ICAO

SEVENTH MEETINGS OF THE SAT IMPLEMENTATION MANAGEMENT GROUP (SAT IMG/7) AND SAT SAFETY OVERSIGHT GROUP (SAT SOG/7)

Dakar, 6-10 April 2026

Agenda Item 2: States/ANSP updates

STATE REPORT DAKAR OCEANIC FIR

(Presented by ASECNA)

SUMMARY	
This paper outlines the latest updates in terms of traffic figures, equipage and developments in Dakar Oceanic FIR. Action by the Meeting at paragraph 3.	
Strategic goals	A-Every Flight is safe and secure C- Aviation Delivers Seamless, Accessible, and Reliable Mobility for All
REFERENCE	SAT-IMG action R-01 / R-02

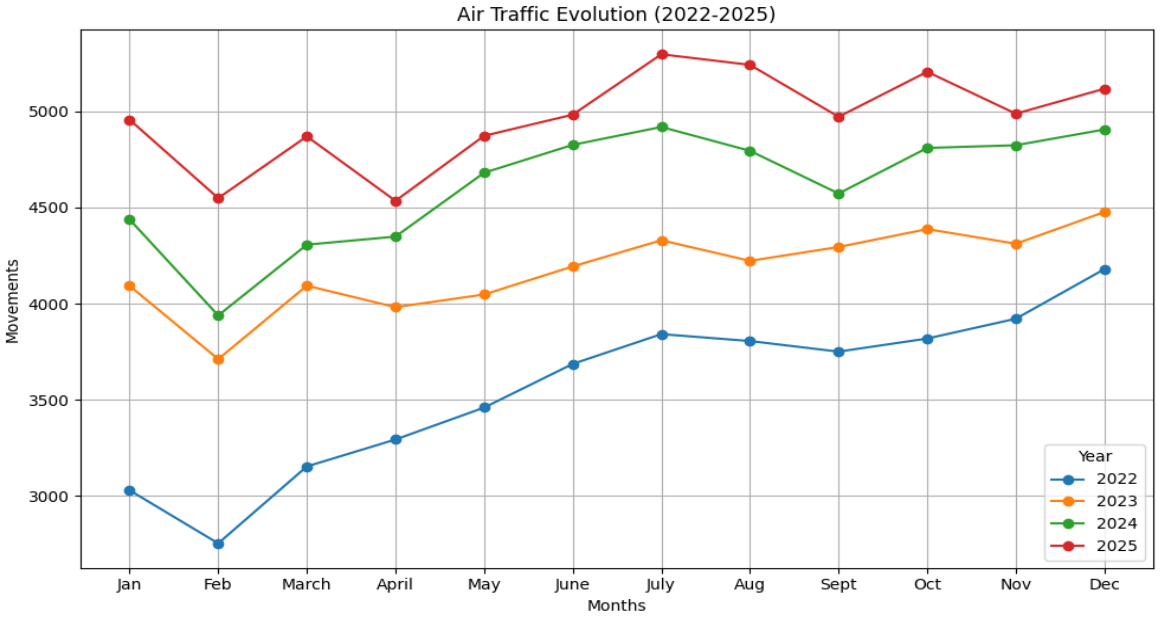
1. Introduction

1.1 This Working Paper addresses SAT-IMG tasks R-01 and R-02, namely “Provide State/ANSP Reports, including traffic figures and information on implementation activities”.

1.2 The paper provides an updated overview of operational data for Dakar oceanic area, as part of ongoing efforts to harmonize local practices with the orientations and initiatives endorsed by the SAT Group. It presents a consolidated view of recent operational developments, together with the current status of the implementation of regional initiatives aimed at enhancing air traffic operations throughout the SAT region.

2. Discussion

Traffic trends in Dakar oceanic airspace



Graph #1

2.1 Graph #1 illustrates the monthly traffic volumes for each year, providing a clear visualization of overall growth patterns and recurring seasonal fluctuations throughout the period.

