

INTERNATIONAL CIVIL AVIATION ORGANIZATION
EIGHTH MEETING OF CIVIL AVIATION AUTHORITIES OF THE SAM REGION
(RAAC/8)

(Buenos Aires, Argentina, 23 – 25 April 2003)

Agenda Item 4: Regional Air Navigation Plan – Transition to the CNS/ATM systems

**REGIONAL TECHNICAL CO-OPERATION PROJECT RLA/98/019-SOUTH AMERICAN
DIGITAL NETWORK (REDDIG)**

(prepared by the Secretariat)

Summary

This working paper presents the status of the REDDIG, highlighting the aspects that remain outstanding following the provisional acceptance tests (PSAT) of the REDDIG nodes. It also describes the objectives of the new regional technical co-operation project RLA/03/091, which will ensure the continuity of REDDIG management, the study of a multinational administration, as well as the implementation of the new CNS/ATM elements through the REDDIG.

References:

- S UNDP/ICAO Regional Technical Co-operation Project document RLA/98/019; and
- S Report of the Fourth REDDIG Co-ordination Meeting (RCC/4).

1. Introduction

1.1 The South American Digital Network – REDDIG will start operations in the middle of the second quarter of 2003. **Appendix A** to this working paper presents the timetable of activities; however, note should be taken that it requires updating to accommodate PSAT results. Information paper RAAC/8-NI/04 of this meeting describes the activities carried out during the provisional acceptance (PSAT) of the REDDIG nodes.

1.2 During the course of the PSATs, it was noted that many of the preparatory activities that had to be carried out by the States had not been fulfilled, mainly the preparation of the access at the level of the ATC consoles for the speech circuit operating through the REDDIG, the implementation of the proper interphases for connecting AFTN circuits to the REDDIG node, the availability of a backup circuit in the event of total failure of the node, the availability of a telephone line for remote access to the node for remote maintenance, and the physical connection between the GNSS trial augmentation network nodes and the corresponding REDDIG nodes.

1.3 The network management system, as well as its maintenance, will be handled by project RLA/98/019 during the six months following the start-up date of the REDDIG. During this period, the network will be managed through the REDDIG node in Lima, having Buenos Aires as the alternate node. To this end, a dedicated digital circuit was implemented between the two locations in order to transfer the management functions in case of a failure in the operating management centre.

1.4 In order to have continuity in terms of network management, maintenance, payment of the space segment, and planning of the new services to be introduced in the network, a project document was prepared, the RLA/03/901, which was reviewed during the Fourth Meeting of the REDDIG Co-ordination Committee held in Lima, on 30-31 January 2003. The project document, once revised, will be circulated to all the States in the Region for approval.

1.5 Project RLA/03/901 will also study and prepare a proposal for the creation of a multinational mechanism for the definitive management of the REDDIG, taking into account the studies to be carried out by GREPECAS in that respect.

1.6 Once the six months of management under project RLA/98/019 are over, the REDDIG would be managed through project RLA/03/901 for the following two years. In this regard, after the first six months, the network would be managed by the network control centres (NCC) in Manaus and Buenos Aires, and, in the event of a contingency, by the Montevideo and Bogota nodes, pursuant to that established in Conclusion RCC3/3 of the Third REDDIG Co-ordination Meeting (Lima, 6-7 November 2002).

1.7 Once the two years of REDDIG management and maintenance through the UNDP/ICAO technical co-operation project RLA/03/901 are over, it is expected that the final administration of the REDDIG will be done subject to an institutional arrangement proposed by said project.

2. **Analysis**

Outstanding actions to be carried out by the States for the implementation of the REDDIG

REDDIG node operating license

2.1 According to the information available to the project, very few States have obtained the license to operate the REDDIG nodes (Chile, Colombia, Guyana and Uruguay). In order to avoid inconveniences in the future operation of the REDDIG, aeronautical administrations should request and obtain the respective licenses, as soon as possible. **Appendix B** shows the progress made in the obtention of said licenses.

Back-up network circuit

2.2 In order to maintain a high degree of availability in the operation of the REDDIG, a back-up network for the main VSAT network needs to be implemented. In this regard, each node of the REDDIG should include a connection to the ISDN public network or have a dedicated digital circuit for the automatic routing of traffic to another REDDIG node in the event of failure of the main system.

2.2.1 The provisional acceptance tests (PSAT) of the REDDIG nodes revealed that many States did not have ISDN services. For this reason, those States that do not have this service should implement a 64Kbits/sec dedicated ground digital circuit with another REDDIG node. **Appendix C** shows a possible solution through dedicated connections between State pairs. Non-implementation of back-up circuits could reduce network availability; consequently, the States must display the necessary efforts for their implementation.

Telephone line for remote maintenance

2.3 For remote monitoring of the REDDIG nodes, each State involved in the REDDIG should implement an international direct dialing line with the public telephone network. Through this line, the equipment manufacturer could carry out maintenance work when required.

Connection of AFTN, ATS speech circuits and other services

2.4 During the provisional acceptance tests (PSAT) of the REDDIG nodes, which took place from 3 February to 28 March 2003, all the functional tests on all of the subsystems that compose the REDDIG were carried out.

2.5 In the communication interphase subsystem, aeronautical fixed service communications, such as the AFTN and the ATS speech network circuits, were installed and verified. Since most of these circuits are operating in the current conventional networks leased to communication service providers, connection tests were only carried out through the REDDIG connections, but the connection was not left for normal operation. In some places, where the AFTN or speech communication service was not in operation for a long time, the service was transferred to the REDDIG.

2.6 Regarding the AFTN service, there are some States that need to take urgent steps so that this service can be provided through the REDDIG. In this sense, the aeronautical administration of Guyana, in order to take advantage of the REDDIG potential, would need to install a new message switching service. Suriname would have to restore its AFTN to normal operation, and Paraguay would need to have the proper interfaces (current loop to RS 232) in order to connect the AFTN system to the REDDIG node, because of its many years of service. Failure to implement the above would deprive the aforementioned States of the advantages that the REDDIG offers to AFTN service.

2.7 Regarding ATS speech circuits, the numbering system to be used in each of the nodes was programmed, and functionality tests were carried out during the PSAT. Likewise, the respective connections between the voice switching systems and the REDDIG node were made. For the network functionality test, all the States need to programme their voice switching systems so that ATS speech communication services are available in each of the respective ACC control positions.

2.8 During the PSATs, it was foreseen that the GNSS augmentation trial system nodes would be connected to the REDDIG nodes, but it was not possible since the physical link between the GNSS LAN and the corresponding REDDIG node was not available. For the NAT network acceptance tests, the States involved must implement the necessary circuits.

