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 8: Coordination between SAT IMG and SAT SOG

8.b) Any other aspects

PBCS MONITORING REPORTS DEVELOPED BY BRAZIL

(Presented by Brazil and CARSAMMA)

SUMMARY

This working paper presents the automated PBCS non-compliance monitoring forms developed by Brazil to support the monitoring of datalink performance in the Atlántico FIR. The forms are based on the monitoring tables of ICAO Doc 9869 and allow for the identification and reporting of potential degradations in CPDLC communication and ADS-C surveillance associated with PBCS operations.

Action by the Meeting is in paragraph 3.

Strategic goals	*A-Every Flight is safe and secure* *C- Aviation Delivers Seamless, Accessible, and Reliable Mobility for All*

1. INTRODUCTION

1.1 In the ICAO Performance-based Communication and Surveillance (PBCS) Manual (Doc 9869), PBCS monitoring is defined as the systematic process of collecting, analyzing, and evaluating the performance of datalink communications and surveillance used in performance-based separation.

1.2 Monitoring activities allow verification that aircraft and ATC systems are meeting the communication performance (RCP) and surveillance performance (RSP) requirements necessary for the

application of PBCS separation minima, ensuring that the performance declared in the flight plan and reflected in ATC clearances corresponds to the actual performance observed during operations.

1.3 Brazil has developed automated monitoring reports aligned with the monitoring framework defined in ICAO Doc 9869. These reports are structured based on the performance evaluation according to the manual, which defines the metrics used to evaluate the operational performance of CPDLC communications and ADS-C surveillance.

2. DISCUSSION

2.1 The automated PBCS non-compliance monitoring forms consolidate operational data associated with datalink communications, ADS-C surveillance exchanges, and aircraft capability information declared in the flight plan. To support this process, Brazil adapted the monitoring tables D-7, D-8, D-9, D-10 and D-11 from ICAO Doc 9869 to structure the automated forms used to identify and report potential deviations from the required RCP and RSP performance levels.

2.2 The forms presented in the appendices to this document were developed by Brazil to support the monitoring and reporting of datalink performance associated with PBCS operations. A total of 28 monitoring forms (**Appendix A**) were developed, including **5 main monitoring forms and 43** complementary forms (analytical forms and operational logs)

2.3 The main forms (**Appendix B**) address (1) datalink service unavailability reporting, (2) daily PBCS aircraft movements, (3 and 4) local RCP and RSP performance monitoring by aircraft, and (5) operator datalink performance comparison. Examples of these main forms are presented in this paper, while the remaining forms constitute the broader monitoring toolkit used within the Brazilian monitoring process.

2.4 The generation of these forms is carried out within CINDACTA III and considers aircraft operating with an associated flight plan under the responsibility of the Atlântico ACC (ACC SBAO). The information provided by these reports supports technical analyses aimed at identifying operational performance trends and detecting potential deviations from the required performance standards. These analyses contribute to monitoring activities within the Brazilian air traffic management system and may support investigations, technical coordination, or operational mitigation actions when necessary.

2.5 The consolidated information is subsequently shared with the entities responsible for regional monitoring, including the Caribbean and South American Regional Monitoring Agency (CARSAMMA), contributing to the regional PBCS monitoring framework.

2.6 Through this approach, the monitoring reports developed in Brazil contribute to the broader regional framework for PBCS performance monitoring, ensuring alignment with international monitoring practices and supporting the safe and efficient implementation of performance-based separation.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) take note of the monitoring report forms presented in this paper as a possible reference for PBCS monitoring reporting in the region; and
b) provide directions as deemed necessary.

APPENDIX A

AUTOMATED PBCS NON-COMPLIANCE MONITORING FORMS LIST

Main Monitoring Forms		
No.	**Name (Standardized)**	**Reference in ICAO Doc 9869**
1	**Datalink Service Unavailability Monitoring Report**	D-7
2	**Daily PBCS Aircraft Movements Report**	NIL – Reference: Doc 10063 item 3.4.2
3	**Local PBCS Monitoring Form – RSP (ADS-C) by Aircraft Registration**	D-9
4	**Local PBCS Monitoring Form – RCP (CPDLC) by Aircraft Registration**	D-8
5	**Operator Datalink Performance Comparison Report (ACP / ACTP / ASP / PORT)**	D-6

