



Agenda Item 1: Declaration of Bogota: Follow-up to the implementation of air navigation priorities

Follow up to the implementation of AIDC interconnection

(Presented by the Secretariat)

SUMMARY

This working paper presents the progress in the implementation of interconnection AIDC in the Region from the Thirteenth meeting of Civil aviation authorities (RAAC/13) where aviation authorities of the Region agreed to implement the priorities for air navigation and safety into the Declaration of Bogota.

References:

- Meeting of Air Navigation and Flight Safety Directors of the SAM Region (Lima, Peru, 21 – 23 October 2013)
- Thirteenth Meeting of Civil Aviation Authorities of the SAM Region RAAC/13 (Bogota, Colombia, 4 - 6 December 2013)
- Thirteenth Workshop/Meeting of the SAM Implementation Group SAM/IG/13 (Lima, Peru, 21 -24 April 2014)
- Fourteenth Workshop/Meeting of the SAM Implementation Group SAM/IG/14 Lima, Peru, 10 – 14 November 2014)
- Fifteenth Workshop/Meeting of the SAM Implementation Group SAM/IG/15 (Lima, Peru, 11 -15 May 2015)
- Third Meeting of the Programmes and Projects Review Committee (PPRC/3) Mexico City, 21 – 23 July 2015
- Summary of AIDC Teleconferences (March – August 2015)

<i>ICAO Strategic Objectives:</i>	<i>A – Safety B – Air navigation capacity and efficiency</i>
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1. Introduction

1.1 The interconnection of systems between adjacent ACCs has as a principal objective to reduce the risk of aeronautical incidents generated by coordination activities between air control centres and, at the same time, improve the planning stages for an efficient control of flights from/to corresponding flight information Regions (FIR).

1.2 The desired interconnection of automated systems involves the implementation of the exchange of surveillance data (radar initially) using format ASTERIX (*All Purpose Structured Eurocontrol Surveillance Information Exchange*) and IP (Internet Protocol), as well as the implementation of the automated transfer of flight plans between automated centers through data communications between ATS facilities (AIDC).

1.3 In view of the difficulties encountered to implement the interconnection of radar data such as the proper handling of the radar information, due to much of this included civil and military information, the use of common communications protocols and integrating radar technical capacity of most of the ACC (being necessary the manufacturer support), only the implantation of the AIDC was initially considered.

1.4 The Thirteenth Meeting of Civil Aviation Authorities of the SAM Region RAAC/13 approved Conclusion RAAC/13-8 *Implementation of air navigation and safety oversight priorities* with the aim that States/territories of SAM Region implement the priorities of air navigation and safety in accordance with the regional goals agreed for the period 2014-2016 in the Declaration of Bogotá.

1.5 The automated systems interconnection (Exchange of data communication between ATS facilities ATS (AIDC) represents one of the air navigation priorities included in the Declaration of Bogotá. The goal for the automated systems interconnection is 15 interconnections implemented by the end of 2015. The distribution of implementation per year from 2013 to 2015 was as follows: 1 in 2013, 8 in 2014 and 6 in 2015. **Appendix A** to this working paper presents a chart with the States' requirements for the implementation of the systems interconnection presented to the Meeting of Air Navigation and Flight Safety Directors, in which are indicated among others, the location aspects and estimated dates for the implementation of the 15 interconnections.

2 Analysis

2.1 From RAAC/13 to date, AIDC practical operational courses were delivered, training air traffic controllers in the ACC Uruguay (9 - 13 December 2013), Chile (6 - 10 April 2015), Peru (13 - 17 April 2015), Ecuador (20 - 24 April 2015) Colombia (27 April to 1 May 2015) and in Panama (22 - 26 June 2015). Likewise, a Seminar/Workshop on technical and operational aspects for the implementation of automation in the SAM Region was carried out in Sao Jose dos Campos, Brazil, from 24 to 28 February 2014. These activities could be implemented thanks to the support of project RLA/06/901. The operational AIDC courses allowed to acquaint in AIDC approximately 25 controllers by ACC.

