International Civil Aviation Organization SAM/IG/19-WP/05
South American Regional Office 15/05/17
Nineteenth Workshop/Meeting of the SAM Implementation Group (SAM/IG/19) - Regional Project RLA/06/901
(Lima, Peru, 22 to 26 May 2016)

Agenda Item 2: Optimization of the SAM airspace
a) PBN en-route
b) PBN in terminal areas
c) PBN procedures

Follow-up to PBN implementation in relation to the goals of the Declaration of Bogota and other implementations related to airspace optimization

(Presented by the Secretariat)

SUMMARY

This working paper presents a report on the evolution of implementation activities related to the goals of the Declaration of Bogota for the SAM Region and other implementations related to airspace optimisation in the SAM Region, so that States may identify those activities in which they must focus their efforts to achieve the established goals.

REFERENCES:

- RAAC/13 (Bogota, Colombia, 4-6 December 2013) – Declaration of Bogota
- Third Meeting of Air Navigation and Safety Directors (Lima, Peru, 22-24 August 2016)
- Tenth Meeting of the Coordination Committee of Project RLA/06/901 (Lima, Peru, 25-26 August 2016)
- SAM/IG meetings

ICAO strategic objectives:	*A - Safety* *E – Environmental protection*

1. Introduction

1.1 The Third Meeting of Air Navigation and Safety Directors (Lima, Peru, 22-24 August 2016) reviewed, *inter alia*, the status of implementation of PBN with respect to route optimisation, terminal areas (SIDs, STARs, CCO and CDO), PBN approach procedures, as well as the reduction of CO_2 emissions as part of the goals approved by the RAAC/13 meeting (Bogota, Colombia, 4-6 December 2013) through the Declaration of Bogota (Conclusion RAAC/13-8 – *Implementation of air navigation and safety priorities*).

1.2 The SAM/IG/18 meeting took note of the progress made in PBN implementation, as well as of the difficulties facing implementation, such as the lack of designers in some States, deficiencies in

the management of national PBN projects to meet the agreed goals, and interruptions resulting from attention being diverted to other parallel projects.

2. **Analysis**

Follow-up to PBN implementation in relation to the goals of the Declaration of Bogota

Updating of PBN national plans

2.1 The information collected at the SAM/IG/18 meeting on the metrics for the updating of PBN national plans showed 93% compliance. **Table 1** below contains the updated information:

2016	**ARG**	**BOL**	**BRA**	**CHI**	**COL**	**FGY**	**ECU**	**GUY**	**PAN**	**PAR**	**PER**	**SUR**	**URU**	**VEN**
93%	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES

Table 1 – States that have submitted their updated PBN national plans

PBN en-route

2.2 The progress made in the implementation of RNAV routes in upper airspace was 65%, exceeding the goal of 60% established in the Declaration of Bogota. In order to get a more clear idea, **Table 2** below shows the number of regional routes in the upper airspace, both conventional and PBN, as well as the percentage of PBN routes attained.

Total ATS routes in upper airspace	Conventional routes	PBN routes	% of PBN routes implemented	Indicator of the Declaration of Bogota: % PBN routes
145	52	93	**65%**	60%

Table 2 - ATS routes in upper airspace (conventional and PBN)

2.3 In accordance with the information provided at the SAM/IG/17 meeting, efforts continued to be made in 2016 for coordination amongst CAR and SAM States to improve ATS routes. In this sense, two harmonisation meetings were carried out on PBN harmonisation, modernisation, and implementation, in Fort Lauderdale – United States, and San José - Costa Rica, in March and December 2016 respectively. The meetings resulted in proposals for the optimisation or implementation of a set of interregional RNAV routes, and an agreement on a first implementation phase with AIRAC date 17 August 2017.

2.4 Within the context of the aforementioned set of routes, four parallel RNAV routes will be improved and implemented in Brazilian airspace, which will optimise aircraft flow from CAR and SAM airports to Rio de Janeiro and Sao Paulo, and *vice versa*. This implementation also involves the administrations of Guyana, Suriname, and Venezuela.

2.5 Within the context of the aforementioned meetings, emphasis has been placed on coordination amongst CAR and SAM States for harmonised implementation of 40 NM longitudinal

separation, as described further down in this working paper.