2.9 By way of information for the meeting, **Appendix D** presents in detail the outstanding issues, by State, that need to be resolved in order to implement the REDDIG.

2.10 The meeting should note that the successful implementation of the the REDDIG within the time periods foreseen will depend on the urgent implementation of the corresponding corrective action by each State, according to the outstanding issues detected during the PSATs. In this respect, the formulation of the following conclusion is proposed:

CONCLUSION 8/X X- IMPLEMENTATION OF THE REDDIG

That, as a matter of urgency, and in order to successfully put the REDDIG in operation in the time foreseen, the States participating in UNDP/ICAO technical co-operation project RLA/98/019 make utmost efforts to resolve, before the REDDIG network tests (NAT), all the outstanding issues listed in **Appendix....** to this part of the report, which were identified during the provisional acceptance tests (PSAT) carried out by the project, the contracting company and the State counterpart.

REDDIG management and the new Regional Technical Co-operation Project RLA/03/901

2.11 As previously indicated, project RLA/98/019 will take care of the initial management of the REDDIG for six months. In this regard, the REDDIG management nodes were defined at the Third Meeting of the Co-ordination Committee of said project (RCC/3). Conclusion RCC3/2 established that the Manaus and Buenos Aires nodes would be the main network control centres (NCC), and, in the event of a contingency, the Montevideo and Bogota nodes.

2.12 Consideration was also given to the way in which the shared costs for the satellite segment lease and maintenance would be distributed. Conclusion RCC3/6 considered that the satellite segment costs would be initially distributed on the basis of the bandwidth used by each node and, subsequently, on the basis of actual traffic.

2.13 For purposes of the future management of the REDDIG after meeting the objectives of project RLA/98/019, the Regional Office circulated letter SA/5065 on 16 January 2003, containing a new Regional Technical Co-operation Project, the RLA /03/901, for comments. The Fourth Meeting of the Co-ordination Committee of project RLA/98/019 (RCC/4) examined said project and made some amendments to it. ICAO, after introducing the corresponding amendments, went on to circulate the revised project document among the States for approval.

2.14 The project document contemplates three objectives. The first objective is:

To develop a proposal for the creation of an international mechanism for the definitive management of the REDDIG, taking into account the studies to be conducted by GREPECAS in that respect.

2.14.1 The proposal of a multinational mechanism for the definitive administration of the REDDIG, once developed, will be presented to the SAM States, GREPECAS and the Meeting of Civil Aviation Authorities of the SAM Region for review. Once comments are received, they will be evaluated for their incorporation into the final proposal. Then, the final proposal would be circulated among the States, requesting their approval. It is important to note, in this respect, that the RAAC/7 meeting formulated Conclusion 7/7 (Agreements for the technical management and administration of the REDDIG). In this regard, it may be noted that this important conclusion is being complied with through the objective described in the previous paragraph. The RLA/03/901 project proposal is expected to be implemented by the States as a mechanism for REDDIG management.

2.14.2 The second objective is an interim measure while the aforementioned is implemented, and is intended to give continuity to REDDIG management for a period of two years. It is formulated as follows:

REDDIG management under the conditions established by RCC/3 (Operation of the REDDIG under project management for a period of two years, REDDIG budget and space segment leasing)

2.14.3 The project will contemplate the administration of the REDDIG for a period of two years up until the transition to the definitive multinational mechanism, providing the services required to maintain the REDDIG in operation, such as advise to the States, monitoring and control of network operation, management of network configuration, verification of maintenance programmes, proposal of a spare part management procedure for the network and preparation of the network maintenance annual budget.

2.14.4 An important element is the leasing of the space segment. In this respect, the project established the most suitable arrangement for leasing the space segment from PanamSat. This arrangement within the new project must be agreed with PanamSat by 30 April 2003, in order to proceed with the signing of the corresponding contract.

To plan the regional development of CNS/ATM applications and implement said applications in keeping with CAR/SAM FASID requirements and project RLA 98/003

2.14.5 Project RLA/03/91 also includes a study of the regional development of CNS/ATM applications deemed necessary in the CAR/SAM Regions. In this sense, the third objective is as follows:

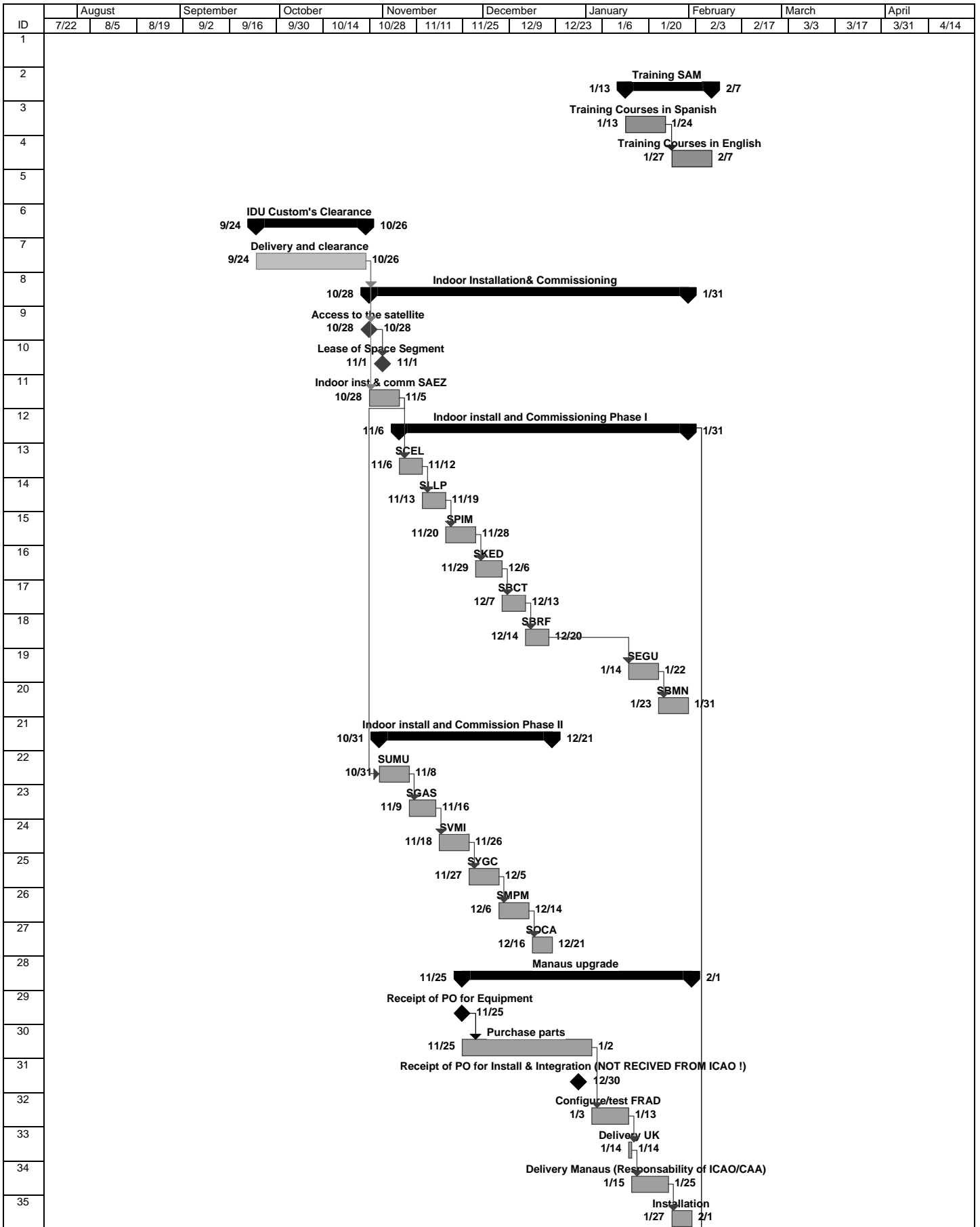
2.15 Regarding the approval of the new project RLA/03/901, all the States, with the exception of Colombia, are in agreement with its implementation. It is important for the States to note that, in the event that Colombia does not participate in the project, the Region must reach an agreement with Colombia so that its REDDIG node may, for technical reasons, take advantage of the satellite segment within the bandwidth to be hired by ICAO for this network, so that its current programming will cause no problems for its future operation. In this respect, the Regional Office is co-ordinating with Colombia so as to obtain its participation in the new project, or to establish a memorandum of understanding between Colombia and the States participating in the new project and ICAO, so as to facilitate the use of REDDIG services in the region as foreseen.