Key Insights

a. **Strong recovery in early 2023:** Traffic growth exceeded **30%** in January, February and March, confirming a sharp post-pandemic expansion following the COVID-19 recovery phase.

b. **More uniform growth in 2024:** Growth rates stabilized between **5% and 15%**, reflecting a more balanced and less volatile traffic profile across the year.

c. **Moderate but sustained growth in 2025:** Monthly increases ranging from **3% to 15%**, indicate the emergence of a more mature and stable operational environment.

d. **Seasonal structure:** Recurrent peaks appear at the beginning of the year and during mid-summer (July–August), highlighting persistent seasonal demand patterns. Across all year, maximum traffic is consistently observed around **July** – an established high-demand period.

e. **Consistent year-over-year increase:** Every annual curve sits above the previous one, demonstrating continuous, structural traffic growth.

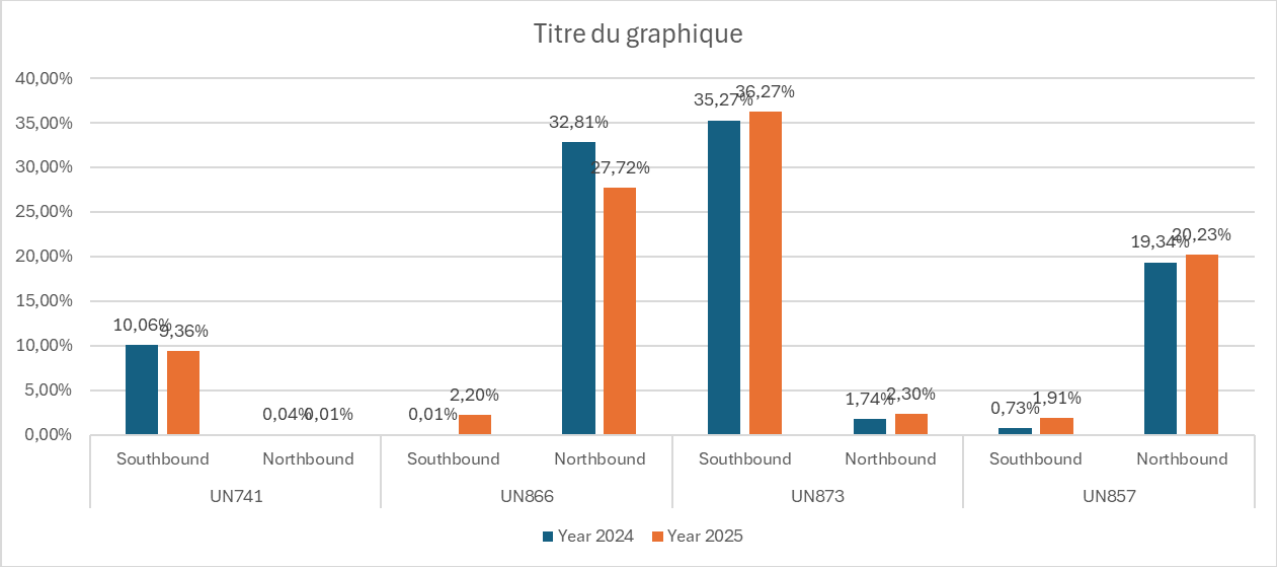
f. **End-of-year rebound:** Following a slight decline around September, traffic realiably increases again toward November–December.

2.2 Interpretation of the Evolution Curve: The evolution curve confirms a robust seasonal pattern characterized by recurrent peaks in July and early months of each year, combined with a consistent end-of-year rebound. These dynamics indicate that the traffic environment in Dakar

Oceanic Area is transitioning toward a **mature and high-density operational phase**, reinforcing the need for continuous optimization of ATC procedures and the accelerated deployment SAT Group initiatives such as PBCS and AIDC.

2.3 **Overall Outlook:** Overall, the traffic outlook points to **sustained operational demand**, necessitating proactive capacity planning, strengthened coordination mechanisms, and the continued maintenance of high performance and safety standards across the airspace.