2.2 Successful AIDC tests were performed between ACC Asunción and ACC Ezeiza at early 2014. The operational phase will be made once the installation of the new automated systems is completed in the ACC Resistencia, since the ACC Ezeiza do not have AIDC requirement with Asuncion.

2.3 In the first half of 2014 were carried out partially successful tests (correct in a sense, but not in the other) between Ecuador, Peru (initiated in March 2014) and Chile-Argentina (initiated in April 2014).

2.4 The implementation of the AIDC interconnection between adjacent centers is foreseen through AFTN or AMHS circuits by means of the REDDIG digital network currently, and REDDIG II from February 2015.

2.5 In order the Region have a guidance for the AIDC interconnection implementation, the SAM/IG Group proceeded to the review of the *Interface Control document (ICD) for data communications between ATS units in the Caribbean and South America Regions (CAR/SAM ICD)* and drafted the guideline for the implementation of AIDC through the interconnection of adjacent automated centers which was presented in the SAM/IG/13 meeting for review and approval. At present, the guide is a reference in the Region while implementing the AIDC between adjacent ACC. A copy can be downloaded from the following website <http://www.icao.int/SAM/Pages/eDocumentsDisplay.aspx?area=CNS>.

2.6 The SAM/IG/14 meeting considered that in view of the high incidence of coordination errors between the ACC of the SAM Region on the Pacific coast, and taking into account that the implementation of the exchange of AIDC messages between these centers would mitigate the coordination mistakes, the implementation of the AIDC among ACC Santiago – ACC Lima, ACC Lima – ACC Guayaquil, ACC Guayaquil - ACC Bogota, ACC Bogota – ACC Lima and ACC Bogota - ACC Panama is identified as priority for the implementation of the regional AIDC. In this sense the SAM/IG/14 meeting established an action plan for the implementation of the referred interconnections, with the support of the project RLA/06/901. (See **Appendix B**).

2.7 To date, from the 15 interconnections foreseen, only one, the AIDC between ACC Lima and ACC Guayaquil is in operation. The AIDC between the ACC - Lima and ACC - Bogotá and ACC Guayaquil with ACC Bogota are in pre-operational phase since the beginning of May. It is expected that by the date of this meeting these interconnections are in operational phase already. AIDC positive tests have been obtained between ACC Bogota and ACC Panama being its operational phase scheduled for end of October 2015.

2.8 With the implementation of the new automated system in Iquique, Chile, the AIDC tests were successful with the ACC of Lima, and considering that the ATS staff of ACC Iquique would start using this new automated system at early October, is expected to begin with the AIDC pre-operation phase by said date between the ACC Iquique and the ACC Lima. It is being considered that the coordination and flight transfers between Chile and Peru are made in ACC Iquique instead of ACC Santiago.

2.9 Regarding the AIDC interconnection among Brazil and other adjacent States, coordination has already been established to carry out the tests between AIDC Brazil (Sagitario from ATECH manufacturer) with the Aircon 2100 automated system of INDRA. Once such tests are completed, the pre-operational phase will begin. The meeting should update the implementation dates for the automated systems interconnection shown in Appendix A.

2.10 In order to arrange the AIDC activities, the States have nominated focal points. The updated list is presented as **Appendix C** to this working paper.

2.11 To follow-up the AIDC implementation, teleconferences are carried out pending on the activities to be performed, weekly, biweekly or monthly. States are invited to continue participating actively through their focal points.

3 Suggested actions

3.1 The Meeting is invited to:

- a) Take note on the information presented in this working paper; and
- b) analyze and comment the AIDC interconnection implementation activities indicated in Section 2 of this working paper and its Appendixes, and inform their plans to comply with the AIDC implementation of the Declaration of Bogota.

