



Agenda Item 2: Optimization of the SAM airspace

**Status of optimization and harmonization of the Longitudinal Separation Minima
in the SAM FIRs boundaries**

(Presented by IATA)

SUMMARY	
This working paper presents a proposal for a follow-up of the optimization and harmonization of the Longitudinal Separation Minima in the SAM FIRs boundaries	
References:	
<ul style="list-style-type: none">- SAM/IG/15 Meeting- SAM/IG/16 Meeting- AN & FS/2 Meeting	
ICAO strategic objectives:	<i>A - Safety</i> <i>B - Air navigation capacity and efficiency</i> <i>E - Environmental protection</i>

1. Background

1.1 After a thorough analysis, the SAM/IG/15 meeting considered that the implementation of an optimization of longitudinal separation could be gradual and that it was advisable that this optimization be applied regionally to increase airspace efficiency and capacity.

1.2 The regional application of an optimized longitudinal separation minima was discussed during the ICAO/IATA/CANSO Performance-Based Navigation (PBN) Harmonization, Modernization and Implementation Meeting for the Caribbean (CAR) Region, held in Fort Lauderdale (28 March - 01 April, 2016). (Refer to WP04).

1.3 The SAM/IG/15 meeting also considered that since the longitudinal optimization procedures were established in the PANS ATM Doc 4444, they could be implemented as the Letters of Operational Agreement between different adjacent FIRs were reviewed.

2. Discussion

2.1 The optimization of longitudinal separation, either in a conventional or radar operational environment, is expected to increase efficiency of operations in the SAM Region, as well as to reduce the work load of ATCO and pilots, taking into consideration that the aircraft would be “naturally separated” and a few intervention of the ATCO would be needed to change aircraft’s flight level. This reduction on the workload would lead to a safety improvement.

2.2 Taking into consideration that the optimization of longitudinal separation from 10 minutes or 80 NM directly to a separation of 20 NM in a conventional environment could represent a significant impact on the operational procedures currently applied, the SAM/IG/15 has established a strategy to apply a gradual optimization, through an action plan developed by the SAM/IG and the States involved, using initially 40 NM longitudinal separation, that is double the separation minimum required under Doc 4444.

2.3 The 20 NM longitudinal separation minima would be the next phase of implementation, taking into account that the 40 NM separation would be applied "only" for the ATCOs adaptation, in order to allow application of 20 NM separation minima in the near future, as contained in Doc. 4444. Thus, the transition from separation of 40 NM to 20 NM could be made within a period of 1 year and may be already established in the same Letter of Agreement signed for a change from 80 NM separation minima to 40 NM. Although it is not a specific requirement of Doc. 4444, taking into consideration that 20 NM is a conventional separation, it is important to observe that a significant portion of the separation of 20 NM will be held in airspace with radar coverage.

2.4 Taking into consideration the existing radar coverage in the SAM Region and the projects on expansion of this coverage, it is natural the evolution for the separation of 10 NM, with a view of a better use of existing CNS infrastructure.

2.5 The present impact of the 80 NM separation minima currently applied in the SAM FIR boundaries is equivalent to the absence of radar coverage to the international flights, with the only exception of the boundary between Ezeiza and Montevideo FIRs.

2.6 The longitudinal separation minima has normally a domino effect on the flight operations, due to the need of coordination between ACCs responsible by ATS in neighboring FIRs. So it is important to establish a close coordination with CAR Region, with objective of avoiding the mentioned domino effect. In this sense, a significant progress on the optimization of the longitudinal separation was achieved in the CAR Region, as well as in the SAM States that interfaces with CAR, during the ICAO/IATA/CANSO Performance-Based Navigation (PBN) Harmonization, Modernization and Implementation Meeting for the Caribbean (CAR) Region. (Refer to Appendix A of WP/04).

2.7 Most of the SAM States have already agreed on the Longitudinal Separation Optimization, as reflected in the figure shown in the **Appendix A** to this working paper. The longitudinal separation status and the expected scenario by the end of 2016 are also shown in Appendix A to this working paper.

2.8 It is important to make a close follow-up of the implementation of the longitudinal separation optimization, to guarantee a harmonization between SAM States, as well as between SAM and CAR States. In this sense, the table shown in the **Appendix B** to this working paper should be used to control the application of the optimized longitudinal separation minima.

3. **Suggested actions:**

3.1 The Meeting is invited to:

- a) take note of the information provided in this working paper;
- b) update the information provided in the figure attached as Appendix A to this working paper;

- c) complete the table of Appendix B to this working paper with the appropriated information.

Longitudinal Separation Status and expected Scenario by 2016



Green: States in charge of the UTA/FIR that have accepted the concept and that **have no problem** to implement the optimized procedural separation.

Brown: States in charge of the UTA/FIR that have accepted the concept and that **have a problem** to implement the optimized procedural separation.