Traffic distribution – Comparison Between 2024 and 2025



Graph #2

	UN741		UN866		UN873		UN857	
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
Year 2024	10,06%	0,04%	0,01%	32,81%	35,27%	1,74%	0,73%	19,34%
Year 2025	9,36%	0,01%	2,20%	27,72%	36,27%	2,30%	1,91%	20,23%
Variation	**-0,70%**	**-0,03%**	**2,19%**	**-5,09%**	**1,00%**	**0,56%**	**1,18%**	**0,89%**

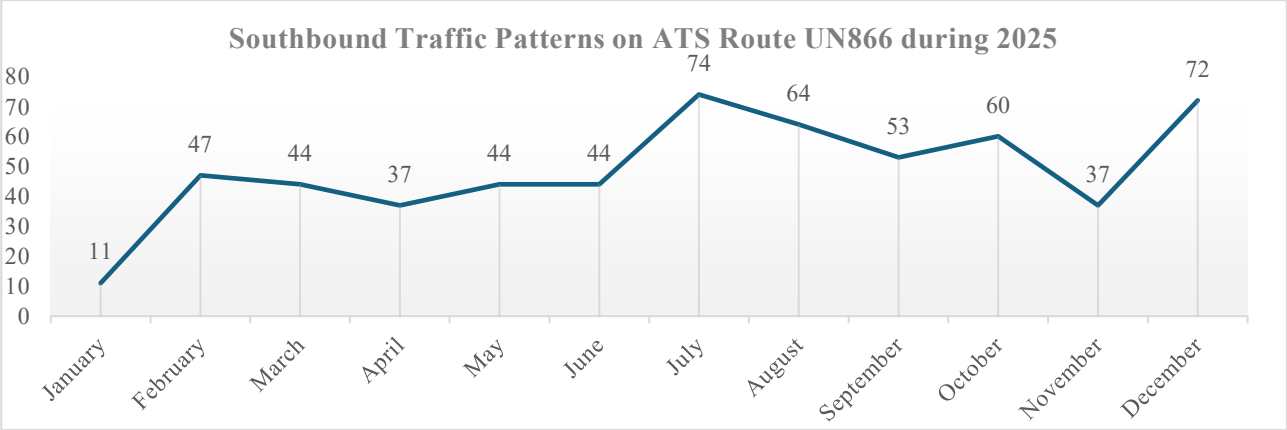
Table #1

2.4 A comparison of ATS route traffic distribution for 2024 and 2025 (refer to Graph #2) indicates continued, though more moderate, structural shifts within the regional traffic network. Route **UN866** further strengthens its role as the dominant Northbound axis, followed by **UN857**, while **UN873** shows signs of stabilization after the significant Northbound decline observed in 2025.

2.5 Route **UN866** exhibits notable directional rebalancing, characterized by a reduction in Northbound movements (-5.09% between 2024 and 2025) coupled with a substantial increase in Southbound traffic (+2,19% over the same period). This change reflects the operational impact of implementing bidirectional use of UN866 in January 2025.
Southbound flows display moderate growth across most routes, whereas Northbound traffic remains primarily concentrated on **UN873** and **UN857**.

2.6 Despite the introduction of bidirectional operations on **UN866**, Graph #2 shows a persistent concentration traffic on ATS Routes **UN866** and **UN873**. This concentration limits optimal

Flight Level allocation and contributes to elevated air traffic controllers workload. These findings underscore the continued need for strategies to promote a more balanced distribution of traffic across the available ATS routes in Dakar Oceanic Area.



Graph #3

2.7 A comparison of Graphs #2 and #3 shows that, despite the implementation of bidirectional operations on **UN866**, its use in the North-South direction remained limited throughout 2025.

2.8 Noticeable southbound traffic peaks were recorded only in July (74 movements) and December (72 movements). As a result, the anticipated operational benefits-namely a more balanced distribution of traffic within the EUR/SAM corridor, reduced North-South demand on UN873, and improved satisfaction of optimum Flight Level requests—have not yet fully materialize, although a slight improvement is observed.

2.9 In light of these observations, it remains essential to encourage aircraft operators to further integrate **UN866** more systematically into their flight planning in order to maximize corridor efficiency. In parallel, ANSPs are encourage to accelerate the deployment of new operational concepts to support a more effective redistribution of traffic across available ATS routes.