- END -

APPENDIX A/ APENDICE A

INTERCONNECTION OF AUTOMATED SYSTEMS /
INTERCONEXIÓN SISTEMAS AUTOMATIZADOS

State/ Estado	AIDC and Radar Data Interconnection Requirements/ Requerimientos de Interconexión AIDC y Datos Radar	MoU Date of Implementation/ Fecha Implantación MoU	AIDC and Radar Data Interconnection Date/ Fecha Interconexión AIDC y Datos Radar	Remarks/ Observaciones
Argentina	Bolivia	TBD	TBD	Bolivia has no automated systems/ Bolivia no cuenta con sistemas automatizados
	Brasil	2009	Aug 2014	MoU implemented/ MoU implantado
	Chile	2010	Jul 2014	MoU implemented/ MoU implantado
	Paraguay	May 2014	Dec 2014	
	Uruguay	2009	Jun 2014	MoU implemented/ MoU implantado
Bolivia	Argentina	TBD	TBD	Bolivia has no automated systems/ Bolivia no cuenta con sistemas automatizados
	Brasil	TBD	TBD	
	Chile	TBD	TBD	
	Paraguay	TBD	TBD	
	Peru	TBD	TBD	
Brazil/Brasil	Argentina	2009	Aug 2014	MoU implemented/ MoU implantado
	Bolivia	TBD	TBD	Bolivia has no automated systems/ Bolivia no cuenta con sistemas automatizados
	Colombia	Oct 2014	Jul 2015	
	Guyana	TBD	TBD	Define requirement/ Definir requerimiento
	French Guiana (France)	TBD	TBD	Define requirement/ Definir requerimiento
	Paraguay	Oct 2014	Mar 2015	
	Peru	2012	Sep 2014	MoU implemented/ MoU implantado
	Suriname	TBD	TBD	Definir requerimiento
	Uruguay	2009	Aug 2014	MoU implemented/ MoU implantado
	Venezuela	2011	Dic 2013	MoU implemented/ MoU implantado
Chile	Argentina	2010	Jul 2014	MoU implemented/ MoU implantado
	Peru	Jun 2014	Mar 2015	

State/ Estado	AIDC and Radar Data Interconnection Requirements/ Requerimientos de Interconexión AIDC y Datos Radar	MoU Date of Implementation/ Fecha Implantación MoU	AIDC and Radar Data Interconnection Date/ Fecha Interconexión AIDC y Datos Radar	Remarks/ Observaciones
Colombia	Brazil	Oct 2014	Jul 2015	
	Ecuador	May 2014	Dic 2014	
	Panamá	May 2014	Dic 2014	
	Peru	Oct 2014	Jul 2015	
	Venezuela	Dec 2014	Dic 2015	
Ecuador	Colombia	May 2014	Dic 2014	
	Peru	Oct 2013	Jun 2014	
French Guiana (France)/ Guyana Francesa (Francia)	Brasil	TBD	TBD	Define requirement/ Definir requerimiento
	Surinam	TBD	TBD	Define requirement/ Definir requerimiento
Guyana	Brazil	TBD	TBD	Define requirement/ Definir requerimiento
	Surinam	TBD	TBD	Define requirement/ Definir requerimiento
	Venezuela	TBD	TBD	Define requirement/ Definir requerimiento
Panama	Colombia	May 2014	Dec 2014	
Paraguay	Argentina	May 2014	Dec 2014	
	Bolivia	TBD	TBD	Bolivia has no automated systems/ Bolivia no cuenta con sistemas automatizados
	Brasil	Oct 2014	Mar 2015	
Peru	Bolivia	TBD	TBD	Bolivia has no automated systems/ Bolivia no cuenta con sistemas automatizados
	Colombia	Oct 2014	Jul 2015	
	Chile	Jun 2014	Mar 2015	
	Ecuador	Oct 2013	Jun 2014	
Surinam	Brasil	TBD	TBD	
	French Guiana (France)	TBD	TBD	
	Guyana	TBD	TBD	
Uruguay	Argentina	2009	Jun 2014	
	Brasil	2009	Aug 2014	MoU implemented/ MoU implantado
Venezuela	Brasil	2011	Dec 2013	MoU implemented/ MoU implantado
	Colombia	Dec 2014	Dec 2015	