2.6 A proposal of amendment to the eANP concerning optimised or implemented ATS routes is being processed. The reports of the two PBN implementation and harmonisation meetings can be found at the following websites:

http://www2010.icao.int/NACC/Pages/meetings-2016-PBN.aspx

http://www2010.icao.int/NACC/Pages/meetings-2016-pbncar.aspx

2.7 The third ICAO/IATA/CANSO PBN harmonisation, modernisation, and implementation meetings for the NAM/CAR/SAM Regions is scheduled for the second semester of 2017, at a venue still to be defined. SAM States, especially those that have common FIR boundaries with the CAR Region, are invited to coordinate through the Regional Office in Lima their requirements in terms of RNAV route optimisation/implementation, longitudinal separation implementation aspects, ATS letters of agreement, etc., so that they can be submitted and discussed at the aforementioned third meeting.

PBN in TMAs

2.8 The SAM/IG/18 meeting took note of the results of the two PBN implementation workshops conducted with the participation of IATA and leading operators, which contributed to collaborative decision-making and enhanced the results of the planning, design, and validation phases.

2.9 At the SAM/IG/18 meeting, as a complement to PBN plans, some SAM States updated the dates of their action plans for the implementation of PBN in the redesign of selected airspaces. However, there are still States that have not updated said action plans. The meeting stressed the importance of efforts being made by States to develop their national plans, but underlined the importance of executing them through their action plans. The status of updating of the action plans is shown in **Table 3**. The tentative implementation dates reported by the States at the SAM/IG/18 meeting are shown in **Table 4**. It is important to note that, since the First PBN Workshop (Bogota, Colombia, 12-23 May 2014), consensus has been slowly building with regard to PBN implementation, with significant implementations in 3 States (Brazil, Chile, and Ecuador).

2016 79%	**ARG**	**BOL**	**BRA**	**CHI**	**COL**	**FGY**	**ECU**	**GUY**	**PAN**	**PAR**	**PER**	**SUR**	**URU**	**VEN**
	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	NO	YES	YES

Table 3 – States with action plans for PBN redesign of selected airspaces

PBN – "Full implementation" airspaces			
State			**Implementation**
Argentina	BAIRES		TBD
Bolivia	Cochabamba		TBD
	La Paz		TBD
	Santa Cruz		TBD
	Sucre		TBD
	Oruro		TBD
	Potosí		TBD
Brazil	Brasilia		12 Nov 2015 (implemented)
	Belo Horizonte		12 Nov 2015 (implemented)
	Sao Paulo (modifications)		12 Nov 2015 (implemented)
	Salvador		27 Apr 2017 (implemented)
	Manaus		17 Aug 2017
	(PBN SUR)	Curitiba	12 Oct 2017
		Florianopolis	
		Joinville	
		Navegantes	
		Porto Alegre	
		São Paulo (modifications)	
		CW FIR route network	
Chile	Santiago (Sur)		8 Dec 2016 (implemented)
	Santiago FIR route network		
Colombia	Bogota		TBD
Ecuador	Guayaquil		21 Jul 2016 (implemented)
Panama	Panama		TBD
Paraguay	Asunción		17 Aug 2017
Peru	Arequipa		TBD
	Cuzco		TBD
	Juliaca		TBD
	Puerto Maldonado		TBD
Uruguay	Carrasco y Laguna del Sauce		TBD
Venezuela	Maiquetía		TBD

Table 4 – Tentative dates established by the States for the implementation of PBN redesign of selected airspaces

2.10 Also at the SAM/IG/18, the States had the opportunity to review the results of the First PANS-OPS workshop conducted in the SAM Region for analysing, together with procedure designers, the best design practices, the amendments to ICAO Doc 8168 and Circular 336 regarding RNAV and RNP arrivals, departures, and approaches. **Appendix A** to this working paper contains a table with the recommendations made by the PANS-OPS workshop to the States for the harmonisation of PANS-OPS procedures in the SAM Region, to be updated at the meeting.

2.11 Taking into account the importance of implementing the recommendations emanating from the First PANS-OPS workshop, which have been proposed by the PANS-OPS Panel with the purpose of harmonising instrument procedures and related processes for improving safety, the SAM/IG/18 meeting formulated Conclusion SAM/IG/18-01: *PANS-OPS recommendations for harmonising instrument procedures in the SAM Region*.

