



**INTERNATIONAL CIVIL AVIATION ORGANIZATION  
South American Regional Office**

**FIFTH WORKSHOP/MEETING OF THE SAM IMPLEMENTATION GROUP (SAM/IG/5)  
REGIONAL PROJECT RLA/06/901**

**Lima, Peru, 10 - 14 May 2010**

**Agenda Item 6: Assessment of operational requirements for the improvement of communications, navigation, and surveillance (CNS) capabilities for en-route and terminal area operations**

**INTERCONNECTION OF AUTOMATION SYSTEMS OF ARGENTINA AND URUGUAY  
THROUGH THE ATN**

(Presented by Argentina)

<b>Summary</b>	
This working paper presents the activities carried out and to be carried out for the interconnection of the automated systems of Argentina and Uruguay through the Aeronautical Telecommunication Network (ATN).	
<b>References:</b>	
<ul style="list-style-type: none"><li>• Guidance for the implementation of national ATN IP networks;</li><li>• Report of the SAM/IG4 meeting; and</li><li>• Memorandum of Understanding for the interconnection of the automated systems of Uruguay and Argentina</li></ul>	
<b>ICAO Strategic Objectives:</b>	<i>A – Safety</i> <i>D - Efficiency</i>

**1. Introduction**

1.1 The plans for the implementation of the ATN ground-ground applications and the plans for regional ATN routers are defined, respectively, in FASID Tables CNS 1Bb and CNS 1Ba, which were formulated through Conclusions *GREPECAS 13/74 - Proposal of amendment to the Regional ATN Plan, and 13/75 - Request for information on plans for the implementation of ATN ground-air applications.*

1.2 GREPECAS/15, taking into account the impact that operational errors in the ATC loop have on the safety of air operations, agreed, in Conclusion 15/36, that “*CAR/SAM States, Territories, and International Organisations gradually implement the interface for ATC interfacility data exchange (AIDC); and that “ICAO coordinate, assist, and follow-up the implementation of such corrective measures.”*

1.3 The analysis of the problem led to the conclusion that the solution involved an intensive use of CNS/ATM technologies, in keeping with ICAO recommendations, especially those related to the interconnection of automated systems, as described in Document 4444-PANS/ATM, in Section 8.1.6: “*States should, on the basis of regional air navigation agreements, provide for the automated exchange of coordination data relevant to aircraft being provided with ATS surveillance services, and establish automated coordination procedures*”.

1.4 In this respect, studies were conducted through Projects RLA/98/003 and RLA/06/901 to obtain an overview of the matter, including obstacles, action required, and the implementation strategy, as described below:

- a) Drafting of the Initial Action Plan – July 2006.
- b) Proof of concept – September 2006.
- c) Data collection – September 2007; November 2007.
- d) Drafting of the Interconnection Plan – February 2008.
- e) Drafting of the SICD (System Interface Control Document) – March 2008.
- f) Drafting of the SSS (System Subsystem Specification) document – September 2008.