Longitudinal Separation – Situation in 2015



Red:	80NM
Green:	10NM or less
Yellow:	40NM

Longitudinal Separation – Current Situation



Red: 80NM
Green: 10NM or less
Yellow: 40NM

CARTAS DE ACUERDO OPERACIONAL – SUDAMÉRICA – SEPARACIÓN LONGITUDINAL 40/20 NM
OPERATIONAL LETTERS OF AGREEMENT - SOUTH AMERICA – LONGITUDINAL SEPARATION 40/20 NM

ESTADO / STATE	ACC	Cartas de Acuerdo Internacionales / International Letter of Agreement	Acuerdo en 40 NM GNSS/DME Longitudinal / Agreement on 40 NM GNSS/DME Longitudinal	Fechas propuestas de implantación / Proposed implementation dates	Acuerdo en 20 NM GNSS/DME Longitudinal / Agreement on 20 NM GNSS/DME Longitudinal	Fechas propuestas de implantación / Proposed implementation dates	Borrador final enviado a la Oficina SAM (Si/No) / Final Draft sent to SAM Regional Office (Yes/No)	Carta de Acuerdo firmada / Letter of Agreement signed
ARGENTINA	Comodoro Rivadavia	Punta Arenas	<i>Insertar SI/NO</i> <i>Insert YES/NO</i>	<i>Insertar fecha tentativa</i> <i>Insert tentative date</i>	<i>Insertar SI/NO</i> <i>Insert YES/NO</i>	<i>Insertar fecha tentativa</i> <i>Insert tentative date</i>	<i>Insertar SI/NO</i> <i>Insert YES/NO</i>	<i>Insertar SI/NO</i> <i>Insert YES/NO</i>
		Johannesburgo						
	Ezeiza	Montevideo						
		Santiago						
		Johannesburgo Puerto Montt						
	Mendoza	Santiago						
	Córdoba	Antofagasta						
		La Paz						
	Resistencia	Asunción						
		Curitiba						
		La Paz						
		Montevideo						
BOLIVIA	La Paz	Amazónico						
		Curitiba						
		Asunción						
		Córdoba						
		Resistencia						
		Antofagasta						
		Lima						

ESTADO / STATE	ACC	Cartas de Acuerdo Internacionales / International Letter of Agreement	Acuerdo en 40 NM GNSS/DME Longitudinal / Agreement on 40 NM GNSS/DME Longitudinal	Fechas propuestas de implantación / Proposed implementation dates	Acuerdo en 20 NM GNSS/DME Longitudinal / Agreement on 20 NM GNSS/DME Longitudinal	Fechas propuestas de implantación / Proposed implementation dates	Borrador final enviado a la Oficina SAM (Si/No) / Final Draft sent to SAM Regional Office (Yes/No)	Carta de Acuerdo firmada / Letter of Agreement signed
BRASIL /BRAZIL	Atlántico							
		Cayenne						
		Dakar						
		Johannesburgh						
		Montevideo						
	Curitiba	Asunción						
		Luanda						
		Montevideo						
		Resistencia						
		Asunción						
BRASIL / BRAZIL	Brasilia	La Paz						
	Amazónica	La Paz						
		Lima						
		Bogotá						
		Maiquetía						
		Georgetown						
		Paramaribo						
		Cayenne						
COLOMBIA	Barranquilla	Panamá						
		Kingston						
		Curaçao						
		Maiquetía						

ESTADO / STATE	ACC	Cartas de Acuerdo Internacionales / International Letter of Agreement	Acuerdo en 40 NM GNSS/DME Longitudinal / Agreement on 40 NM GNSS/DME Longitudinal	Fechas propuestas de implantación / Proposed implementation dates	Acuerdo en 20 NM GNSS/DME Longitudinal / Agreement on 20 NM GNSS/DME Longitudinal	Fechas propuestas de implantación / Proposed implementation dates	Borrador final enviado a la Oficina SAM (Si/No) / Final Draft sent to SAM Regional Office (Yes/No)	Carta de Acuerdo firmada / Letter of Agreement signed
	Bogotá	Guayaquil						
		CENAMER						
		Panamá						
		Maiquetía						
	Amazónico							
CHILE	Santiago	Córdoba						
		La Paz						
		Lima						
	Isla de Pascua	Lima						
	Puerto Montt	Ezeiza						
		Comodoro Rivadavia						
	Punta Arenas	Comodoro Rivadavia						
	Santiago	Mendoza						
		Córdoba						
Ezeiza								
ECUADOR	Guayaquil	CENAMER						
		Bogotá						
		Lima						
FRANCIA / FRANCE	Rochambeau	Paramaribo						
		Piarco						
		Atlántico						
		Amazónico						
		Dakar						

ESTADO / STATE	ACC	Cartas de Acuerdo Internacionales / International Letter of Agreement	Acuerdo en 40 NM GNSS/DME Longitudinal / Agreement on 40 NM GNSS/DME Longitudinal	Fechas propuestas de implantación / Proposed implementation dates	Acuerdo en 20 NM GNSS/DME Longitudinal / Agreement on 20 NM GNSS/DME Longitudinal	Fechas propuestas de implantación / Proposed implementation dates	Borrador final enviado a la Oficina SAM (Si/No) / Final Draft sent to SAM Regional Office (Yes/No)	Carta de Acuerdo firmada / Letter of Agreement signed
GUYANA	Georgetown	Maiquetía						
		Piarco						
		Paramaribo						
		Amazónico						
PANAMÁ	Panamá	Bogotá						
		CENAMER						
		Kingston						
		Barranquilla						
PARAGUAY	Asunción	Resistencia						
		Córdoba						
		La Paz						
		Curitiba						
PERÚ	Lima	Guayaquil						
		Bogotá						
		Amazónico						
		La Paz						
		Antofagasta						
SURINAME	Paramaribo	Georgetown						
		Piarco						
		Rochambeau						
		Amazónico						
URUGUAY	Montevideo	Curitiba						
		Atlántico						

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		Resistencia						
		Ezeiza						
VENEZUELA		Bogotá						
		Barranquilla						
		Curaçao						
		San Juan						
		Piarco						
		Georgetown						
		Amazónico						