Implementation of SIDs, STARs and PBN approach procedures

2.12 No significant progress has been made in terms of the commitment made at the ICAO Assembly, in accordance with Resolution A37-11, since the region only achieved 75% implementation, as reported at the SAM/IG/18 meeting. Consequently, the States will have to work harder in order to achieve this goal.

2.13 Regarding CCO implementation, the SAM/IG/18 meeting determined that 20% implementation had been achieved, and 22% for CDO. The meeting agreed that the States of the Region would consider applying the processes described in the CDO and CCO Manuals to existing SIDs and STARs, which were validated as such.

2.14 In this sense, the SAM/IG/18 meeting also took note that, in complex airspaces, it is not always possible to have a perfect combined CCO and CDO design, in which case, each State, to the extent possible, should prioritise SIDs with the application of CCO operational techniques, provided the obstacles or the operational complexity do not jeopardise safety.

2.15 Similarly, the meeting noted that, at some international airports, the strict implementation of a STAR might not be efficient. Accordingly, the meeting agreed that, under such circumstances, and after conducting the corresponding analysis, each State could send a note reporting this fact and designate it "*not applicable*" in the same PBN procedure implementation control template.

2.16 The meeting took note of the convenience of optimising controller and pilot workload, by establishing SIDs with different transitions instead of having many SIDs for departing from the same runway.

2.17 As reported at the SAM/IG/18 meeting, the goal of the Declaration of Bogota of having PBN SID/STAR routes in at least 60% of international aerodromes of the Region has been exceeded. Likewise, progress continues to be made in the implementation of said routes.

2.18 Upon analysing the status of implementation of SIDs, STARs, and PBN approaches, the SAM/IG/18 meeting took note of the latest information on international aerodromes of the Region, as shown in **Appendix B** to this working paper, and which was incorporated into the control template.

2.19 Regarding this information on international aerodromes submitted to the SAM/IG/18 meeting, the DCA of Suriname sent an email indicating that they did not consider the aerodrome of the city of Paramaribo (SMZO) as international and therefore should not appear in Table AOP of VOL II of the eANP. The Secretariat deleted that aerodrome from the list so that it will not be considered in the PBN procedure control template.

2.20 Based on a suggestion made by Peru and approved by the SAM/IG/18 meeting, the control template has incorporated a status option in addition to "1 = *implemented*" or "2 = *not-implemented*", which is "N/A = *not applicable*", in order to identify thresholds where SID, STAR and/or PBN approach implementation is not feasible due to obstacles or some other specific reason, thus permits a more detailed portrayal of the status of implementation.

2.21 Thus, taking into account the changes made, it is essential that, during the Meeting, the States review and complete the data of the model table shown in **Appendix C** to this working paper, in order to update and supplement template information, pursuant to conclusion SAM/IG/14-4: *Follow-up to the PBN goals established in the Declaration of Bogota*. The Secretariat will provide the spread sheet and will explain the criteria for proper completion.

Reduction of CO_2 emissions as a result of PBN implementation in TMAs

2.22 The CO_2 reduction achieved in 2015 was **23.351 tonnes of CO_2.** In accordance with Conclusion SAM/IG/14-4, States are expected to submit at this Meeting and, if applicable, by 30 June, their fuel and CO_2 emission calculations resulting from their 2016 implementation plans. Most States have used the ICAO IFSET tool. Other States have calculated these savings in collaboration with the operators.

2.23 At the SAM/IG/18 meeting, several States presented their annual CO_2 savings calculations based on PBN design implementations foreseen for 2017. In this regard, Brazil estimated conservative savings of 10,000 tonnes, Chile calculated saving 2,000 tonnes, and Uruguay 7,000 tonnes with the implementation of their designs. At this Meeting, the States may present their partial calculations for the first half of the year.