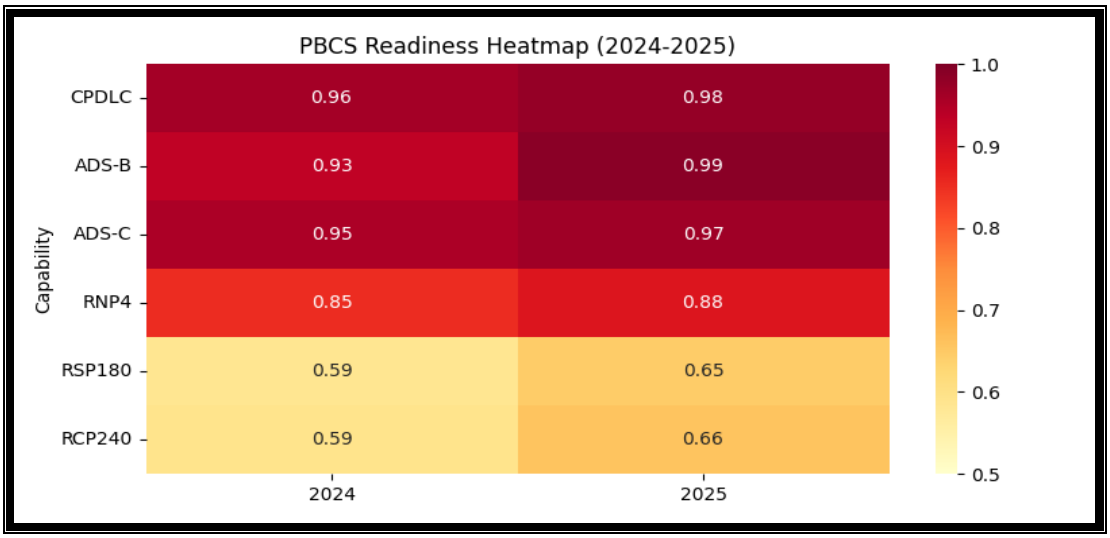
Aircraft equipage based on FPLs Data

	CPDLC	ADS-B	ADS-C	RNP10	RNP4	RSP180	RCP240
2024	96.15%	93.31%	95.48%		85.22%	58.50%	59.34%
2025	97.74%	98.89%	96.83%	99.50%	88.48%	64.56%	65.99%
Variation	1.6%	5.6%	1.3%	-	3.3%	6.1%	6.7%

Table #2

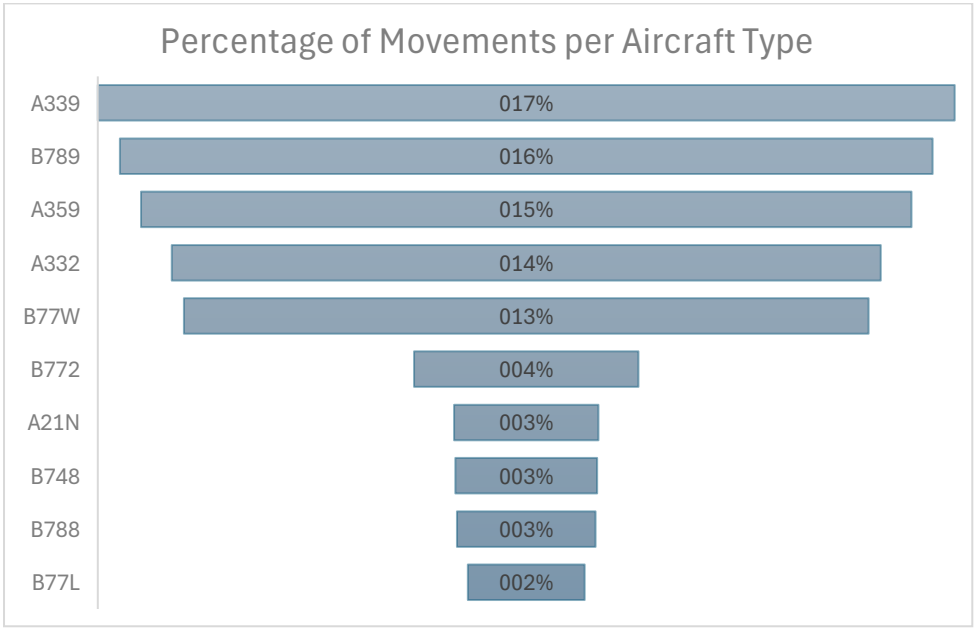
2.10 The 2024–2025 equipage data in Table #2 specifies that aircraft operating within Dakar oceanic airspace possess exceptionally high levels of CNS and PBN capability. **CPDLC** and **ADS-B** equipage are approaching full saturation. **RNP10** is almost universal, and RNP4 equipage continues to rise - providing a robust technological baseline for **PBCS** implementation.