APPENDIX B

PLAN OF ACTIVITIES FOR INITIAL AIDC IMPLEMENTATION

	Start	End	Responsible party	Status
1. Establishment of initial activities for completing the technical implementation of AIDC	10/10/2014	16/10/2014	ICAO	Completed The initial plan of activities for AIDC implementation is scheduled for 2015. The plan of activities contemplates the conduction of AIDC courses for air traffic controllers working at ACCs and the operational implementation of AIDC between adjacent ACCs. These activities will be conducted in Chile, Colombia, Ecuador and Peru. Interconnection tests between the Lima and Bogota ACCs were added to the list shown in paragraph 1.1.1.
<p>1.1 Based on the results of AIDC tests conducted from February 2014 to June 2014, the technical documentation of the automated systems installed in the Region, and the SAM AIDC implementation guide, develop:</p> <p>1.1.1 Plan of activities to complete technical feasibility tests for AIDC interconnection between:</p> <p style="padding-left: 40px;">Santiago ACC - Lima ACC Guayaquil ACC - Lima ACC Bogota ACC - Guayaquil ACC</p> <p>1.1.2 Contents of AIDC course for ATS controllers and programmers of AIDC automated system databases, to be conducted in Chile, Colombia, Ecuador and Peru.</p>	10/10	16/10	ICAO	
2. Review of activities at the SAM/IG/14 meeting	09/10	13/11	ICAO and SAM/IG	Completed The SAM/14 reviewed and approved the plan of activities for AIDC implementation
2.1 Submission of the plan of activities and contents of the AIDC course at the SAM/IG/14 meeting	09/10	13/11	ICAO	
2.2 Review and approval for submission at the Eighth Coordination Meeting of Project RLA/06/901	09/10	13/11	SAM/IG	

	Start	End	Responsible party	Status
3. Approval of activities by the RCC/8 meeting	25/02/15	27/02/15	RLA/06/901 member States	Completed The RCC/8 meeting held in Lima on 25-27 February 2015 approved the activities for initial implementation of AIDC interconnection in Chile, Colombia, Ecuador and Peru.
3.1 Submission of activities, with their respective cost, for approval.	25/02/15	27/02/15	RLA/06/901 member States	
4. Search and selection of experts	24/11/14	28/01/15	ICAO	Completed For the performance of the initial activities, three SAM experts with experience in database programming and operation of ACC automated systems were selected: Rubén Silva of Argentina, Mauricio Ferrer of Colombia, and Jorge Merino of Peru.
4.1 Search and selection of 4 experts from SAM States participating in Project RLA/06/901, with experience in the installation, operation and programming of AIDC databases, to perform the activities listed in item 1.	24/11/14	28/01/15	ICAO	
5. Missions to complete AIDC interconnection between States that started tests during the first semester of 2014	06/04/15	01/05/15	3 automation experts ICAO	Completed Missions were conducted for training purposes and to complete tests for AIDC interconnection and operation Chile 6/4 to 10/4 2015 Peru 13/4 to 17/4 2015 Ecuador 20/4 to 24/4 2015 Colombia 27/4 to 1/5/2015
5.1 Mission to Santiago de Chile	13/04/15	17/04/15	3 automation experts ICAO	Completed Implementation of AIDC activities at the Santiago ACC