Activities and resources necessary for the implementation of the Action Plan for the Optimisation of the South American Airspace with the support of Project RLA/06/901

Activities and resources approved with the support of Project RLA/06/901 for 2017

2.24 The Tenth Meeting of the Coordination Committee of Project RLA/06/901 (RCC/10) approved the following activities in support of the optimisation of South American airspace in 2017:

- **Version 4 – SAM route network aligned with the PBN Concept of Operations,** in order to develop the Concept of Operations for the PBN route structure (ATS, SID and STAR routes) for the period 2017-2019, including the implementation strategy, the navigation specification to be applied en-route and in TMAs, as well as metrics and indicators, to take place in Lima, Peru, by two experts of the Region, on 5-23 June 2017.

- **Second PANS-OPS implementation workshop,** in order to continue harmonising and coordinating PBN instrument procedures in the SAM Region, advanced RNP and CDO/CCO, to be held in Lima, 17-21 July 2017.

- **Workshop on ASBU implementation and PBIP revision,** to examine the PBIP revision and the National Air Navigation Plans aligned with ASBU. This workshop will be carried out in Lima, on 14-18 August 2017.

- **Workshop on longitudinal separation optimisation,** in order to develop an implementation plan for reducing longitudinal separation from 40 to 20 NM in SAM airspace and sign the respective Letters of Operational Agreement, to be held in Lima, on 21-25 August 2017.

- **ATSRO/8 workshop/meeting,** to conduct a preliminary revision of Version 4 of the route network optimisation and approve the final version to be implemented, scheduled to be held in Lima, on 18-22 September 2017.

- **SAM/IG/20 meeting,** in order to continue with the activities for the implementation of the action plans developed by the Project in the AGA, AIM, ATM, CNS and MET areas. This meeting will be held in Lima on 16-20 October 2017.

Strategy for the implementation of PBN in the SAM Region

2.25 The SAM/IG/16 meeting developed a strategy for the implementation of PBN in TMAs in 2016, and approved several activities. Some of these activities, such as the PBN workshops and the PANS/OPS workshop, were incorporated into the airspace optimisation work plan:

- ✓ Monthly teleconferences (last Thursday of each month);
- ✓ 2 PBN implementation workshops in 2016;
- ✓ 1 PANS/OPS workshop;
- ✓ Bilateral and/or multilateral meetings when needed.

2.26 The SAM/IG/18 meeting did not establish a specific strategy to continue PBN implementation, which should be based on the activities mentioned in paragraph 2.24. Regarding activities related to PBN implementation in TMAs, and taking into account that 6 PBN workshops were carried out, the follow-up to this implementation should be pursued at SAM/IG meetings.

2.27 Taking into account that SAM/IG meetings alone would not be sufficient for such follow-up, it would be advisable to resume monthly PBN teleconferences. In summary, PBN implementation would be based on the following activities/events.

a) Development of the Concept of Operations for the PBN route structure (ATS, SID, and STAR routes) for the period 2017-2019, including the implementation strategy, the navigation specification to be applied en-route and in TMAs, as well as metrics and indicators, to which end, experts were hired by Project RLA 06/901. Validation will be conducted at the SAM/IG/19, ATSRO/8 and SAM/IG/20 meetings.

b) Version 4 of the ATS route network - ATSRO/8.

c) PBN implementation in TMAs - SAM/IG meetings and monthly teleconferences (last Thursday of each month).

d) Harmonisation and coordination of PBN instrument procedures in the SAM Region – PANS/OPS workshops.

e) Longitudinal separation optimisation – multilateral and bilateral meetings.

f) Coordination and harmonisation of the route network and longitudinal separation between the CAR/SAM Regions – NAM/CAR/SAM inter-regional implementation meetings and teleconferences.

Implementation control of reduced longitudinal separation in the Region and signing of Letters of Operational Agreement

2.28 Many States took advantage of the SAM/IG/18 meeting to update their letters of agreement or to sign a Memorandum of Understanding, with a view to sealing the commitments assumed at the SAM/IG/17 meeting in terms of reducing longitudinal separation. This reduction applies to GNSS-equipped aircraft. In case one or the two aircraft involved in a longitudinal separation lacked GNSS capability, then the separation to be applied to that traffic would be 80 NM. **Appendix D** to this working paper shows the agreements reached between the various adjacent FIRs. It is expected that this Meeting will continue the aforementioned process of updating of the letters of agreement or signing of memoranda of understanding, with the possibility of reducing longitudinal separation to 20 NM as foreseen in Doc 4444.