2.11 Of particular note, **RSP180** and **RCP240** capabilities have increased significantly, with approximately two-thirds of traffic now fully PBCS-eligible. This evolution places Dakar oceanic FIR in a strong position to safely reduce separation minima, enhance traffic throughput, and adopt advanced operational concepts such as **PBCS**, **ASEPS** and **collaborative flow management**.



Graph #4

Aircraft type operations in Dakar Oceanic FIR (2025)



Graph #5

2.12 In 2025, aircraft traffic within Dakar oceanic airspace were predominantly driven by **long-range**, **wide-body fleets**. Operations conducted by the **A339**, **B789**, **A359**, **A332**, and **B77W** accounted for **over 74% of all movements**. The A339 emerged as the most frequently operated type, followed closely by the **B789** and **A359**, highlighting a clear operational preference for **new-generation**, **fuel-efficient**, **long-haul aircraft**.

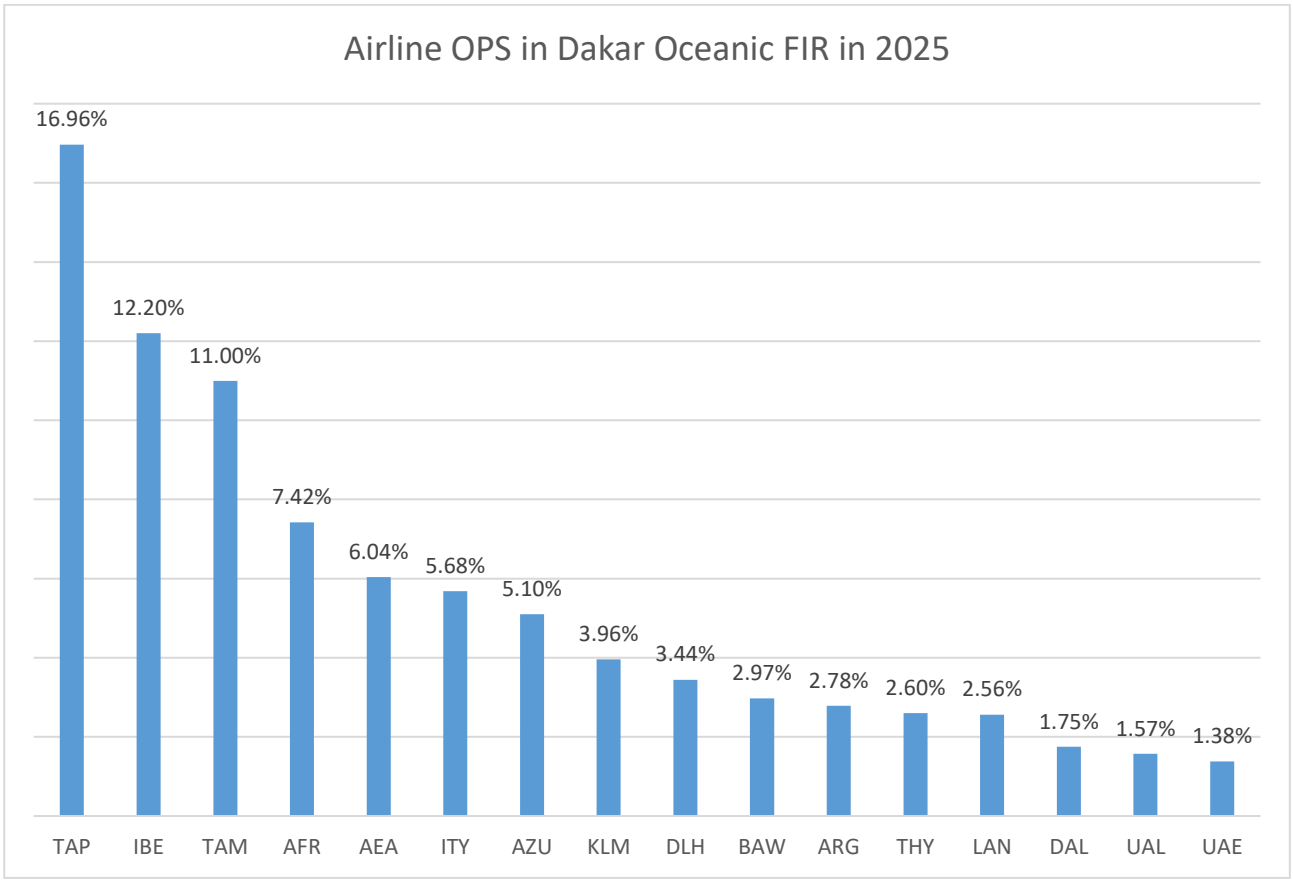
2.13 The Boeing 777 family also maintained a substantial footprint in Dakar Oceanic FIR, **representing approximately one-fifth of total traffic**. Narrow-body operations remained marginal, with the **A321neo** accounting for **less than 3% of movements**.

