



**TWENTYENTH MEETING ON THE IMPROVEMENT OF AIR TRAFFIC SERVICES
OVER THE SOUTH ATLANTIC (SAT22)**

(Paris, 7-9 June, 2017)

EUR-SAM CORRIDOR AIRSPACE PROJECT
(Presented by ENAIRE)

Summary

This working paper presents main amendments to EUR/SAM CORRIDOR AIRSPACE PROJECT, derived from new documentation approved by ICAO regarding time based longitudinal separation minima.

Introduction

In SAT 21 a task force was created to update the actual “EUR/SAM Corridor Airspace Concept”. This task force was composed of focal points from EUR/SAM corridor member States/ANSPs (Brazil, Cape Verde, Senegal, Spain), SATMA, ICAO (WACAF & SAM) and IATA.

This team, called ESCIT (EUR-SAM Corridor Implementation Team), with Portugal leading, met in several videoconferences in order to define milestones and establish a main schedule for the project, so it could be coordinated and forwarded in a proper time scale. At that time, the main targets to reach were a 50NM longitudinal separation (in a short/medium time) and RNP4 (as final target), so the project was divided in three different phases: two for 50 NM (first in tactical and then with FANS required), and a final one for RNP4.

In the interim time between SAT21 and the second ESCIT videoconference, some ICAO relevant information regarding PANS-ATM doc.4444 approvals appeared, so ENAIRE proposed that, perhaps, some intermediate objectives should be reanalyzed and, in case, reformulated.

Consequently, the objective of this paper is to rise up discussions around the EUR/ SAM Corridor Airspace concept Action Plan, looking for a more practical approach and, overall, taking into account changes approved in last version of PANS-ATM doc.4444.

Discussion

Before last amendments of ICAO PANS ATM Doc 4444, the longitudinal distance-based separation minima values were 50 NM and 30 NM, both conditioned to a set of requirements to meet or exceed, which includes the requirement for aircraft to be authorized for RNP-10 or RNP-4, direct pilot controller voice communication or CPDLC and ADS-C position reports.

<i>Separation minima</i>	<i>RNP type</i>	<i>Maximum ADS-C periodic reporting interval</i>
93 km (50 NM)	10	27 minutes
	4	32 minutes
55.5 km (30 NM)	4	14 minutes

In November 2016, ICAO Doc 4444 (Pans ATM) introduced for the first time the concept of time-based longitudinal separation minima, so not only distance criteria might be applied.

<i>Mínimas de separación</i>	<i>RNP</i>	<i>RCP</i>	<i>RSP</i>	<i>Máximo intervalo de notificación periódica de ADS-C</i>
93 km (50 NM)	10	240	180	27 minutos
	4	240	180	32 minutos
55,5 km (30 NM)	2 o 4	240	180	12 minutos
5 minutos	2 o 4 o 10	240	180	14 minutos

Based in new ICAO documentation, a five (5) minutes longitudinal separation may be applied, under certain conditions

RNP: Required Navigation Performance

RCP: Required Communication Performance

RSP: Required Surveillance Performance

Is important to take into account that RCP240 and RSP180 should be also be applied to implement 50NM and 30NM longitudinal separation, so not different requisites (but a different time for periodic contract for ADS-C) are to be added to the initial EUR/SAM Airspace Concept Action Plan.

In case that the new time-based criteria is adopted by SAT member , it should be a matter for ESCIT (EUR-SAM Corridor Implementation Team) to define what RCP and RSP requisites implies for operators in the corridor (apart of fulfilling flight plan codes), and how ANSPs Systems should be updated or configured.

RCP240 assumes that the communication system bound to enable the application of the 5 minutes separation minima shall allow a controller, within 4 minutes, to intervene and resolve a potential conflict by contacting an aircraft using an alternative communication. An alternative means shall be available to allow the controller to intervene and resolve the conflict within a total time of 10.5 minutes, should the normal means of communication fail.

RSP180. When a ADS-C periodic or waypoint change event report is not received within 3 minutes of the time it should have been sent, the report is considered overdue and the controller shall take action to obtain the report as quickly as possible, normally by ADS-C or CPDLC. If a report is not received within 6 minutes of the time the original report should have been sent, and there is a possibility of loss of separation with other aircraft, the controller shall take action to resolve any potential conflict(s) as soon as possible. The communication means provided shall be such that the conflict is resolved within a further 7.5 minutes.



PD: When information is received indicating ground or aircraft equipment failure or deterioration below the communication, navigation and surveillance performance requirements, ATC shall then, as required, apply alternative separation minima.

ICAO CIRCULAR 343

ICAO Circular 343 contains detailed information on the analysis used to determine these separation minima and monitoring procedures. Guidelines for the Implementation of Performance-based Longitudinal Separation Minima (Circular 343). As main principles, without going deeper at that stage of the project, we will just refer to point 3.21- CONCLUSIONS of the circular.

3.21.2 ... There is a requirement for a region or State to undertake an implementation safety assessment. In principle, this comprises **two parts**, namely, a **safety assessment for navigation performance** and a **hazard assessment**. In practice, **only a hazard assessment needs to be performed for any local implementation since the safety assessment for the navigation performance under the various navigation specifications is valid for any implementation**. The hazard analysis is to identify hazards and related mitigation measures that are specific to the local situation.

3.21.3 To assist regions and States with their implementation safety assessment, a **State implementation plan is provided** in the next chapter (ANNEX I). This plan relies upon the various outputs from the application of the SASP safety assessment.

ACTION BY THE MEETING

The Meeting is invited to:

- Agree on EUR/SAM Corridor Airspace Concept, introducing time based longitudinal separation minima.
- Agree on EUR/SAM Corridor Airspace Concept Schedule.