Complementary Monitoring Forms		
No.	**Name (Standardized)**	**Reference in ICAO Doc 9869**
1	**CPDLC Uplink Confirmation Time Monitoring Form**	D-1
2	**ADS-C Message Forwarding Time Monitoring Form**	D-3
3	**Local PBCS Monitoring Form – RCP by Communication Type**	D-8
4	**Local PBCS Monitoring Form – RCP by Aircraft Operator**	D-8
5	**Local PBCS Monitoring Form – RCP by Uplink Message Type**	D-8
6	**Local PBCS Monitoring Form – RCP by Ground Station**	D-8
7	**Local PBCS Monitoring Form – RCP by Grouped Communication Type**	D-8
8	**Local PBCS Monitoring Form – RSP (ADS-C)**	D-9
9	**Local PBCS Monitoring Form – RSP by Ground Station**	D-9
10	**Local PBCS Monitoring Form – RSP by Media Type**	D-9
11	**Local PBCS Monitoring Form – RSP by Grouped Communication Type**	D-9
12	**RCP Performance Monitoring Report – ACP / ACTP / PORT (Cumulative)**	D-10
13	**Aircraft Operator Monitoring Report – CPDLC by Aircraft Type**	D-10
14	**Aircraft Operator Monitoring Report – ADS-C by Aircraft Type**	D-10
15	**FIR Monitoring Report – RCP (CPDLC)**	D-11
16	**FIR Monitoring Report – RSP (ADS-C)**	D-11

Complementary Monitoring Forms		
17	**Report on the number of automatically rejected CPDLC downlink messages**	2.2.3.2 b)
18	**Report on the number of retransmitted CPDLC uplink messages**	2.2.3.2 c)
19	**Report on the number of CPDLC uplink messages pending operational response**	2.2.3.2 c)
20	**Monthly cumulative ADS-C ASP performance report**	3.1.5.6 - Figure D-4./ 3.1.5.8 - Figure D-6 (by Operator)
21	**Monthly cumulative CPDLC ACTP performance report**	
22	**Monthly cumulative CPDLC ACP performance report**	
23	**Monthly cumulative PORT ACP performance report**	
24	**Weekly cumulative ADS-C ASP performance report**	
25	**Weekly cumulative CPDLC ACTP performance report**	
26	**Weekly cumulative CPDLC ACP performance report**	
27	**Weekly cumulative PORT ACP performance report**	
28	**ASP performance report -by year**	3.1.5.6 - Figure D-3
29	**ACTP performance report - by year**	
30	**ACP performance report - by year**	
31	**PORT performance report -by year**	
32	**ADS-C text file**	Table D-3.
33	**CPDLC text file**	Table D-1.
34	**ADS-C and CPDLC availability report**	Figure D-5.
35	**ADS-C and CPDLC interruption report (overall)**	Table D-4
36	**Registry of reported ADS-C and CPDLC communication interruptions**	

APPENDIX A

AUTOMATED PBCS NON-COMPLIANCE MONITORING FORMS LIST

Operational Logs and Additional Monitoring Records		
No.	**Name (Standardized)**	**Reference**
1	**ADS-C LLD Operational Log**	NIL – Doc 10063 item 3.4.3.4.5
2	**ACP Violation Report**	NIL
3	**ASP Violation Report**	NIL
4	**CPDLC Acknowledgment Log**	NIL
5	**RCP Alert Log**	NIL
6	**Minimum Separation Violation Daily Report**	NIL
7	**CPDLC Message Data Volume Report (Kilobits)**	NIL

APPENDIX B

AUTOMATED PBCS NON-COMPLIANCE MONITORING FORMS SAMPLE

1	**Datalink Service Unavailability Monitoring Report**	D-7

Emissão: 18/12/2025 13:12:28 (UTC)

ACC Atlântico

RELATÓRIO PBCS

Relatório de Interrupções Datalink

Data/Hora Inicial:	01/11/2025 00:00	Data/Hora Final:	18/12/2025 13:12

Obs.: as interrupções estão ordenadas em ordem crescente da data/hora de início da interrupção

Notificação do CSP	Nome do CSP/Ticket	Tipo de Interrupção	Início	Término	Duração (min)
Não há dados para o período selecionado					
Total					**0**

Critérios para identificação de interrupções não identificada:

1 - Pelo menos 4 ou mais mensagens ADS-C e/ou CPDLC consecutivas da mesma Estação, ordenada pela data/hora de envio, com tempo de downlink(hora de recebimento menos hora de envio) maior que 180 segundos;

2 - As mensagens consecutivas sejam de ao menos 3 aeronaves diferentes;

3 - O horário de envio entre cada mensagem consecutiva de uma mesma estação, deve ser menor que 24 horas para que essas mensagens sejam consideradas como continuidade de falha;

4 - A duração da interrupção seja maior ou igual a 10 minutos(600 segundos).