2.14 Overall, the 2025 traffic composition within Dakar Oceanic airspace reflects a **long-haul**, **high-capacity** operating environment dominated by modern, wide-body fleets optimized for extended-range operations.

Airline operations in Dakar Oceanic FIR during 2025

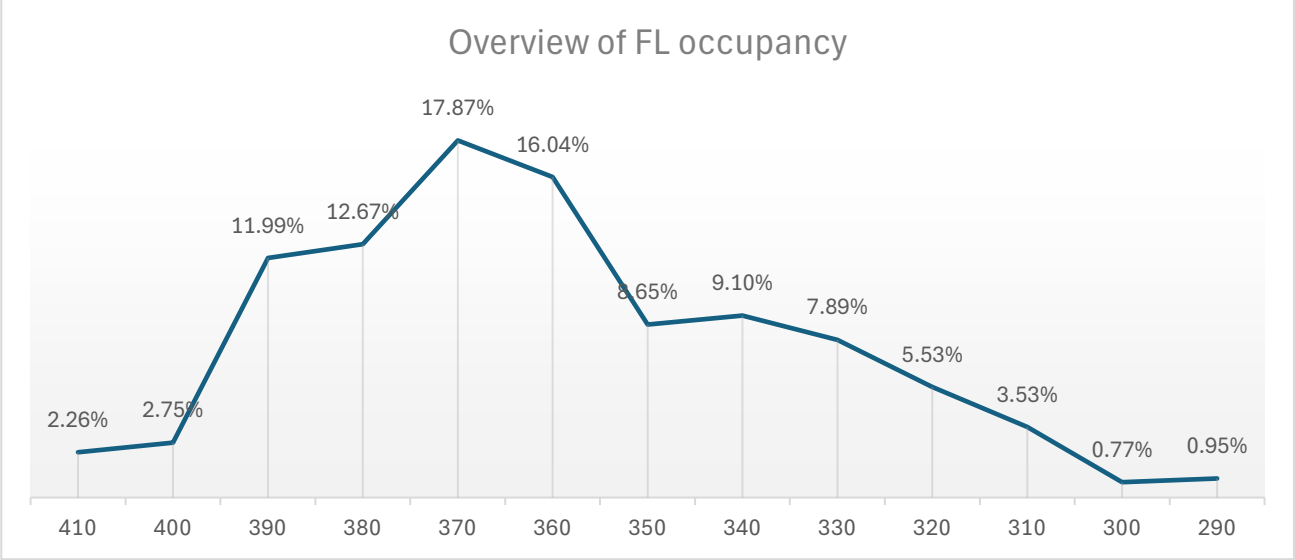
2.15 Airline activity in Dakar Oceanic airspace during 2025 was led by high-density, long-haul operators serving Europe-South America intercontinental flows. As shown in Graph #6 **TAP Air Portugal** was the most prominent carrier, accounting for **16.96% of all movements**, followed by **Iberia** and **TAM**, with these three (3) airlines collectively representing over **40%** of total traffic. European airlines—including **Air France**, **Air Europa**, **ITA Airways**, **Lufthansa**, **KLM**, and **British Airways**—also maintained robust activity levels, reaffirming the strategic importance of the Dakar Oceanic FIR as a **major intercontinental overflight corridor**. South American carriers such as **Azul**, **Aerolíneas Argentinas**, and **LATAM** contribute a significantly to the overall traffic mix.