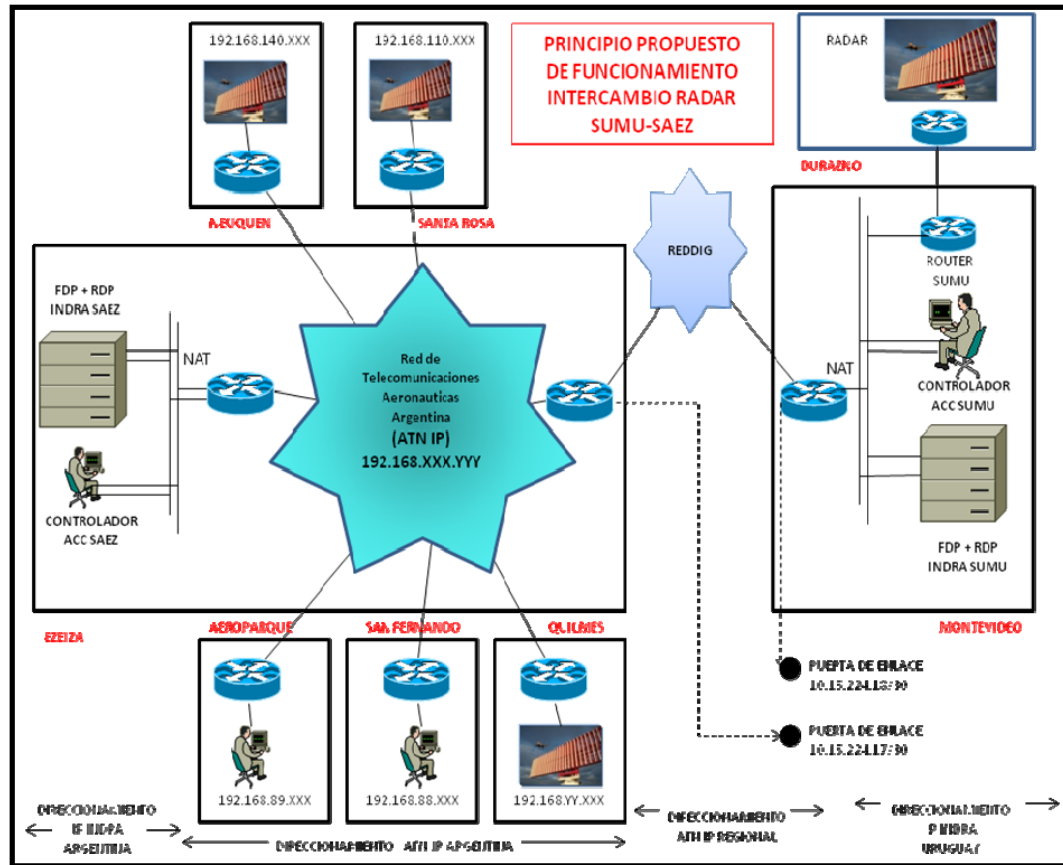
1.5 The ATN/TF/5 meeting reviewed the IPv4 addressing scheme and, in this respect, considered that the States, when implementing IP-based systems at national level, may adopt the IPv4 addressing scheme. The meeting also considered that, for intra-regional links between systems, the IPv4 addressing scheme shall be used, and formulated Conclusion 5/1 - *Proposed IPv4 addressing scheme for ATN ground-ground applications at intra-regional level*.

## 2. Action taken

2.1 At the 1a ATM/CNS Multilateral Meeting (SAM ATM-CNS MULTI) held in Lima, Peru, on 14 - 18 September 2009, a memorandum of understanding was signed for the interconnection of the automated systems of Argentina and Uruguay, which included a technical-operational agreement covering:

- ✓ An analysis of the current scenario
- ✓ Transfer of surveillance data (data from the Ezeiza and Carrasco radars are being exchanged since 1999 – proprietary transmission protocols).
- ✓ Transfer of flight plans (oral).
- b) Selection of the exchange scenario
  - ✓ Transfer of surveillance data (Quilmes – El Durazno – Asterix over TCP/IP transmission protocols).
  - ✓ Transfer of flight plans (data – the AIDC service will be activated once Uruguay has it in place).
- c) Implementation strategy
  - ✓ Data transport network: Intra-regional ATN IP.
  - ✓ Means: REDDIG.
  - ✓ Channel: DLCI to be implemented by REDDIG expert.
  - ✓ ATN frontier elements: Argentina will lend Uruguay a router until the latter has its own.
  - ✓ IP addressing of router link ports: according to the Regional Addressing Plan.
  - ✓ Serial interfaces: V.35.

### SCHEMATIC FUNCTIONAL DIAGRAM



2.2 On 23 March 2010, a meeting with staff from the national Bureau of Civil Aviation Services and Aeronautical Infrastructure (DINACIA) of Uruguay was held in Ezeiza in order to determine the tasks and action required for the implementation.

2.3 Between 5 and 9 April 2010, in Carrasco, technical staff from our Administration and from DINACIA, with the support of the REDDIG Administrator:

- a) installed a Cisco 3640 router.
- b) configured the channel *via* the REDDIG (FRAD configuration, cabling, configuration of networking equipment, etc).
- c) configured IP addressing.
- d) conducted connectivity tests with the ANAC ATN network.
- e) configured the RSMA Quilmes (ILM) radar for sending data to the equipment installed in Uruguay.
- f) received data from the Quilmes RSMA radar in Carrasco.
- g) Data from the Durazno radar could not be received at Ezeiza, due to the way in which that sensor broadcasts information. It was decided that tests should continue in the future.
- h) The Uruguayan Administration is in the process of acquiring networking equipment, not only for the exchange of radar data but also for the interconnection of future ATN services of interest to both States.

2.4 Currently, data from the Quilmes RSMA continue to be sent through this link for testing purposes, and arrangements are being made between the two Administrations to implement new services.

2.5 Likewise, during said mission, an ATS speech circuit was activated between the TWR at Aeroparque Jorge Newbery and the TWR at Colonia, thus complying with a regional requirement that was pending.

3. **Suggested action**

3.1 The Meeting is invited to:

- a) Take note of the information provided; and
- b) If applicable, request States to use this experience for the implementation of automation systems through the ATN.

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