2.29 Although some FIRs like French Guiana and Atlantico have oceanic separation in most of their FIR, the implementation process has been very positive in the States of the Region. Nevertheless, more coordination is required with the adjacent States of the CAR Region. Such coordination may be finalised at the PBN/NAM/CAR/SAM/3 meeting. The reported status of implementation with the ACCs of the adjacent States is as follows:

2016 86%	**ARG**	**BOL**	**BRA**	**CHI**	**COL**	**FGY**	**ECU**	**GUY**	**PAN**	**PAR**	**PER**	**SUR**	**URU**	**VEN**
	YES	YES	YES	NO*[2]	YES	NO*[1]	YES	YES	YES	YES	YES	YES	YES	YES

*[1] French Guiana applies oceanic separations with neighbouring States.
*[2] Chile has not yet completed external processes for the implementation of longitudinal reduction with adjacent ACCs of other States.

PBN focal points of the regulator and air navigation service provider

2.30 The list of the PBN focal points of the regulator and air navigation service provider (ANSP) for coordination and teleconferencing is shown in **Appendix E** to this working paper. This list must be updated as needed by the States during the Meeting.

Amendment to the ATC bilingual phraseology of Document 4444

2.31 The SAM/IG/18 meeting took note that, on 1 March 2016, the ICAO Air Navigation Commission approved Amendment 7 to Doc 4444, which includes Amendments 7-A and 7-B to the 15th edition of the PANS-ATM, effective on 10 November 2016.

2.32 The SAM/IG/18 meeting agreed that, due to the importance of using standard ATC phraseology and given the changes made by the Amendment to Doc 4444, the civil aviation authorities of the Region must take appropriate measures to report these changes to airspace users under their responsibility. These measures include the publication of an AIC describing the new phraseology, specifying the date in which it would become effective, the issuance of a NOTAM, and the corresponding induction process for pilots and controllers. In this sense, States are requested to complete the table

contained in **Appendix F** to this working paper, in order to know the status of implementation in the SAM Region.

2.33 For the dissemination of Amendment 7 to Doc 4444, States may use Appendices A and B to working paper SAM/IG/18-WP/09, which refer to the brochures that explain the changes in ATC bilingual phraseology, available at:

http://www2010.icao.int/SAM/Documents/2016-SAMIG18/SAMIG18_NE09.pdf

2.34 As an example of the implementation of Amendment 7 to Doc 4444, **Appendix G** contains the AIC published by NAVCANADA (English only). Likewise, it is possible to see the Brazilian regulation (MCA 100-16) that incorporates such amendment, in the following link (Portuguese only):

http://publicacoes.decea.gov.br/?i=publicacao&id=4428

3. Suggested action

3.1 States participating in the Meeting are invited to:

a) take note of the information provided in this working paper;

b) complete the information contained in Appendix A to this working paper on the status of implementation of the recommendations of the First PANS-OPS Workshop (Conclusion SAM/IG/18-01: *PANS-OPS recommendations for harmonising instrument procedures in the SAM Region*);

c) update the PBN procedure control template, reviewing the information provided in Appendix C, and inform the Secretariat in case any changes are required;

d) review, propose changes as applicable, and approve the SAM PBN implementation strategy, including the monthly PBN teleconferences;

e) insert the corresponding information in Appendix D concerning the status of implementation of longitudinal separation in the SAM Region;

f) review the information provided in Appendix E, and inform the Secretariat in case any changes are required;

g) insert the corresponding information in Appendix F in relation to the status of implementation of Amendment 7 to Doc 4444 (*Aeronautical phraseology*);

h) submit the PBN national plans to the Secretariat if not done yet, or the corresponding updates to such plans;

i) submit to the Secretariat the updated action plans with the latest modifications to the dates for PBN redesign of selected airspaces;

j) submit to the Secretariat all information on fuel saving calculations that were not submitted to the PBN/IMP/1 workshop, and that are related to route optimisation or redesign of selected airspaces.

