acquisition would be USD 375,000.00.		<b>Expected impact:</b> <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Technical/Operational	
<b>Why:</b> To better protect the network against cyber attacks and unauthorised access.			
<b>When:</b> 2019/2020		<b>Status:</b> Underway	
<b>Who:</b> RCC/22 Secretariat			

2.24 The South American Regional Office has sent to the Technical Cooperation Bureau the documents required to begin the acquisition process.

#### *Acquisition of spare parts for REDDIG*

2.25 The process for the acquisition of spare parts for REDDIG by the TCB was concluded and the material received was included in the network spare part inventory.

*New last-mile provider of the MPLS service of the Manaus node*

2.26 Given the continuously low availability performance of the MPLS service shown by some nodes of the REDDIG backup network, mainly the Manaus node, the REDDIG Administration held a meeting with CenturyLink on 4 March 2019 at the SAM Regional Office.

2.27 At that meeting, the company agreed to improve the availability of all the nodes that showed performance below the contracted levels. Specifically for the Manaus node, a new last-mile provider (EMBRATEL) had already been hired.

2.28 The change of last-mile provider took place on 25 April 2019, and a significant change was immediately noted in the latency parameter, as shown in Figure 1 below.

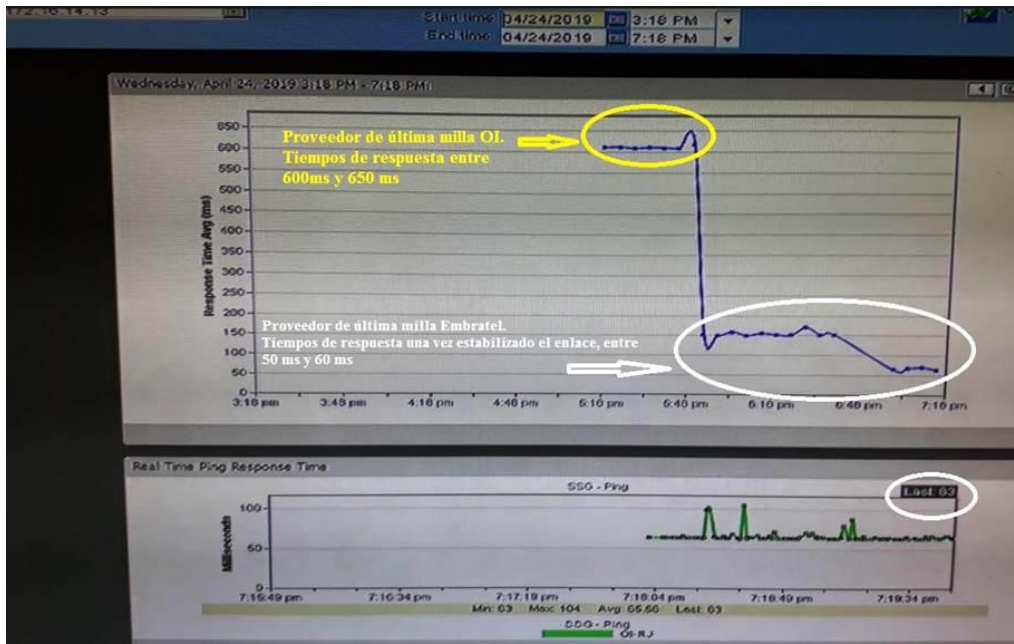


Figure 1 – Latency parameter with the new last-mile MPLS provider in Manaus

2.29 The REDDIG Administrator shall do the follow-up in the coming months to make sure that the availability has reached the agreed level (99.5%) or more.

**2.30 Suggested action**

3.1 The Meeting is invited to:

- a) take note of the information provided;
- b) review the activities conducted and the performance of the REDDIG II since the SAM/IG/22 meeting, shown in section 2 and the corresponding **Appendices A and B** to this working paper; and
- c) consider any other issues it may deem appropriate.

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## APPENDIX A

### SUMMARY OF THE TELECONFERENCE FOR DISCUSSING AMENDMENT VII TO CONTRACT 22501200

(23 April 2019 from 13:30 to 14:20 hours, UTC time)

#### 1. INTRODUCTION

1.1 Amendment VII to contract 22501200 refers to the nodes of Bogotá (Colombia) and Ezeiza (Argentina). The two migrations were included in the same amendment in order to simplify the process.

1.2 On 11 January 2017, the administration of Argentina transferred the amount of USD 464,000.00 to Project RLA/03/901 for the implementation of the new Ezeiza node. On 21 September 2018, the administration of Colombia deposited the amount of USD 177,878.50 in Project RLA/03/901 for the transfer of the Bogotá node.

1.3 The purpose of the teleconference was to discuss the last details for the signing of the amendment with the States (Argentina and Colombia).