3. **Proposed action**

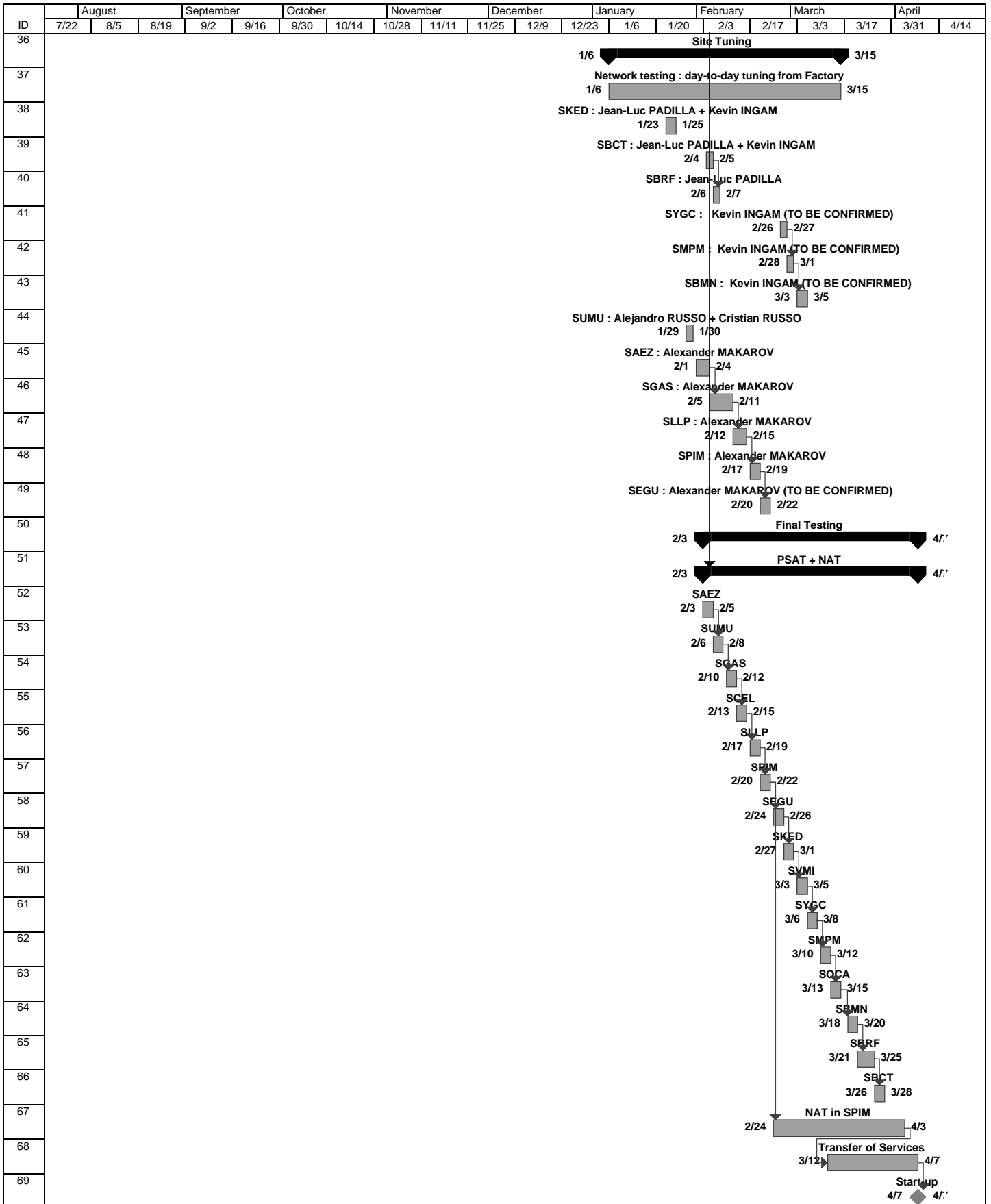
3.1 The meeting is invited to take note of the information presented in this working paper, in order to:

- a) take note of PSAT results, and formulate the draft conclusion indicated in paragraph 2.10 above; and
- b) take note of the activities foreseen under project RLA/03/901 and of the possibility that Colombia will not participate in said project, in which case, a special arrangement would be needed with Colombia in order to maintain the integrity of REDDIG operation.

