



Agenda Item 4: Follow up on Bogota Declaration

b) Priorities for the implementation of improvements in air navigation

OPTIMIZATION AND HARMONIZATION OF THE LONGITUDINAL SEPARATION MINIMA IN THE SAM FIR'S BOUNDARIES

(Presented by IATA)

SUMMARY	
This working paper presents a proposal for establishing a concrete goal for Optimization and harmonization of the Longitudinal Separation Minima in the SAM FIR's boundaries, using the current ATC systems and infrastructure.	
References: <ul style="list-style-type: none">- SAMIG/15 Meeting Report- AN & FS/2	
ICAO Strategic Objectives:	<i>A – Safety</i> <i>D - Development of Air Transport</i> <i>E - Environmental Protection and Sustainable</i>

1. Introduction

1.1 After a thorough analysis, the SAMIG/15 Meeting considered that the 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 SAMIG/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.

1.3 The SAMIG/15 Meeting was of the opinion that this implementation be part of ATFM Implementation Plan and in that sense understood appropriate to include this activity in the GREPECAS ATFM Project and the corresponding ATFM Action Plan.

1.4 Based on the above, the SAMIG/15 Meeting formulated the following conclusion:

Conclusion SAM/IG/15-4: Reduction of the longitudinal separation between aircraft in the SAM airspace

That, taking into account the operational benefits to be gained from reducing the longitudinal separation of aircraft in the SAM airspace, States:

- a) investigate the possibility of reducing the longitudinal separation of aircraft at 40 NM between adjacent FIRs using the Mach number technique;
- b) their application be included in the Letters of Operational Agreement; and
- c) the Secretariat includes this implementation in the GREPECAS ATFM Project and its Action Plan.

1.5 The Optimization of Longitudinal Separation was discussed also during the Second Meeting of Air Navigation and Flight Safety Directors of the SAM Region (AN & FS/2). The need of establishing a concrete goal for the mentioned optimization was addressed during the meeting. However, an agreement could not be achieved due to the need of technical expertise to make a deeper analysis of this subject. In this sense, the AN & FS/2 recommended that SAMIG16 Meeting should analyse this subject and present a concrete goal to be considered by RAAC/14.

2. Discussion

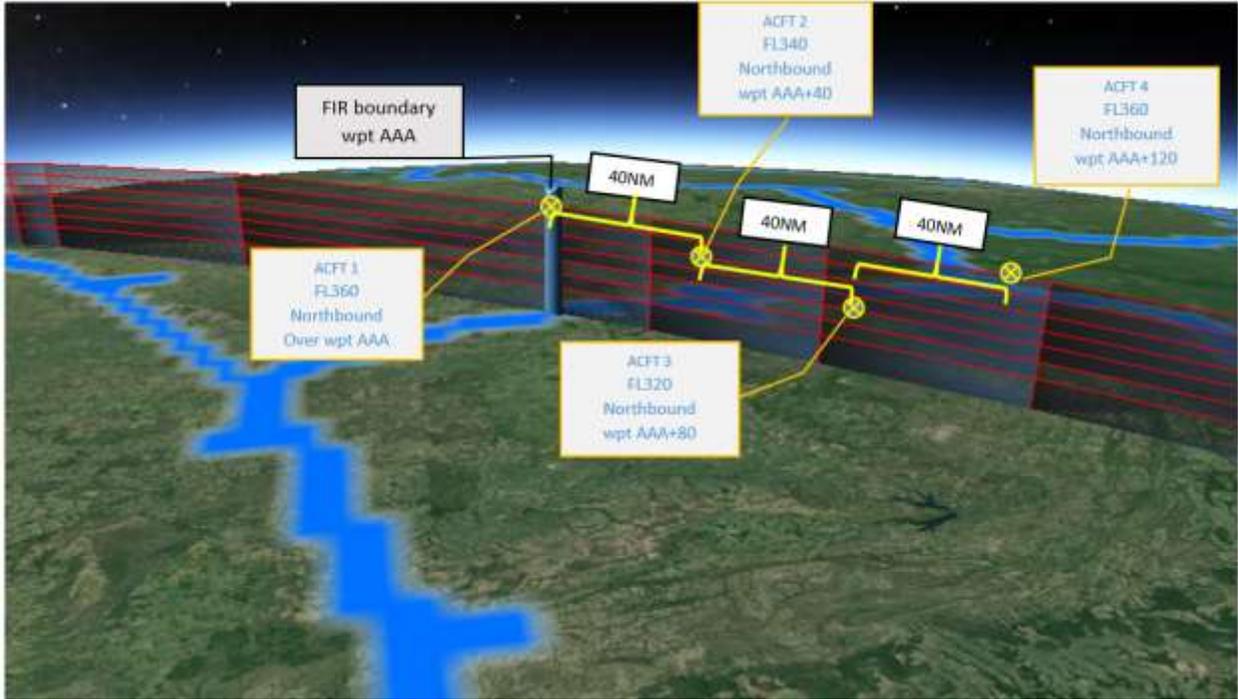
2.1 IATA would like to reinforce his position about the need of optimizing the Longitudinal Separation as an important tool for flight efficiency.