1.4 The teleconference took place with the participation of:

##### **Argentina (EANA):**

Fabián Horacio Romero – Gerente C.N.S. – [fromero@eana.com.ar](mailto:fromero@eana.com.ar)

Walter Rupo – Responsable Proyectos C.N.S. – [WRupo@eana.com.ar](mailto:WRupo@eana.com.ar)

Marisa Fornero – Responsables Asuntos OACI – [mfornero@eana.com.ar](mailto:mfornero@eana.com.ar)

##### **Colombia (Aerocivil):**

Robinson Quintero Ladino – Especialista CNS – [robinson.quintero@aerocivil.gov.co](mailto:robinson.quintero@aerocivil.gov.co)

##### **INEO/ENGIE:**

Christophe Emery – Technical Manager – [christophe.emery@engie.com](mailto:christophe.emery@engie.com)

Zénon Peneau – Junior Project Manager – [zenon.peneau@engie.com](mailto:zenon.peneau@engie.com)

##### **OACI (TCB):**

Kristin Moko – Procurement Section, Contracts Unit – [KMoko@icao.int](mailto:KMoko@icao.int)

Patricia Frai – Senior Procurement Associate – [pfrai@icao.int](mailto:pfrai@icao.int)

Pablo Lopez – Technical Officer, Procurement Section – [PLopez@icao.int](mailto:PLopez@icao.int)

##### **ICAO (SAM Office):**

Verónica Chávez – ICAO TA Officer – [vchavez@icao.int](mailto:vchavez@icao.int)

Francisco Almeida – ICAO CNS Officer – [falmeida@icao.int](mailto:falmeida@icao.int)

Javier Vittor – REDDIG Administrator – [jvittor@icao.int](mailto:jvittor@icao.int)

#### 2. MATTERS DISCUSSED

2.1 Note was taken of the need to sign the amendment in order for INEO to start the process and start executing the foreseen agenda, which involves a series of activities related to both locations (Bogotá and Ezeiza).

2.2 The representatives of Argentina noted that they could not specify a precise day or month for the completion of the works at the new tower in Ezeiza, where the new node must be installed. Therefore, and in order not to hinder the migration process of the Bogotá node, they requested a separate amendment for each State. Accordingly, there would be an amendment for the Bogotá node and another for the Ezeiza node.

2.3 In this regard, the TCB stated that there would be no problem in separating the activities into two different amendments, whereby the transfer of the Bogotá node would remain under Amendment VII to contract No 22501200, and the implementation of the new Ezeiza node would be the subject matter of a future amendment, restarting the process all over again.

2.4 The representative of INEO/ENGIE stated that there was no problem with executing two separate processes, acknowledging the situation set forth by EANA, but a new quote would be required, and there was no guarantee that the costs indicated in Amendment VII would be maintained.

2.5 Another point highlighted by the representative of INEO/ENGIE was that a long delay could result in a modification of the equipment, models and hardware features foreseen for the new Ezeiza node, because they would no longer be available in the market.

2.6 The SAM CNS officer and the REDDIG Administrator noted that the implementation of new nodes with equipment other than standard equipment would hinder the spare part maintenance and provision process established by REDDIG. New spare parts were recently acquired and stored at the South American Regional Office, to be used by nodes facing a failure or malfunction of some piece of equipment.

2.7 Another important aspect is that network equipment has already reached half of its expected service life of approximately 10 years ago (it was installed in 2014 and, therefore, manufactured before 2014). Thus, it is quite likely that, during the second half of network service life, some pieces of equipment will be obsolete or discontinued by manufacturers.

2.8 The representative of Colombia expressed their readiness to begin the process for the transfer of the REDDIG node of Bogotá as soon as possible.

2.9 In light of the above, the following action will be taken:

- a) EANA shall send an official letter to the South American Regional Office expressing its intention not to participate in Amendment VII to contract N° 22501200 and shall subsequently indicate when will it be ready to sign the new amendment;
- b) The South American Regional Office will inform the Technical Coordination Bureau (TCB) of the intention expressed by EANA;
- c) TCB will proceed to separate the activities involved in the implementation of a new node in Ezeiza, keeping in Amendment VII to contract No 22501200 only the activities for the transfer of the Bogotá node;
- d) TCB will coordinate con INEO/ENGIE for the signature of the modified amendment;
- e) Colombia shall officially confirm the focal points for the activities involved in the transfer of the Bogotá node;
- f) Once the contract has been signed, INEO/ENGIE shall submit a timetable for the conduction of the activities for the transfer of the REDDIG node of Bogotá, at a teleconference to be coordinated by the ICAO South American Regional Office, and which will mark the beginning of work.

## APPENDIX B

INTER-OFFICE MEMORANDUM

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## URGENT

LN 3/20.2– SA5261

Lima, 25 April 2019

To: D/TCB

Cc: C/PRO, FOS/PIU

From: ICAORD, Lima

Subject: **RLA/03/901, System for the Management of the REDDIG and the Administration of the Satellite Segment – Amendment VII to Contract 22501200**

With reference to the attached letter GCIA INF Y TEC No. 28/19, dated 23 April 2019, received from EANA (Argentina Aerial Navigation Authority) informing that Argentina is not in a position to determine the work completion date in the new Ezeiza's Tower, and in order not to harm the State of Colombia, requests to exclude Argentina from Amendment VII of Contract 22501200

Consequently, I would very much appreciate if you proceed with this request.

Thank you very much for your prompt attention

Regards,



Fabio Faizi Rahnemay Rabbani

Enc.