REDDIG



REDDIG



APPENDIX B
LICENSE STATUS (*)

STATE	NODES	LICENSE FORMAT SUBMITTED TO THE OFFICE OF THE PROJECT		LICENSE FORMAT SUBMITTED TO THE REGULATORY BODY FOR APPROVAL		ADDITIONAL INFORMATION REQUESTED FROM THE OFFICE OF THE PROJECT		LICENSE FORMAT SUBMITTED TO THE REGULATORY AGENCY FOR APPROVAL		COPY OF THE LICENSE SENT TO THE OFFICE OF THE PROJECT
		REC.	RESP	REC	RESP	REC	RESP	REC	RESP	
Argentina	SAEZ	X	X	X	OUTSTANDING	X	X			
Bolivia	SLLP	X	X	X	OUTSTANDING	X	X			
Brasil	SBMN	X	X	X						
Brasil	SBRF	X	X	X						
Brasil	SBCT	X	X	X						
Chile	SCEL	X	X	X	X	NA	NA	NA	NA	X
Colombia	SKED	X	X	X	X	X	X	X	X	X
Ecuador	SEGU	X	X	X	OUTSTANDING	X	X	X		
Francia	SOCA	X (2)	X							
Guyana	SYGC	X	X	X	X	X (1)	X (1)	NA	NA	X (1)
Paraguay	SGAS			X	OUTSTANDING	X	X			
Peru	SPIM	X	X	X						
Suriname	SMPM									
Uruguay	SUMU	X	X	X	APPROVED	NA	NA	NA	NA	X
Venezuela	SVMI	X	X	X	OUTSTANDING	X	X	X		

Legend

NA: Not applicable

Notes:

- (1) License update
- (2) France is co-ordinating directly with SEEE

(*) This is the latest information available and is updated as of 16 January 2003.

APPENDIX C

CONNECTIONS FOR THE REDDIG BACKUP NETWORK

SAEZ	SUMU
SLLP	SCEL
SBMN	SBRF
SBCT	SBRF
SKED	SVMI
SOCA	SBRF
SEGU	SPIM
SMPB	SYGC

APPENDIX D**ACTIVITIES RELATED TO THE REDDIG NODES PENDING IMPLEMENTATION BY THE STATES AS A RESULT OF THE PSATs****ARGENTINA***AFTN*

Programme new AFTN ports in the message switch and connect them to the MUX FRAD CX950 B multiplexer, whose ports are duly identified. The number of ports is six:

SAEZ	SCEL
SAEZ	SUMU
SAEZ	SGAS
SAEZ	SLLP
SAEZ	SPIM
SAEZ	SBCT/SBBR

ATS SPEECH CIRCUITS

Programme the ACC VCCS speech circuit switching system, which allows the controller in the ATC console position to access voice communication services, so that each console position may have the dedicated and switched ATS speech circuits that are consistent with the operations of the Ezeiza control centre.

Make the respective connections between the VCCS and the MUX FRAD CX950 B multiplexer of the REDDIG node, whose ports are duly identified.

Dedicated ATS circuits

The dedicated ATS circuits to be programmed in the VCCS and connected from the VCCS to the FRAD CX950 B multiplexer are:

SAEZ	SCEL
SAEZ	SUMU
BAIRES	CARRASCO APP
BAIRES	SUMU
SAEZ	CARRASCO APP

Switched ATS circuits

The switched ATS circuits to be programmed in the VCCS and connected to the FRAD CX950 B multiplexer will provide the following connections:

SARE /SAEZ SGAS
 SACO/ SAEZ SCEL
 SACO/SAEZ SLLP
 SAVC/SAEZ SCEL/SCTE
 SAVC/SAEZ SCEL/SCCI
 SARE /SAEZ SBCT
 SARE/ SAEZ SUMU
 SARE/SAEZ SUMU/SUCA
 SARE/SAEZ SBCT/SBWI
 SAZS/SAEZ SCEL/SCTE

ADMINISTRATIVE NETWORK VOICE COMMUNICATIONS

Connect the respective telephones at the locations assigned by the Aeronautical Administration for administrative communications to the FRAD CX950 B multiplexer, whose ports are duly identified.

GNSS DATA

Establish the physical connection between the DB60 serial outlet of the Cisco 2501 router of the GNSS augmentation trial system TRS and the FRAD CX950 B multiplexer, whose ports are duly identified (winchester V.35 connector of the TRS node connected to the V.35 connector in the REDDIG rack).

BACK-UP NETWORK CIRCUIT

Each REDDIG node should include a connection to the ISDN public network (Project RLA/98/01 page 3.27) for automatic traffic routing to another REDDIG node in case of failure of the main circuits. Since there is no ISDN service available, a dedicated circuit must be implemented. See Appendix C.

SWITCHED TELEPHONE LINE (PSTN)

Implement a switched telephone line (PSTN) (Project RLA/98/01 page 3.39) to be used exclusively to support the network management system for operations such as remote maintenance. Modems are contemplated within the REDDIG equipment.

OPERATION LICENSE FOR VSAT STATION

Complete the procedures to obtain the operation license for the local VSAT station.

BOLIVIA

AFTN

Programme new AFTN ports in the message switch and connect them to the MUX FRAD CX950 B multiplexer, whose ports are duly identified. The number of ports is three:

SLLP SBCT/SBBR
 SLLP SAEZ
 SLLP SPIM

ATS SPEECH CIRCUITS

Programme the new PBAX exchange so that each ATC console position may have the dedicated and switched ATS speech circuits that are consistent with the operations of the La Paz control centre.

Make the respective connections between the PBAX and the MUX FRAD CX950 B multiplexer, whose ports are duly identified.

Dedicated ATS circuits

The dedicated ATS circuits to be programmed in the PBAX and connected from the PBAX to the FRAD CX950 B multiplexer are:

SLLP	SPIM
SLLP	SBMN/SBPH

Switched ATS circuits

The switched ATS circuits to be programmed in the PBAX and connected from the PBAX to the FRAD CX950 B multiplexer will provide the following connections:

SLLP	SCEL
SLLP	SBCT/SBBR
SLLP	SAEZ/SACO
SLLP	SBCT
SLLP	SGAS

ADMINISTRATIVE NETWORK VOICE COMMUNICATIONS

Connect the respective telephones at the locations assigned by the Aeronautical Administration for administrative communications to the FRAD CX950 B multiplexer, whose ports are duly identified.

GNSS DATA

Establish the physical connection between the DB60 serial outlet of the Cisco 2501 router of the GNSS augmentation trial system TRS to the FRAD CX950 B multiplexer, whose ports are duly identified (winchester V.35 connector of the TRS node connected to the V.35 connector in the REDDIG rack).

BACK-UP NETWORK CIRCUIT

Each REDDIG node should include a connection to the ISDN public network (Project RLA/98/01 page 3.27) for automatic traffic routing to another REDDIG node in case of failure of the main circuits. Since there is no ISDN service available, a dedicated circuit must be implemented. See Appendix C.