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APPENDIX A

PANS-OPS/1 WORKSHOP RECOMMENDATIONS

Conclusion/Task	ARG	BOL	BRA	CHI	COL	ECU	FGI	GUY	PAN	PAR	PER	SUR	URU	VEN	REMARKS
IFPP Panel Inasmuch as possible, to seek regional harmonisation (SAM) in the use of documentation developed by States of recognised capacity in global air navigation, such as the United States (FAA) and European Community member countries (EUROCONTROL and EASA), while waiting for ICAO documentation.															
Changes in the denomination of approach procedures (Circular 336) That States, when implementing the changes foreseen in Circular 336, take into account the processes for the development of the transition plan and the impact assessment, and publish an AIC on this issue, in coordination with all stakeholders..															
Procedure validation That SAM States consider the adoption of documentation on ground and flight validation of procedures, similar to that applied by Argentina.															

Conclusion/Task	ARG	BOL	BRA	CHI	COL	ECU	FGI	GUY	PAN	PAR	PER	SUR	URU	VEN	REMARKS
RNAV1/RNP/1 in SID/STARs That SAM States use RNAV-1 and RNP-1 in PBN SIDs/STARs, even in non-radar environments, since RNAV-1 is used exclusively with GNSS.															
RNAV-1 and RNP-1 in RNAV/ILS approaches That SAM States use RNAV-1 and RNP-1 in RNAV/ILS procedures, including non-radar environments, since RNAV-1 is used exclusively with GNSS.															
Advanced RNP (A-RNP) That SAM States study the application of A-RNP at airports that have problems with DEP minima for reasons related to obstacles or aeronautical noise, which can be resolved with an RF Leg and/or values of less than 1 NM and down to 0.3 NM.															
ATC gradient That SAM States, when applying the ATC gradient, take into account the following: a) To be applied only at domestic airports; b) Prior CDM process among stakeholders; **c)** Assess the convenience of publishing different charts to															

Conclusion/Task	ARG	BOL	BRA	CHI	COL	ECU	FGI	GUY	PAN	PAR	PER	SUR	URU	VEN	REMARKS
enhance situational awareness of controllers and pilots.															
Identification of SIDs/STARs • That airspace planner should assess the best way of designating SIDs/STARs (with or without transition) through CDM with all stakeholders; • SAM States should apply the concept of transition in RNP AR procedures that have many intermediate fixes (IF), assessing their impact on the graphic representation in the chart and any possible problem in automated ATC systems.															
Minimum altitudes of SIDs That SAM States: a) Publish, as an additional safety mechanism, the minimum altitudes in the SIDs, in critical segments on account of obstacles, to allow the pilot to monitor such altitude through the FMS; **b)** Establish the proper connection between the SIDs and the ATS route network to ensure obstacle clearance.															

Conclusion/Task	ARG	BOL	BRA	CHI	COL	ECU	FGI	GUY	PAN	PAR	PER	SUR	URU	VEN	REMARKS
Level segments to intercept the ILS glide slope That SAM States: a) Whenever possible, use level segments in the intermediate approach so that the aircraft may lose power and get ready for an ILS approach procedure, ensuring interception of the glide slope "below the path"; **b)** If a level segment cannot be established, then a reduced slope in the intermediate segment should be used to allow the aircraft to lose power. Likewise, interception of the glide slope "below the path" shall be ensured.															
Elimination of publication of procedures on paper That SAM States assess the possibility of eliminating or substantially reducing publications on paper, especially the AIP, including air navigation procedures (routes, STARs, SIDs, IAC, etc.) with a view to allowing monthly updates, savings in printing/paper, and more expeditious publication and updating of such publications.															

Conclusion/Task	ARG	BOL	BRA	CHI	COL	ECU	FGI	GUY	PAN	PAR	PER	SUR	URU	VEN	REMARKS
Retirement of information on ceiling and MDA/MDH from approach charts That SAM States publish the OCA/OCH in instrument approach procedures and **not** publish MDA/MDH and ceiling, in accordance with ICAO documentation (Annex 6, Doc 8168 and Doc 9365), to ensure harmonisation in the SAM Region..															
Application of CCO/CDO techniques at airports with low traffic volume That SAM States: a) Publish an AIC and/or instruct air traffic controllers to authorise the approach direct to the IAF from a distance of approximately 200 NM from the airport, especially if there are no terrain and obstacle issues, in order to allow the pilot to calculate the ideal point of descent, using the IAF as a reference, and request it from the ATCO. **b)** Develop the corresponding STARs and SIDs, trying to apply CCO/CDO techniques within the possibilities of each scenario under consideration.															