PROJECT: EUR/SAM CORRIDOR AIRSPACE CONCEPT

<i>SAT Region</i>	PROJECT DESCRIPTION (PD)			
Title of the Project		Starting date	Ending date	
Meetings on The Improvement of Air Traffic Services over the South Atlantic (SAT)	EUR/SAM CORRIDOR AIRSPACE CONCEPT <i>Project Coordinator: Nuno Simoes (Portugal)</i>		2015	2020
Objective	<p>The objective of the Project is the gradual implementation of the EUR/SAM Airspace Concept, which through optimized ATS Routes and ADS-C, CPDLC and PBN requirements, would allow lateral and longitudinal separation reduction and optimum flight level allocation. Free route concept will be gradually introduced according to PBN and ADS-C/CPDLC requirements and appropriate separation.</p>			
Scope	<p>The scope of the Project is to produce the high level deliverables and documentation models (letter of agreements, AIC, AIP Supplements, etc.), in order to offer the necessary support to States for the gradual implementation of a short, medium and long term EUR/SAM Airspace Concept, applying ADS-C, CPDLC and PBN requirements.</p>			
Metrics	<ul style="list-style-type: none"> • Efficiency: NM, Fuel and CO2 savings. • Target of Level of Safety. 			
Strategy	<p>The Project will follow the following strategic framework:</p> <ul style="list-style-type: none"> - The other deliverables will be developed by members of the SAT Study Group on the Improvement of the Airspace Structure in the EUR/SAM Corridor (IAS/SG), under coordination of the Project Coordinator and support provided by SAM and WACAF ICAO Offices. - The initial reference for the work to be developed will be the Road Map presented to the SAT 19 meeting (refers to the appendix M to the SAT 19 Final Report). - SATMA/CFRA will monitor the preliminary and post phase implementations in accordance with TOR's, where all involved States will provide the necessary data. 			



Goals	Reduce the fuel burn and CO2 emissions. <input type="checkbox"/> Improve Safety <input type="checkbox"/> Improve the capacity of the EUR/SAM Airspace
Justification	The 38 th ICAO General Assembly approved the Global Air Navigation Capacity & Efficiency Plan for the period 2013-2018. The Global Plan Aviation System Block Upgrades (ASBU) will enable aviation to visualize global harmonization, capacity increase and the improvement of environmental efficiency that modern air traffic growth is currently demanding in every region around the world. In this sense, the PBN was selected as one of the main objectives to be complied with, in order to obtain improvement in safety and efficiency. The gradual implementation of the EUR/SAM Airspace Concept, would allow States, Air Navigation Service Providers and users to comply with safety and efficiency strategic objectives applying ADS-C, CPDLC and PBN requirements.
Related projects	<ul style="list-style-type: none">• States: ADS-C/CPDLC Implementation and Maintenance.• Users: PBN (RNP10/RNP4) Airworthiness and Operations Approval



Project Deliverables	Responsible	Status of implementation*	Delivery date	Remarks
Development of the Draft of the EUR/SAM Corridor Airspace Concept Action Plan.	SAM Office		March 04, 2015	
Teleconference on discussion of the Draft of the EUR/SAM Corridor Airspace Concept Action Plan.	Project Coordinator		March 11, 2015	
Formal Approval of the Draft of the EUR/SAM Corridor Airspace Concept Action Plan.	SAM and WACAF ICAO Offices		SAT 20 3 rd to 5 th June 2015	
Designation of Focal points	States/ANSPs/ SATMA		SAT 20 3 rd to 5 th June 2015	List of Focal Points designated to follow and contribute for the different phases of the action plan.
Monthly Teleconference to follow up the status of the Project Deliverables Development	Project Coordinator		Every first Wednesday of each month	The number of teleconferences could be increased or reduced, at the IAS discretion, depending on the work to be developed.



Code	Project Deliverables	Responsible	Status of implementation*	Delivery date	Remarks
5 minutes Longitudinal Separation minima based on RSP/RCP/RNP10					
EUR/SAM_1.1	Approval of Doc4444 5.4.2.9 “Longitudinal separation minima” in EUR/SAM Corridor States National Regulations	States		TBD	
EUR/SAM_1.2	RNP10/RSP180/RCP240 ANSP Requirements Operator Requirements Flight Plan	IATA/ANSP		TBD	States and operators inform about their Systems and fleet status regarding RSP/RCP ANSP systems update and ANSP Safety Studies (ICAO CIRCULAR 343-AN/201)
EUR/SAM_1.3	Global evaluation of ADS-C/CPDLC Ground Systems Performance against RCP and RSP in the corridor, to determine the feasibility of Data Link Mandate	CFRA/ANSP		TBD	Evaluation of the ADS-C/CPDLC Ground Systems Performance against RCP and RSP. RCP/RSP for Operators Flight Plan cover
EUR/SAM_1.5	Safety Assessment Report States Implementation Hazards Log Operators requirements GO-NO GO Decision	SATMA/CFRA/ IATA/STATES		SAT23	
EUR/SAM_1.6	Operational Procedures	States		TBD	
EUR/SAM_1.7	AIC EUR/SAM Corridor DL Mandate: Development of AIC, AIP Supplement and letter of operational agreement to support 5 minutes Longitudinal Separation for States involved on the implementation	SATMA States/ANSP IAS Members		TBD	
EUR/SAM_1.8	Post-implementation Monitoring of the 5 minutes Longitudinal Separation under Data Link Mandate	SATMA States/ANSP IAS Members		SAT 24	