SWITCHED TELEPHONE LINE (PSTN)

Implement a switched telephone line (PSTN) (Project RLA/98/01 page 3.39) to be used exclusively to support the network management system for operations such as remote maintenance. Modems are contemplated within the REDDIG equipment.

OPERATION LICENSE FOR VSAT STATION

Complete the procedures to obtain the operation license for the local VSAT station.

BRAZIL**CURITIBA***AFTN*

Programme new AFTN ports in the message switch and connect them to the MUX FRAD CX950 B multiplexer, whose ports are duly identified. The number of ports is four:

SBBR/SBCT SLLP
 SBBR/SBCT SAEZ
 SBBR/SBCT SUMU
 SBBR/SBCT SGAS

ATS SPEECH CIRCUITS

Programme the ACC VCCS speech circuit switching system, which allows the controller in the ATC console position to access voice communication services, so that each console position may have the dedicated and switched ATS speech circuits that are consistent with the operations of the Curitiba control centre.

Make the respective connections between the VCCS and the MUX FRAD CX950 B multiplexer, whose ports are duly identified.

Dedicated ATS circuits

The dedicated ATS circuits to be programmed in the VCCS and connected from the VCCS to the FRAD CX950 B multiplexer are:

SBCT SGAS
 SBCT SUMU

Switched ATS circuits

The switched ATS circuits to be programmed in the VCCS and connected from the VCCS to the FRAD CX950 B multiplexer will provide the following connections:

SBBR/SBCT	SLLP
SBCT	SAEZ/SARE
SBCT	SLLP
SBWI/SBCT	SAEZ/SARE
SBWI/SBCT	SGAS
SBWI/SBCT	SBRF
SBCT	SBMN

ADMINISTRATIVE NETWORK VOICE COMMUNICATIONS

Connect the respective telephones at the locations assigned by the Aeronautical Administration for administrative communications to the FRAD CX950 B multiplexer, whose ports are duly identified.

BACK-UP NETWORK CIRCUIT

Each REDDIG node should include a connection to the ISDN public network (Project RLA/98/01 page 3.27) for automatic traffic routing to another REDDIG node in case of failure of the main circuits. If the ISDN service is not implemented, a dedicated circuit must be implemented. For connection, see Appendix C.

SWITCHED TELEPHONE LINE (PSTN)

Implement a switched telephone line (PSTN) (Project RLA/98/01 page 3.39) to be used exclusively to support the network management system for operations such as remote maintenance. Modems are contemplated within the REDDIG equipment.

GNSS DATA

Establish the physical connection between the GNSS augmentation system master station located in Rio de Janeiro and the FRAD CX950 B multiplexer, whose ports are duly identified. To this end, one of the REDDIG nodes of Brazil would have to be selected.

OPERATION LICENSE FOR VSAT STATION

Complete the procedures to obtain the operation license for the local VSAT station.

RECIFE

AFTN

Programme new AFTN ports in the message switch and connect them to the MUX FRAD CX950 B multiplexer, whose ports are duly identified.

SBCT SVMI

ATS SPEECH CIRCUITS

Programme the ACC VCCS speech circuit switching system, which allows the controller in the ATC console position to access voice communication services, so that each console position may have the dedicated and switched ATS speech circuits that are consistent with the operations of the Recife control centre.

Make the respective connections between the VCCS, through its interphases to the external trunk circuits, and the MUX FRAD CX950 B multiplexer, whose ports are duly identified.

Switched ATS circuits

The switched ATS circuits to be programmed in the VCCS and connected from the VCCS to the FRAD CX950 B multiplexer will provide the following connections:

SBRF SOCA
SBRF SUMU
SBRF SBMN
SBRF SBCT

ADMINISTRATIVE NETWORK VOICE COMMUNICATIONS

Connect the respective telephones at the locations assigned by the Aeronautical Administration for administrative communications to the FRAD CX950 B multiplexer, whose ports are duly identified.

BACK-UP NETWORK CIRCUIT

Each REDDIG node should include a connection to the ISDN public network (Project RLA/98/01 page 3.27) for automatic traffic routing to another REDDIG node in case of failure of the main circuits. If the ISDN service is not implemented, a dedicated circuit must be implemented. For connection, see Appendix C.

SWITCHED TELEPHONE LINE (PSTN)

Implement a switched telephone line (PSTN) (Project RLA/98/01 page 3.39) to be used exclusively to support the network management system for operations such as remote maintenance. Modems are contemplated within the REDDIG equipment.

OPERATION LICENSE FOR VSAT STATION

Complete the procedures to obtain the operation license for the local VSAT station.

MANAUS*AFTN*

Programme new AFTN ports in the message switch and connect them to the MUX FRAD CX950 B multiplexer, whose ports are duly identified.

The number of ports is five:

SBBR/SBMN SOCA
SBBR/SBMN SMPB
SBBR/SBMN SYGC
SBBR/SBMN SKED
SBBR/SBMN SPIM

ATS SPEECH CIRCUITS

Programme the ACC VCCS speech circuit switching system, which allows the controller in the ATC console position to access voice communication services, so that each console position may have the dedicated and switched ATS speech circuits that are consistent with the operations of the Manaus control centre.

Make the respective connections between the VCCS and the MUX FRAD CX950 B multiplexer, whose ports are duly identified.

Dedicated ATS circuits

The dedicated ATS circuits to be programmed in the VCCS and connected from the VCCS to the FRAD CX950 B multiplexer are:

SBMN	SVMI
SBMN	SKED
SBMN	SKED/SKLT
SBPH/SBMN	SKED
SBPH/SBMN	SLLP

Switched ATS circuits

The switched ATS circuits to be programmed in the VCCS and connected from the VCCS to the FRAD CX950 B multiplexer will provide the following connections:

SBBE/SBMN	SMPB
SBBE/SBMN	SOCA
SBMN	SYGC
SBPH/SBMN	SPIM
SBMN	SBRF
SBMN	SBCT

ADMINISTRATIVE NETWORK VOICE COMMUNICATIONS

Connect the respective telephones at the locations assigned by the Aeronautical Administration for administrative communications to the FRAD CX950 B multiplexer, whose ports are duly identified.

BACK-UP NETWORK CIRCUIT

Each REDDIG node should include a connection to the ISDN public network (Project RLA/98/01 page 3.27) for automatic traffic routing to another REDDIG node in case of failure of the main circuits. If the ISDN service is not implemented, a dedicated circuit must be implemented. For connection, see Appendix C.

SWITCHED TELEPHONE LINE (PSTN)

Implement a switched telephone line (PSTN) (Project RLA/98/01 page 3.39) to be used exclusively to support the network management system for operations such as remote maintenance. Modems are contemplated within the REDDIG equipment.