	Start	End	Responsible party	Status
				<ul style="list-style-type: none"> • AIDC practical course • AIDC interconnection tests between: <i>Santiago ACC and Lima ACC</i>
5.1.1 Complete AIDC technical implementation between the Santiago and Lima ACCs	13/04/15	17/04/15	3 automation experts ICAO	<p>Two-way communication was established in the AIDC interconnection tests between the Thales Topssky system of the Santiago ACC and the INDRA Aircon 2100 of the Lima ACC. For the operational interconnection, certain actions need to be taken as listed in Appendix B to this working paper.</p> <p>The practical course on AIDC and database programming was conducted, providing training to 16 controllers of the Santiago ACC and 2 aeronautical technicians.</p>
5.1.2 Conduct AIDC course for ATS personnel of the Santiago ACC	13/04/15	17/04/15		
5.2 Mission to Lima:	13/04/15	17/04/15	3 automation experts	<p>Completed</p> <p>Implementation of AIDC activities in the Lima ACC</p> <ul style="list-style-type: none"> • AIDC practical course • AIDC interconnection tests between: <p><i>Lima ACC - Santiago ACC</i> <i>Lima ACC - Guayaquil ACC</i> <i>Lima ACC - Bogota ACC</i></p>

	Start	End	Responsible party	Status
5.2.1 Conduct AIDC course for ATS personnel of the Lima ACC	13/04/15	17/04/15	3 Automation experts ICAO	The practical course on AIDC and database programming was conducted, providing training to 44 controllers of the Lima ACC.
5.2.2 Complete AIDC tests between the Lima ACC and the Guayaquil ACC	13/04/15	17/04/15		AIDC tests between the Lima and Guayaquil ACCs were successfully conducted.
5.2.3 Complete AIDC tests between the Lima ACC and the Bogota ACC	13/04/15	17/04/15		AIDC tests between the Lima and Bogota ACCs were successfully conducted.
5.3 Mission to Guayaquil	20/04/15	24/04/15	3 Automation experts of the SAM Region	Completed Implementation of AIDC activities at the Guayaquil ACC <ul style="list-style-type: none"> • Practical course on AIDC • AIDC interconnection tests and pre-operational implementation: Guayaquil ACC - Lima ACC Guayaquil ACC- Bogota ACC
5.3.1 Complete AIDC technical implementation between the Guayaquil ACC and the Lima ACC	20/04/15	24/04/15	3 automation experts of the SAM Region	AIDC technical interconnection was completed, currently in the pre-operational phase.
5.3.2 Complete AIDC technical implementation between the Guayaquil ACC and the Bogota ACC	20/04/15	24/04/15		AIDC technical interconnection was completed, currently in the pre-operational phase
5.3.2 Conduct AIDC course for ATS personnel of the Guayaquil ACC	20/04/15	24/04/15		The practical course on AIDC and database programming was conducted, providing training to 31 controllers of the

	Start	End	Responsible party	Status
				Guayaquil ACC.
5.4 <i>Mission to Bogota</i>	27/04/15	01/05/15	3 automation experts	Completed Implementation of AIDC activities in the Bogota ACC <ul style="list-style-type: none"> • Practical course on AIDC • AIDC interconnection tests and pre-operational implementation: <i>Guayaquil ACC - Lima ACC</i> <i>Guayaquil ACC - Bogota ACC</i>
5.4.1 Complete AIDC technical implementation between the Bogota ACC and the Guayaquil ACC	27/04/15	01/05/15	3 automation experts of the SAM Region	The AIDC technical interconnection was completed, currently in pre-operational phase
5.4.2 Complete AIDC technical implementation between the Bogota ACC and the Lima ACC	27/04/15	01/05/15		The AIDC technical interconnection was completed, currently in pre-operational phase
6. First meeting of the AIDC operational implementation working group during the SAMIG/15 meeting	11/05/15	15/05/15	RLA/06/90 member States	
6.1 It is proposed that, as a matter of priority, the SAM/IG/15 meeting do the follow-up of AIDC implementation. Accordingly, the AIDC operational implementation working group will hold its first meeting.	11/05/15	15/05/15	RLA/06/901 member States	In progress As a result of AIDC technical implementation, the SAM/IG/15 established a group of activities to migrate from the pre-operational phase to the operational between the ACC Bogota, Guayaquil and Lima. Additionally the AIDC