1 / 1

APPENDIX B

AUTOMATED PBCS NON-COMPLIANCE MONITORING FORMS SAMPLE

2	**Daily PBCS Aircraft Movements Report**	NIL – Reference: Doc 10063 item 3.4.2

Emissão: 18/12/2025 13:27:51 (UTC)

ACC Atlântico

RELATÓRIO PBCS

Relatório de Movimentos Diários

Data Inicial: 01/11/2025 Data Final: 18/12/2025

Matrícula(s): TODOS

Operador(es) de Aeronave: PLN

Data	Indicativo Chamada da ANV	Matrícula da ANV	Tipo da ANV	Aprovado RVSM?	AD de origem	AD de destino	Ponto de Entrada	Hora no Ponto de Entrada	FL no Ponto de Entrada	Aerovias	Ponto de Saída	Hora no Ponto de Saída	FL no Ponto de Saída	RNP4	RNP10	RCP240	RSP180
06/11/2025	PLN001A	PT	B774	W	SBSV	GOOO	POLVO	11:37	300	UL330	ASDOK	16:14	300	Y	N	N	N
06/11/2025	PLN003C	PTA003C	B774	W	SBSP	FAJO	WAYBB	11:37	300	--	WAYAA	17:36	300	N	N	Y	N
06/11/2025	PLN005E	PTA005E	B774	W	SBSP	FAJO	3400S05000W	11:37	300	--	2600S01000W	19:05	300	Y	Y	Y	Y
06/11/2025	PLN008H	--	B774	W	FAOR	SOCA	ETAXO	11:37	300	UL375 / UN548 / UL327 / UL330 / UL206 / UN857 / UN873 /	ARUSI	20:42	300	Y	Y	Y	Y
06/11/2025	PLN002B	PTB	B774	X	SBNT	FAJO	BBB	11:37	250	--	AAA	18:41	250	N	Y	N	N
06/11/2025	PLN004D	PTA004D	B774	W	SBSP	FAJO	34S050W	11:37	300	--	26S010W	19:05	300	N	N	N	Y
06/11/2025	PLN006F	LTA006F	B774	W	SBFN	GOOO	VUNOK317010	11:37	300	--	TASIL328010	13:07	300	N	N	N	N

1 / 1

APPENDIX B

AUTOMATED PBCS NON-COMPLIANCE MONITORING FORMS SAMPLE

3	**Local PBCS Monitoring Form – RSP (ADS-C) by Aircraft Registration**	D-9

Emissão: 18/12/2025 13:21:23 (UTC)

ACC Atlântico

RELATÓRIO PBCS

Relatório de monitoramento PBCS local RSP - ADS-C - Por Matrícula

Interrupções do CSP excluídas

Início Período:	11/2025	Fim Período:	12/2025
Matrícula(s):	TODOS		
Operador(es) de Aeronave:	TODOS		

Matrícula	Total de reportes ADS-C	Referência 95% RSP 180s ASP ≤ 90s	Referência 99.9% RSP 180s ASP ≤ 180s
		Fim a Fim	Fim a Fim
PTNOV3	123	99,19%	99,19%
PC01	8	100,%	100,%
PDEZEMB	4	100,%	100,%
PLTAM1	3	100,%	100,%
PTNOV2	3	100,%	100,%
PMDEZEM	2	50,%	50,%
PTNOV0	2	50,%	50,%
PTNOV4	2	100,%	100,%
PC	1	100,%	100,%
PC0	1	100,%	100,%
PTNOV1	1	100,%	100,%
PTPHNOV	1	0,%	100,%

APPENDIX B

AUTOMATED PBCS NON-COMPLIANCE MONITORING FORMS SAMPLE

4	**Local PBCS Monitoring Form – RCP (CPDLC) by Aircraft Registration**	D-8

Emissão: 18/12/2025 13:18:06 (UTC)