OPERATION LICENSE FOR VSAT STATION

Complete the procedures to obtain the operation license for the local VSAT station.

*CHILE**AFTN*

Programme new AFTN ports in the message switch and connect them to the MUX FRAD CX950 B multiplexer, whose ports are duly identified.

The number of ports is two:

SCEL SPIM

SCEL SAEZ

ATS SPEECH CIRCUITS

Programme the ACC VCCS speech circuit switching system, which allows the controller in the ATC console position to access voice communication services, so that each console position may have the dedicated and switched ATS speech circuits that are consistent with the operations of the Santiago control centre.

Make the respective connections between the VCCS, through its interphases to the external trunk circuits, and the MUX FRAD CX950 B multiplexer, whose ports are duly identified.

Dedicated ATS circuits

The dedicated ATS circuits to be programmed in the VCCS and connected from the VCCS to the FRAD CX950 B multiplexer are:

SCEL SPIM

SCEL SAEZ/SAME

Switched ATS circuits

The switched ATS circuits to be programmed in the VCCS and connected from the VCCS to the FRAD CX950 B multiplexer will provide the following connections:

SCEL SAEZ/SACO

SCEL SLLP

SCTE/SCEL SAEZ/SAVC

SCCI/SCEL SAEZ/SAVC

SCTE/SCEL SAEZ/SAZS

ADMINISTRATIVE NETWORK VOICE COMMUNICATIONS

Connect the respective telephones at the locations assigned by the Aeronautical Administration for administrative communications to the FRAD CX950 B multiplexer, whose ports are duly identified.

GNSS DATA

Establish the physical connection between the GNSS augmentation trial equipment TMS to the FRAD CX950 B multiplexer of the REDDIG, whose ports are duly identified.

BACK-UP NETWORK CIRCUIT

Each REDDIG node should include a connection to the ISDN public network (Project RLA/98/01 page 3.27) for automatic traffic routing to another REDDIG node in case of failure of the main circuits. Since there is no ISDN service available, a dedicated circuit must be implemented. For connection, see Appendix C.

SWITCHED TELEPHONE LINE (PSTN)

Implement a switched telephone line (PSTN) (Project RLA/98/01 page 3.39) to be used exclusively to support the network management system for operations such as remote maintenance. Modems are contemplated within the REDDIG equipment.

COLOMBIA

AFTN

Programme new AFTN ports in the message switch and connect them to the MUX FRAD CX950 B multiplexer, whose ports are duly identified.

The number of ports is two:

- SKED SPIM
- SKED SEGU
- SKED SBMN/SBBR
- SKED SVMI

ATS SPEECH CIRCUITS

Programme the ACC VCCS speech circuit switching system, which allows the controller in the ATC console position to access voice communication services, so that each console position may have the dedicated and switched ATS speech circuits that are consistent with the operations of the Bogota control centre.

Make the respective connections between the VCCS, through its interphases to the external trunk circuits, and the MUX FRAD CX950 B multiplexer, whose ports are duly identified.

Dedicated ATS circuits

The dedicated ATS circuits to be programmed in the VCCS and connected from the VCCS to the FRAD CX950 B multiplexer are:

- SKED SEGU
- SKED SPIM
- SKED SVMI
- SKED SBMN
- SKED SBMN/SBPH
- SKEC/SKED SVMI

SKLT/SKED SVMI

Switched ATS circuits

The switched ATS circuits to be programmed in the VCCS and connected from the VCCS to the FRAD CX950 B multiplexer will provide the following connections:

SKAN/SKED SEGU

SKCL /SKED SEGU

SKLT/SKED SPIM

SKCC /SKED SVMI

ADMINISTRATIVE NETWORK VOICE COMMUNICATIONS

Connect the respective telephones at the locations assigned by the Aeronautical Administration for administrative communications to the FRAD CX950 B multiplexer, whose ports are duly identified.

GNSS DATA

Establish the physical connection between the DB60 serial outlet of the Cisco 2501 router of the GNSS augmentation equipment reference station and the FRAD CX950 B multiplexer, whose ports are duly identified (winchester V.35 connector of the TRS node connected to the V.35 connector in the REDDIG rack).

BACK-UP NETWORK CIRCUIT

Each REDDIG node should include a connection to the ISDN public network (Project RLA/98/01 page 3.27) for automatic traffic routing to another REDDIG node in case of failure of the main circuits. If the ISDN service is not implemented, a dedicated circuit must be implemented. For connection, see Appendix C.

SWITCHED TELEPHONE LINE (PSTN)

Implement a switched telephone line (PSTN) (Project RLA/98/01 page 3.39) to be used exclusively to support the network management system for operations such as remote maintenance. Modems are contemplated within the REDDIG equipment.

ECUADOR

AFTN

Programme new AFTN ports in the message switch and connect them to the MUX FRAD CX950 B multiplexer, whose ports are duly identified.

The number of ports is three:

SEGU SPIM

SEGU SKED

SEGU SVMI

ATS SPEECH CIRCUITS

Programme the PBAX exchange so that each ATC console position may have the dedicated and switched ATS speech circuits that are consistent with the operations of the Guayaquil control centre.

Make the respective connections between the PBAX, through its interphases to the external trunk circuits, and the MUX FRAD CX950 B multiplexer, whose ports are duly identified.

Dedicated ATS circuits

The dedicated ATS circuits to be programmed in the PBAX and connected from the PBAX to the FRAD CX950 B multiplexer are:

SEGU SPIM
SEGU SKED

Switched ATS circuits

The switched ATS circuits to be programmed in the PBAX and connected from the PBAX to the FRAD CX950 B multiplexer will provide the following connections:

SEGU SKAN/SKED
SEGU SKCL /SKED

ADMINISTRATIVE NETWORK VOICE COMMUNICATION

Connect the respective telephones at the locations assigned by the Aeronautical Administration for administrative communications to the FRAD CX950 B multiplexer, whose ports are duly identified.

BACK-UP NETWORK CIRCUIT

Each REDDIG node should include a connection to the ISDN public network (Project RLA/98/01 page 3.27) for automatic traffic routing to another REDDIG node in case of failure of the main circuits. Since there is no ISDN service available, a dedicated circuit must be implemented. For connection, see Appendix C.

SWITCHED TELEPHONE LINE (PSTN)

Implement a switched line (PSTN) (Project RLA/98/01 page 3.39) to be used exclusively to support the network management system for operations such as remote maintenance. Modems are contemplated in the REDDIG equipment.