APPENDIX B / APÉNDICE B

SAM Region- International Aerodromes/ Aeródromos Internacionales-Región SAM						
City/Aerodrome/Designation Ciudad/Aeródromo/Designación		RFF Category Categoría RFF	Physical Characteristics/ Características Físicas			Remarks Comentarios
			RC	Rwy No	Rwy Type	
1		2	3	4	5	6
ARGENTINA						
SABE	BUENOS AIRES/Aeroparque J. Newbery RS	7	4D	13 31	PA1 NINST	
SAEZ	Ezeiza/Ministro Pistarini RS	9	4E 4E	11 29 17 35	PA3 NPA NINST PA1	
SADF	SAN FERNANDO RG	4	3C	05 23	NINST NPA	
SARI Krause	CATARATAS DEL IGUAZÚ / My. D. C. E. RNS & AS	6	4E	13 31	NPA PA1	
SAVC Mosconi RS	COMODORO RIVADAVIA/ Gral. E.	6	4D	07 25	NINST PA1	
SACO	CORDOBA/Ing. Aer. A.L.V. Taravella RS	9	4E 4C	18 36 05 23	PA1 NINST NINST NINST	
SASJ	JUJUY/Gobernador Guzmán RS	6	4D	16 34	NINST PA1	
SAZM	MAR DEL PLATA/Astor Piazolla RG & AS	6	4D	13 31	PA1 NINST	
SAME	MENDOZA/El Plumerillo RS	6	4E	18 36	NPA PA1	
SAZN	NEUQUÉN/Presidente Perón RNS & AS	6	4C	09 27	PA1 NINST	

SAM Region- International Aerodromes/ Aeródromos Internacionales-Región SAM						
City/Aerodrome/Designation Ciudad/Aeródromo/Designación		RFF Category Categoría RFF	Physical Characteristics/ Características Físicas			Remarks Comentarios
			RC	Rwy No	Rwy Type	
1		2	3	4	5	6
SARE	RESISTENCIA RNS & AS	7	4C	03 21	NINST PA1	
SAWG	RÍO GALLEGOS/Piloto Civil N. Fernández RS	7	4E	07 25	NPA PA1	
SAAR	ROSARIO/Islas Malvinas RS	8	4E	02 20	NINST PA1	
SASA	SALTA/ General D. Martín Miguel de Güemes RS	6	4D 4C	02 20 06 24	PA1 NINST NPA NPA	
SAZS	SAN CARLOS DE BARILOCHE RNS & AS	7	4E	11 29	NPA PA1	
SAWH	USHUAIA/Malvinas Argentinas RNS & AS	9	4E	07 25	NPA PA1	
BOLIVIA						
SLCB	COCHABAMBA/ Aeropuerto Internacional Jorge Wilstermann AS	8	4D	14 32	NPA PA1	
SLLP	LA PAZ/ Aeropuerto Internacional de El Alto RS	7	4D	10 28	PA1 NINST	
SLVR	SANTA CRUZ/ Aeropuerto Internacional Viru Viru RS	9	4E	16 34	NPA PA1	
BRAZIL / BRASIL						
SBBE	BELÉM/Val de Cans/Júlio Cezar Ribeiro, RS	9	4D	06 24	PA1 NPA	

SAM Region- International Aerodromes/ Aeródromos Internacionales-Región SAM						
City/Aerodrome/Designation Ciudad/Aeródromo/Designación		RFF Category Categoría RFF	Physical Characteristics/ Características Físicas			Remarks Comentarios
			RC	Rwy No	Rwy Type	
1		2	3	4	5	6
SBCF	BELO HORIZONTE/ Tancredo Neves, MG RS	9	4E	16 34	PA1 NPA	
SBBV	BOA VISTA/ Atlas Brasil Cantanhede, RR RS	6	4D	08 26	PA1 NPA	
SBBR	BRASÍLIA/ Pres. Juscelino Kubitschek, DF RS	9	4E 4E	11L 29R 11R 29L	PA1 PA1 PA2 PA1	
SBCB	CABO FRIO/Cabo Frío, RJ RS	9	4E	10 28	NPA NPA	
SBKP	CAMPINAS/Viracopos, SP RS	10	4E	15 33	PA1 NPA	
SBCG	CAMPO GRANDE/Campo Grande, MS RS	7	4E	06 24	PA1 NPA	
SBCR	CORUMBÁ/Corumbá, MS RS	5	4C	09 27	NPA NPA	
SBCZ	CRUZEIRO DO SUL/Cruzeiro do Sul, AC RS	5	4C	10 28	NPA NPA	
SBCY	CUIABÁ/Marechal Rondon, MT l RS	7	4C	17 35	NPA PA1	
SBCT	CURITIBA/Afonso Pena , PR RS	8	4D	15 33 11 29	PA3 PA2 NPA NPA	