ACC Atlântico

RELATÓRIO PBCS

Relatório de Monitoramento PBCS Local RCP - CPDLC - Por Matrícula

Interrupções do CSP excluídas

Início Período: 11/2025 Fim Período: 12/2025

Matrícula(s): TODOS

Operador(es) de aeronave: TODOS

Instruções de contato (UM117 a UM123): SIM

Matrícula	Total de Transações (WILCO recebido)	Referência 95% RCP 240s ACP ≤ 180s	Referência 95% RCP 240s ACTP ≤ 120s	Referência 99.9% RCP 240s ACP ≤ 210s	Referência 99.9% RCP 240s ACTP ≤ 150s	Referência 95% RCP 240s PORT ≤ 60s
		Fim a Fim	Rede	Fim a Fim	Rede	Resposta do Piloto
KDEZEMB	2	100,%	100,%	100,%	100,%	100,%
PC	1	100,%	100,%	100,%	100,%	100,%
PC0	1	100,%	100,%	100,%	100,%	100,%
PC01111	1	100,%	100,%	100,%	100,%	100,%
PHNOV1	1	100,%	100,%	100,%	100,%	100,%
PHNOV2	1	100,%	100,%	100,%	100,%	100,%
PHNOV3	7	100,%	100,%	100,%	100,%	100,%
PHNOV4	1	100,%	100,%	100,%	100,%	100,%
PHNOV5	2	100,%	100,%	100,%	100,%	100,%
PHNOV6	1	100,%	100,%	100,%	100,%	100,%

APPENDIX B

AUTOMATED PBCS NON-COMPLIANCE MONITORING FORMS SAMPLE

5	**Operator Datalink Performance Comparison Report (ACP / ACTP / ASP / PORT)**	D-6

Emissão: 18/12/2025 13:11:20 (UTC)

ACC Atlântico

RELATÓRIO PBCS

Relatório de Desempenho de ACTP, ACP, PORT, ASP por operador de aeronave

Interrupções do CSP excluídas

Início Período: 11/2025 Fim Período: 12/2025

Matrícula(s): TODOS

Instruções de Contato (UM117 a UM123): Sim

Operador de Aeronave	ADS-C				CPDLC						
	Total de reportes ADS-C	% de Total de reportes ADS-C	Referência 95% RSP 180s ASP ≤ 90s Fim a Fim	Referência 99.9% RSP 180s ASP ≤ 180s Fim a Fim	Total de Transações CPDLC (WILCO recebido)	% de Total de Transações CPDLC (WILCO recebido)	Referência 95% RCP 240s ACTP ≤ 120s Rede	Referência 99.9% RCP 240s ACTP ≤ 150s Rede	Referência 95% RCP 240s ACP ≤ 180s Fim a Fim	Referência 99.9% RCP 240s ACP ≤ 210s Fim a Fim	Referência 95% RCP 240s PORT ≤ 60s Resposta do Piloto
AEY	123	81,46%	99,19%	99,19%	0	0,%	0,%	0,%	0,%	0,%	0,%
YYY	10	6,62%	100,00%	100,%	3	2,4%	100,%	100,%	100,%	100,%	100,%
TAM	8	5,3%	100,00%	100,%	3	2,4%	100,%	100,%	66,67%	66,67%	66,67%
FAB	5	3,31%	80,00%	80,%	5	4,%	80,%	80,%	80,%	80,%	80,%
BPA	3	1,99%	33,33%	66,67%	4	3,2%	75,%	100,%	50,%	100,%	50,%
AFR	2	1,32%	100,00%	100,%	0	0,%	0,%	0,%	0,%	0,%	0,%
GOL	0	0,%	0,00%	0,%	7	5,6%	100,%	100,%	100,%	100,%	100,%
ETH	0	0,%	0,00%	0,%	101	80,8%	99,01%	99,01%	99,01%	99,01%	99,01%
PTN	0	0,%	0,00%	0,%	1	0,8%	100,%	100,%	100,%	100,%	100,%
AZU	0	0,%	0,00%	0,%	1	0,8%	100,%	100,%	100,%	100,%	100,%
TOTAL	151	100,%	97,35%	98,01%	125	100,%	97,6%	98,4%	96,%	97,6%	96,%