OPERATION LICENSE FOR VSAT STATION

Complete the procedures to obtain the operation license for the local VSAT station.

FRENCH GUYANA***AFTN***

Programme new AFTN ports in the message switch and connect them to the MUX FRAD CX950 B multiplexer, whose ports are duly identified.

The number of ports is two:

SOCA	SVMI
SOCA	SBMN/SBBR

ATS SPEECH CIRCUITS

Programme the ACC VCCS speech circuit switching system, which allows the controller in the ATC console position to access voice communication services, so that each console position may have the dedicated and switched ATS speech circuits that are consistent with the operations of the Cayenne control centre.

At the same time, the respective connections have to be made between the VCCS, through its interphases to the external trunk circuits, and the MUX FRAD CX950 B multiplexer whose ports are duly identified.

Switched ATS circuits

the switched ATS circuits to be programmed in the VCCS and connected from the VCCS to the FRAD CX950 B multiplexer will provide the following connections:

SOCA	SBMN/SBBE
SOCA	SMPM
SOCA	SBRF

ADMINISTRATIVE NETWORK VOICE COMMUNICATIONS

Connect the respective telephones at the locations assigned by the Aeronautical Administration for administrative communications to the FRAD CX950 B multiplexer whose ports are duly identified.

BACK-UP NETWORK CIRCUIT

Each REDDIG node should include a connection to the ISDN public network (Project RLA/98/01 page 3.27) for automatic traffic routing to another REDDIG node in case of failure of the main circuits. If the ISDN service is not implemented, a dedicated circuit must be implemented. For connection, see Appendix C.

OPERATION LICENSE FOR VSAT STATION

Complete the procedures to obtain an operation license for the local VSAT station.

GUYANA

AFTN

Since, at present, Guyana does not have an AFTN switching centre, it has to connect dedicated terminals with AFTN applications to each of the new ports envisaged, and connect these to the MUX FRAD CX950 B multiplexer, whose ports are duly identified.

The number of ports is three:

SYGC SMPM
SYGC SVMI
SYGC SBMN/SBBR

ATS SPEECH CIRCUITS

Since Guyana does not have a VCCS system nor a PBAX exchange, it has to install dedicated telephones and connect them to the FRAD CX950 B multiplexer of the REDDIG node whose ports are duly identified.

Switched ATS circuits

SYGC SBMN
SYGC SMPM
SYGC SVMI

ADMINISTRATIVE NETWORK VOICE COMMUNICATIONS

Connect the respective telephones at the locations assigned by the Aeronautical Administration for administrative communications to the FRAD CX950 B multiplexer whose ports are duly identified.

BACK-UP NETWORK CIRCUIT

Each REDDIG node should include a connection to the ISDN public network (Project RLA/98/01 page 3.27) for automatic traffic routing to another REDDIG node in case of failure of the main circuits. Since there is no ISDN service available, a dedicated circuit must be implemented. See connection in Appendix C.

SWITCHED TELEPHONE LINE (PSTN)

Implement a switched telephone line (PSTN) (Project RLA/98/01 page 3.39) to be used exclusively to support the network management system for operations such as remote maintenance. Modems are contemplated within the REDDIG equipment.

GROUNDING OF NODE EQUIPMENT

Ground the REDDIG node equipment.

PARAGUAY*AFTN*

Programme new AFTN ports in the message switch and connect them to the MUX FRAD CX950 B multiplexer, whose ports are duly identified. Since the AFTN message switching centre in the communication sub-system operates with current loop circuits, and the equipment to be connected to the REDDIG (MUX FRAD CX950 B multiplexer) operates with RS232, the respective interphases must be installed for the conversion.

The number of ports is two:

SGAS SBCT/SBBR
SGAS SAEZ

ATS SPEECH CIRCUITS

Since Paraguay does not have a VCCS system nor a PBAX exchange, it must install dedicated telephones and connect them to the FRAD CX950 B multiplexer of the REDDIG node whose ports are duly identified, in order to carry out the programmed dedicated and switched communications.

Dedicated circuits

SGAS SBCT

Switched circuits

SGAS SLLP
SGAS SBCT/SBWI
SGAS SAEZ/SARE

ADMINISTRATIVE NETWORK VOICE COMMUNICATIONS

Connect the respective telephones at the locations assigned by the Aeronautical Administration for administrative communications to the FRAD CX950 B multiplexer whose ports are duly identified.

BACK-UP NETWORK CIRCUIT

Each REDDIG node should include a connection to the ISDN public network (Project RLA/98/01 page 3.27) for automatic traffic routing to another REDDIG node in case of failure of the main circuits. Since there is no ISDN service available, a dedicated circuit must be implemented. See connection in Appendix C.

SWITCHED TELEPHONE LINE (PSTN)

Implement a switched telephone line (PSTN) (Project RLA/98/01 page 3.39) to be used exclusively to support the network management system for operations such as remote maintenance. Modems are contemplated within the REDDIG equipment.

OPERATION LICENSE FOR VSAT STATION

Complete the procedures to obtain the operation license for the local VSAT station.

PERU

AFTN

Programme new AFTN ports in the message switch and connect them to the MUX FRAD CX950 B multiplexer of the REDDIG node whose ports are duly identified. The number of ports is seven:

SPIM SCEL
SPIM SLLP
SPIM SAEZ
SPIM SEGU
SPIM SVMI
SPIM SKED
SPIM SBMN/SBBR

ATS SPEECH CIRCUITS

Programme the ACC VCCS speech circuit switching system, which allows the controller in the ATC console position to access voice communication services, so that each console position may have the dedicated and switched ATS speech circuits that are consistent with the operations of the Lima control centre.

Make the respective connections between the VCCS, through its interphases to the external trunk circuits, and the MUX FRAD CX950 B multiplexer of the REDDIG node, whose ports are duly identified.

Dedicated ATS circuits

The dedicated ATS circuits to be programmed in the VCCS and connected from the VCCS to the FRAD CX950 B multiplexer will provide the following connections:

SPIM SCEL
SPIM SKED
SPIM SEGU
SPIM SLLP

Switched ATS circuits

The switched ATS circuits to be programmed in the VCCS and connected from the VCCS to the FRAD CX950 B multiplexer are:

SPIM SKED/SKLT
SPIM SBMN/SBPH

ADMINISTRATIVE NETWORK VOICE COMMUNICATIONS

Connect the respective telephones at the locations assigned by the Aeronautical Administration for administrative communications to the FRAD CX950 B multiplexer, whose ports are duly identified.

GNSS DATA

Establish the physical connection between the DB60 serial outlet of the Cisco 2501 router of the GNSS augmentation trial system reference station to the FRAD CX950 B multiplexer, whose ports are duly identified (winchester V.35 connector of the TRS node connected to the V.35 connector in the REDDIG rack).