	Start	End	Responsible party	Status
				messages to be used were defined.
7- AIDC operational implementation	18/05/15	31/12/15	Involved States	
7.1 Definition of the parameters of the AIDC database for the to AID operational interconnection between Colombia, Ecuador and Peru	25/05/15	29/5715	Involved States	
7.2 Amend letter of operational agreement to include the AIDC for the coordination between the ACC Lima with AAC Bogota, ACC Bogota with ACC Guayaquil and ACC Lima with ACC Guayaquil	15/06/15	30/06/15	Involved States	
7.3 Teleconferences to coordinate and follow-up the migration from the AIDC pre-operational phase to the operational for Colombia, Ecuador and Peru		03/06/15 12/06/15 24/06/15 15/07/15 15/08/15 16/09/15 02/10/15	Involved States ICAO	
7.4 Complete courses for the ACC Lima and Guayaquil, Bogotá ATS staff as well as staff ARO/AIS	18/05/15	30/09/15	Involved States	
7.5 Start of AIDC operational implementation Guayaquil ACC - Lima ACC Bogota ACC - Guayaquil ACC Lima ACC - Bogota ACC Lima ACC – Santiago ACC*	18/05/15	31/12/15 03/08/15 03/08/15 03/08/15 31/12/15	States involved	Updating of letter of operational agreement, to include AIDC messages to be used. Establishment of a pre-operational period, completing training for the rest of ATS personnel. Operational implementation.

	Start	End	Responsible party	Status
				*AIDC operational implementation between Chile and Peru to take place between Antofagasta and the Lima ACCs once the automated system in Antofagasta is operative.
<p>8. Other AIDC implementations</p> <p>Bogota ACC - Panama ACC Ezeiza ACC - Santiago ACC Ezeiza ACC - Montevideo ACC Resistencia ACC - Asunción ACC</p>	18/05/15	30/06/16	States involved	<p>AIDC course – Panama, 22 to 26 June 22 2015.</p> <p>AIDC interconnection tests between Bogota and Panama, June 2015. Pre-operational phase 29 June to 30 September.</p> <p>AIDC tests between Ezeiza and Santiago, May-June 2015.</p> <p>AIDC tests between Ezeiza and Montevideo August 2015. Pre-operational September-November 2015. Operational December 2015.</p> <p>AIDC course – Paraguay, April 2016. AIDC tests Ezeiza Asuncion June 2016.</p> <p>AIDC tests between Resistencia and Asunción – June 2016.</p>

	Start	End	Responsible party	Status
9. Workshop on implementation of ATM automation, ADS B, and multilateration	21/09/15	24/09/15	ICAO	CAR/SAM workshop The implementation of inter-regional AIDC interconnections will be analysed at this workshop (1 scholarship per State is required).
10. Second meeting of the AIDC operational implementation working group during SAMIG/16	19/10/15	23/10/15	ICAO	
10.1 It is proposed, as a matter of priority, the SAM/IG/16 meeting do the follow-up of AIDC implementation. Accordingly, the second meeting of the AIDC operational implementation working group will be held.	19/10/15	23/10/15	ICAO	Follow-up of operational implementation and programming of activities for operational implementation in 2016.

APPENDIX C / APÉNDICE C

**NATIONAL FOCAL POINTS/PUNTOS FOCALES NACIONALES
IMPLEMENTATION OF INTERCONNECTION OF AUTOMATED SYSTEMS/IMPLANTACIÓN INTERCONEXIÓN SISTEMAS
AUTOMATIZADOS**

STATE/ ESTADO	ADMINISTRATION/ ADMINISTRACIÓN	NAME/ NOMBRE	POST/ CARGO	TELEPHONE/ TELEFONO	E-MAIL
ARGENTINA	DGSTA	Rubén Silva	Especialista ATM sistemas automatizados		rubensilva@hotmail.com
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