2.16 In addition, global long-range operators-including **Turkish Airlines**, **Emirates**, Delta Air Lines, and United Airlines-featured prominently, further illustrating the airspace's role as a **key transit zone for worldwide overflight operations**.



Graph #6

Flight Level Occupancy Distribution in Dakar Oceanic airspace (2025)



Graph #7

2.17 The analysis of Graph #7 shows:

- **High-density band**: A pronounced concentration of traffic is observed between **FL360** and **FL380**, with a clear peak at **FL370** (**17.87%**).
- **Moderate usage**: Flight levels between FL340 and FL350 show moderate but steady utilization, decreasing below **FL330**.
- **Low-usage extremes**: Very limited traffic is recorded **above FL390** and **below FL310**.

Conclusion: Aircraft operating in Dakar Oceanic FIR overwhelmingly favor the **FL360–380** band, a typical profile for long-haul operations seeking optimal fuel burn, engine performance, and wind advantage.

2.18 Correlation Between Aircraft Types and Vertical Occupancy: The correlation between Graph #5 (Aircraft type operations) and Graph #7 (Flight level occupancy) clearly demonstrates several critical operational aspects:

- **Dominance of modern wide-body fleets:** Aircraft such as **A339, B789, A359, A332, B77W** constitute the majority of traffic and drive overall vertical-airspace behaviour.
- **Cruise-performance alignment:** These aircraft types are optimized to operate within **FL360-FL380**, directly explaining the marked concentration of traffic around **FL370**.
- **Fleet-driven vertical structure:** The vertical structure of the airspace is therefore largely determined by the prevailing fleet mix. Since many aircraft seek to cruise within the same "optimal band," the following effects are observed:
  - **Saturation at FL370**,
  - **Congestion throughout the FL360–380 layer**,

Which in turn affects level allocatiom flexibility and ATC workload.

Communication and Surveillance Performance Supporting PBCS implementation

2.19 A 28-day extraction of performance data for February was conducted, covering **RCP/CPDLC** communication and **RSP/ADS-C** surveillance. The results are summarized in Tables #3 and #4 below.

2.20 The RCP240 Criterion: The RCP240 specification requires that 95% of transactions achieve an **ACP ≤ 180 seconds threshold** (Table #3 refers):

- The observed performance of **99.45%** significantly exceeds the requirement, demonstrating **excellent CPDLC latency performance** under RCP240 standard.

2.21 **System Application Requirement:** The system-level requirement evaluates whether **99.9% of communications** meet an **ACP ≤ 210 seconds threshold** (Table #3 refers):

- The system achieved **99.61%**, which is slightly below the **99.9%** target but remains **very high and operationally reliable.**
- Although marginally short of the upper threshold, the performance is fully compatible with current operational needs and supports continued PBCS expansion.

RCP		
SPECIFICATION: RCP 240		**APPLICATION: CPDLC**
Total CPDLC_transactions_count	95% RCP240 Benchmark ACP<=180sec	99.9% RCP240 Benchmark ACP<=210sec
7187	**99,45%**	**99,61%**

Table #3

2.22 **High compliance with the 95% RSP180 Standard:**

The **RSP180** specification requires that **95% of ADS-C reports** be received **within 90 seconds.**
The system achieved **98.03%** compliance (Table #4 refers), well above the require threshold. This result demonstrates **strong surveillance-update performance**, ensuring that position reports are delivered with **stable and predictable latency**.

2.23 **Strong performance Against the 99.9% Benchmark:**

The **99.9% benchmark** evaluates whether virtually all ADS-C reports are delivered within **180 seconds**. The system recorded **99.56%** (Table #4 refers), slightly below 99.9% target but still **very high**.