BACK-UP NETWORK CIRCUIT

Each REDDIG node should include a connection to the ISDN public network (Project RLA/98/01 page 3.27) for automatic traffic routing to another REDDIG node in case of failure of the main circuits. If the ISDN service is not implemented, a dedicated circuit must be implemented. See connection in Appendix C.

SWITCHED TELEPHONE LINE (PSTN)

Implement a switched telephone line (PSTN) (Project RLA/98/01 page 3.39) to be used exclusively to support the network management system for operations such as remote maintenance. Modems are contemplated within the REDDIG equipment.

OPERATION LICENSE FOR VSAT STATION

Complete the procedures to obtain the operation license for the local VSAT station.

SURINAME*AFTN*

The message switching centre needs urgent repair in order to connect the AFTN services to the REDDIG node. The AFTN system has only one terminal left; all the rest are out of commission. New ports must be programmed to the switching centre and connected to the MUX FRAD CX950 B multiplexer of the REDDIG node, whose ports are duly identified.

The number of ports is three:

SMPM	SYGCS
SMPM	SVMI
SMPM	SBMN/SBBR

ATS SPEECH CIRCUITS

Since Suriname does not have a VCCS system nor a PBAX exchange, it must install dedicated telephones and connect them to the FRAD CX950 B multiplexer of the REDDIG node, whose ports are duly identified.

Switched circuits

SMPB	SBMN/SBBE
SMPM	SYGC
SMPM	SOCA

ADMINISTRATIVE NETWORK VOICE COMMUNICATIONS

Connect the respective telephones at the locations assigned by the Aeronautical Administration for administrative communications to the FRAD CX950 B multiplexer, whose ports are duly identified.

BACK-UP NETWORK CIRCUIT

Each REDDIG node should include a connection to the ISDN public network (Project RLA/98/01 page 3.27) for automatic traffic routing to another REDDIG node in case of failure of the main circuits. Since there is no ISDN service available, a dedicated circuits must be implemented. See Appendix C.

SWITCHED TELEPHONE LINE (PSTN)

Implement a switched telephone line (PSTN) (Project RLA/98/01 page 3.39) to be used exclusively to support the network management system for operations such as remote maintenance. Modems are contemplated within the REDDIG equipment.

OPERATION LICENSE FOR VSAT STATION

Complete the procedures to obtain the operation license for the local VSAT station.

URUGUAY

AFTN

Programme new AFTN ports in the message switch and connect them to the MUX FRAD CX950 B multiplexer of the REDDIG node, whose ports are duly identified. The number of ports is two:

SUMU	SBCT/SBBR
SUMU	SAEZ

ATS SPEECH CIRCUITS

Programme the ACC VCCS speech circuit switching system, which allows the controller in the ATC console position to access voice communication services, so that each console position may have the dedicated and switched ATS speech circuits that are consistent with the operations of the Montevideo control centre.

Make the respective connections between the VCCS, through its interphases to the external trunk circuits, and the MUX FRAD CX950 B multiplexer of the REDDIG node, whose ports are duly identified.

Dedicated ATS circuits

The dedicated ATS circuits to be programmed in the VCCS and connected from the VCCS to the FRAD CX950 B multiplexer are:

SUMU	SAEZ
SUMU	BAIRES
Carrasco APP	BAIRES
Carrasco APP	SAEZ
SUMU	SBCT

Switched ATS circuits

The switched ATS circuits to be programmed in the VCCS and connected from the VCCS to the FRAD CX950 B multiplexer will provide the following connections:

SUMU	SAEZ/SARE
SUCA/SUMU	SAEZ/SABE
SUMU	SBRF

ADMINISTRATIVE NETWORK VOICE COMMUNICATIONS

Connect the respective telephones at the locations assigned by the Aeronautical Administration for administrative communications to the FRAD CX950 B multiplexer, whose ports are duly identified.

BACK-UP NETWORK CIRCUIT

Each REDDIG node should include a connection to the ISDN public network (Project RLA/98/01 page 3.27) for automatic traffic routing to another REDDIG node in case of failure of the main circuits. Since there is no ISDN service available, a dedicated circuit must be implemented. See connection in Appendix C.

SWITCHED TELEPHONE LINE (PSTN)

Implement a switched telephone line (PSTN) (Project RLA/98/01 page 3.39) to be used exclusively to support the network management system for operations such as remote maintenance. Modems are contemplated within the REDDIG equipment.

VENEZUELA*AFTN*

Programme new AFTN ports in the message switch and connect them to the MUX FRAD CX950 B multiplexer of the REDDIG node, whose ports are duly identified. The number of ports is six:

SVMI	SYGC
SVMI	SOCA
SVMI	SMPM
SVMI	SPIM
SVMI	SEGU
SVMI	SKED
SVMI	SBRF

ATS SPEECH CIRCUITS

Programme the ACC VCCS speech circuit switching system, which allows the controller in the ATC console position to access voice communication services, so that each console position may have the switched and hot-line ATS speech circuits that are consistent with the operations of the Maiquetía control centre.

Make the respective connections between the VCCS, through its interphases to the external trunk circuits, and MUX FRAD CX950 B multiplexer, whose ports are duly identified.

Dedicated ATS circuits

The dedicated ATS circuits to be programmed in the VCCS and connected from the VCCS to the FRAD CX950 B multiplexer are:

SVMI SKED
SVMI SBMN
SVMI SKED/SKEC

Switched ATS circuits

The switched ATS circuits to be programmed in the VCCS and connected from the VCCS to the FRAD CX950 B multiplexer will provide the following connections:

SVMI SKED/SKCC
SVMI SYGC

ADMINISTRATIVE NETWORK VOICE COMMUNICATIONS

Connect the respective telephones at the locations assigned by the Aeronautical Administration for administrative communications to the FRAD CX950 B multiplexer, whose ports are duly identified.

BACK-UP NETWORK CIRCUIT

Each REDDIG node should include a connection to the ISDN public network (Project RLA/98/01 page 3.27) for automatic traffic routing to another REDDIG node in case of failure of the main circuits. Since there is no ISDN service available, a dedicated circuit must be implemented. See connection in Appendix C.

SWITCHED TELEPHONE LINE (PSTN)

Implement a switched telephone line (PSTN) (Project RLA/98/01 page 3.39) to be used exclusively to support the network management system for operations such as remote maintenance. Modems are contemplated within the REDDIG equipment.

LICENSE OPERATION FOR VSAT STATION

Complete the procedures to obtain the operation license for the local VSAT station.