2.2 The importance of the Longitudinal Separation Optimization is reflected in the table below, provided by an IATA Airline Member, where the loss due to the use of a non-preferred flight level can be verified:

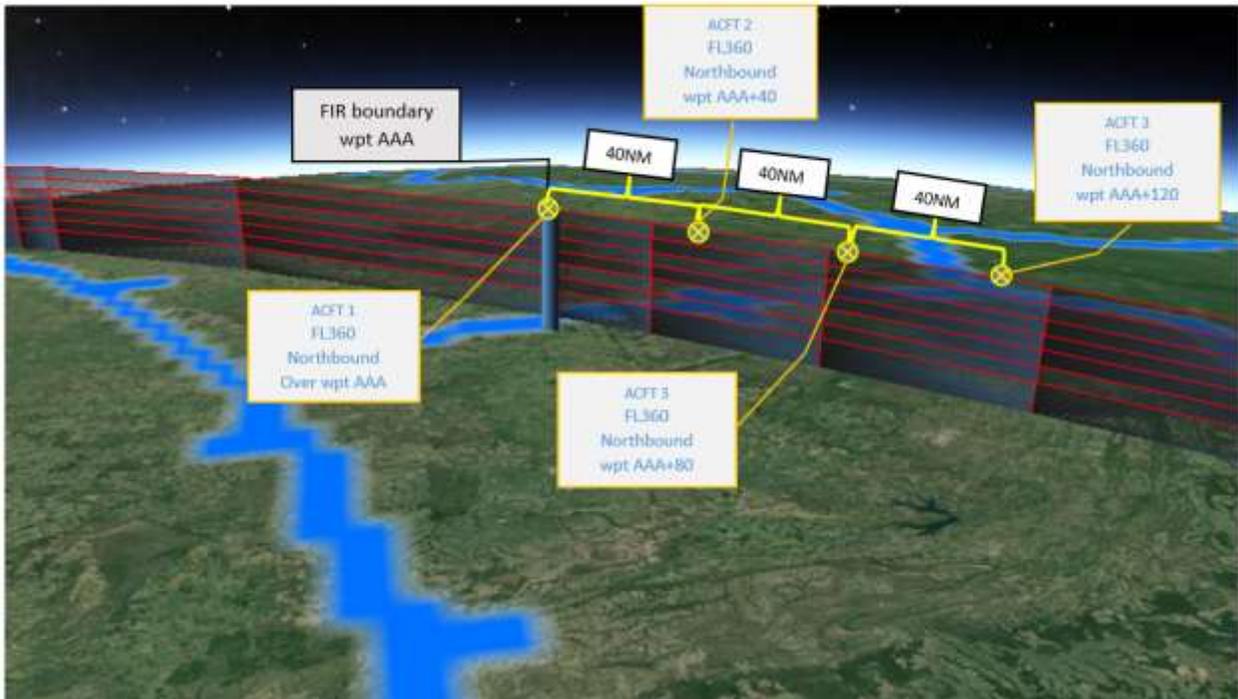
FL Difference	B767-300ER	B767-400ER	B777-200ER	B777-200ER PW	B787-8 GENX	B757-200W	B737-700
1000 FT	0.9 kg/minute	0.1 kg/minute	0.1 kg/minute	1.1 kg/minute	0.2 kg/minute	0.5 kg/minute	0.3 kg/minute
2000 FT	2.2 kg/minute	0.9 kg/minute	1.6 kg/minute	2.8 kg/minute	0.8 kg/minute	1.4 kg/minute	0.8 kg/minute
3000 FT	3.8 kg/minute	2.2 kg/minute	3.7 kg/minute	5.1 kg/minute	2.0 kg/minute	2.6 kg/minute	1.4 kg/minute
4000 FT	5.7 kg/minute	4.0 kg/minute	6.1 kg/minute	7.7 kg/minute	3.3 kg/minute	3.9 kg/minute	2.3 kg/minute

2.3 The proposed longitudinal separation optimization will not increase the traffic per ATC sectors. The airlines will not change their itineraries due to the application of a lower separation. The same amount of flights that the ATC sector are handling today, will be handled post implementation, but with a more efficient longitudinal separation that will increase the possibility of the crews to climb to a more optimum flight level. The graphics bellow show the expected present and future situations:

TODAY'S SITUATION (VERTICAL ENROUTE RESTRICTIONS)



IMPROVED SITUATION (OPTIMUM VERTICAL PROFILE FOR ENROUTE)



2.4 It's important to observe that the implementation of separation of 40 NM is quite simple, considering that:

- a) 20 NM Conventional separation minima based on the application of GNSS is already established in Doc. 4444 and its safety has already been proved by the Panel on Separation and Airspace Safety (SASP);
- b) The proposed separation of 40 NM is twice the minimum required under Doc. 4444;
- c) The implementation of this proposal would need to provide the following information (briefing) to the ATCOs:
 - The new separation minima;
 - The corresponding phraseology; and
 - The application of the new letters of agreement; and
- d) The effectiveness of the new separation would be done by small changes in the current operational agreement letters, replacing the current 80 NM Longitudinal separation by 40 NM.

2.5 The 20 NM longitudinal separation minima should 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 to 40 NM 20 NM separations 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's not a specific requirement of Doc. 4444, taking into consideration that 20 NM is a conventional separation, it's important to observe that a significant portion of the separation of 20 NM will be held in airspace with radar coverage.

2.6 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.

2.7 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.

2.8 It is essential that SAM States establish a comprehensive Action Plan, beginning with the optimization to 40 NM, but also includes the separation of 20 NM and 10 NM. Thus, it is expected that the percentage of states with corresponding optimizations separation evolve over a period of approximately one year between implementations.

3. **Suggested action**

3.1 The Meeting is invited to:

- a) Take note of the information provided in this working paper; and
- b) Establish goals and States commitment to optimize the Longitudinal Separation in SAM Regions.