This indicates **reliable and consistent ADS-C reporting**, with only a very small proportion of reports experiencing extended delivery times.

RSP		
SPECIFICATION: RSP180	**APPLICATION: ADS-C**	
Total ADS-C_messages_count	95% RSP180 Benchmark ASP<=90sec	99.9% RSP180 Benchmark ASP<=180sec
18563	**98,03%**	**99,56%**

Table #4

2.24 Overall Assessment of PBCS Readiness: The results presented in tables #3 and #4 provide strong evidence that the system meets the operational perequisites for PBCS implementation:

- Both **RCP** and **RSP** performance **exceed their 95% compliance thresholds**, the key criteria for operational approval.
- The system demonstrates **excellent stability**, low latency, and high predictability in communication and surveillance performance.
- Slight deviations below the **99.9% extreme-tail benchmarks** are observed; however, these are **not operationally prohibitive** and do not undermine overall capability. They simply indicate that **rare, infrequent delays** could can still be optimized.

2.25 **Alignment With ICAO Documentation and Future Enhancements:** Table #3 and #4 provide an overview of system performance related to RCP and RSP requirements in accordance with **ICAO Doc 9869 – PBCS Manual** standards. Further work is underway to harmonize data presentation and analysis with the **PBCS Monitoring and Reporting Guidance** (**Phase 1 -EUR/SAM Corridor**), ensuring full alignment with regional performance-monitoring expectations.

Implementation activities since 2019 onward

Concept	Status	
Route Change	• In accordance with *SAT IMG Decision 03/06* UN866 bidirectionality successfully implemented in Dakar airspace on AIRAC date January 23rd, 2025	
AIDC implementation with neighboring SAT States	Abidjan/Accra	• AIDC between Abidjan ACC and Accra ACC has been operational since July 2019, following a successful bilateral implementation.
	Abidjan/Dakar	• AIDC between Abidjan ACC and Dakar ACC became operational in November 2021, enabling automated and timely coordination
	Abidjan/Luanda	• No AIDC between Abidjan ACC and Luanda ACC but interoperability has been noticed
	Abidjan/Atlántico	• No AIDC between Abidjan ACC and Atlántico ACC but interoperability has been noticed
	Atlántico/Dakar	• Dakar ACC and Atlántico ACC initiated the transition to AIDC coordination on 1 November 2023. • Due to a technical issue, voice coordination has remained in use as a temporary measure. • Significant progress has been achieved by both ANSPs toward resolving the underlying technical problem, with corrective actions already underway.
	Sal/Dakar	• Initial technical and operational testing has been successfully completed. • The safety assessment is nearing finalization to support full operational implementation. • Additional operational tests, conducted on 4 February 2026 and 11 March 2026, were successfully completed. • A phased implementation is planned for 2026, potentially before the next SAT-IMG meeting.
	Piarco/Dakar	• A technical mission to Piarco ACC was conducted in December 2024, establishing the groundwork for a future AIDC implementation roadmap.
	Cayenne/Dakar:	• A coordination mission from Dakar to Cayenne will be scheduled to define a joint roadmap for AIDC implementation between both centers.
Implementation of ASEPS (On hold)	**Space-Based ADS-B** • Space-based ADS-B has been operational in the Dakar Oceanic FIR since 19 May 2022. • It is currently used for situational awareness only. **ASEPS and Advanced ATM Concepts** • Future implementation of ASEPS (Advanced Surveillance-Enhanced Procedural Separation), using space-based ADS-B together with CPDLC, is planned upon completion of PBCS Phase 2.	

PBCS	**PBCS Implementation Roadmap** • In accordance with Decision SAT-IMG/02-1 and the agreements reached during SAT-IMG/04, PBCS implementation has been integrated into ESCIT activities, starting with Phase 1 for the EUR/SAM Corridor. • The implementation plan was updated during ESCIT/9, held virtually on 24 March 2026. • The tentative implementation date for Phase 1 (time-based separation minima) is 26 November 2026.

3. Action by the Meeting

3.1 The meeting is invited to:

a) note the information provided

b) discuss any relevant matter.

— END —