SAM Region- International Aerodromes/ Aeródromos Internacionales-Región SAM						
City/Aerodrome/Designation Ciudad/Aeródromo/Designación		RFF Category Categoría RFF	Physical Characteristics/ Características Físicas			Remarks Comentarios
			RC	Rwy No	Rwy Type	
1		2	3	4	5	6
SBFL	FLORIANÓPOLIS/ Hercílio Luz , SC RS	7	4C	14 32 03 21	PA1 NPA NINST NINST	
SBFZ	FORTALEZA/Pinto Martins, CE RS	8	4E	13 31	PA1 NPA	
SBFI	FOZ DO IGUAÇU/ Cataratas, PR RS	7	4D	14 32	PA1 NPAT	
SBMQ	MACAPÁ/ Alberto Alcolumbre, AP RS	6	4C	08 26	NPA NPA	
SBMO	MACEIO/Zumbi dos Palmares, AL RS	7	4C	12 30	PA1 NPA	
SBEG	MANAUS/Eduardo Gomes, AM RS	9	4D	10 28	PA1 NPA	
SBPP	PONTA PORÃ/Ponta Porã, MS RNS	3	4C	04 22	NPA NPA	
SBPL	PETROLINA/Senador Nilo Coelho, PE RS	6	4E	13 31	NPA NPA	
SBPA	PORTO ALEGRE/Salgado Filho, RS RS	8	4D 4E	11 29	PA1 NPA	
SBRF	RECIFE/Guararapes–Gilberto Freyre, PE RS	9	4E	18 36	PA1 NPA	

SAM Region- International Aerodromes/ Aeródromos Internacionales-Región SAM						
City/Aerodrome/Designation Ciudad/Aeródromo/Designación		RFF Category Categoría RFF	Physical Characteristics/ Características Físicas			Remarks Comentarios
			RC	Rwy No	Rwy Type	
1		2	3	4	5	6
SBGL	RIO DE JANEIRO/Galeão-Antônio Carlos Jobim, RJ RS	10	4E 4E	10 28 15 33	PA2 PA1 PA1 NPA	
SBSV	SALVADOR/Deputado Luis Eduardo Magalhães, BA RS	8	4E	10 28 17 35	PA1 PA1 NINST NINST	
SBSN	SANTARÉM/Maestro Wilson Fonseca, PA AS	6	4D	10 28	PA1 NPA	
SBSL	SÃO LUÍS/Marechal Cunha Machado, MA AS	7	4D	06 24 09 27	PA1 NPA NINST NINST	
SBSG	SÃO GONÇALO DO AMARANTE/ São Gonçalo do Amarante RN RS	9	4E	12 30	PA1 NPA	
SBGR	SÃO PAULO/Guarulhos-Governador André Franco Montoro, SP RS	10	4E 4E	09R 27L 09L 27R	PA3 PA1 PA2 PA1	
SBTT	TABATINGA/Tabatinga, AM RS	5	4C	12 30	NPA NPA	

SAM Region- International Aerodromes/ Aeródromos Internacionales-Región SAM						
City/Aerodrome/Designation Ciudad/Aeródromo/Designación		RFF Category Categoría RFF	Physical Characteristics/ Características Físicas			Remarks Comentarios
			RC	Rwy No	Rwy Type	
1		2	3	4	5	6
SBUG	URUGUAIANA/Rubem Berta, RS RS	3	3C	09 27 04 22	NINST NPA NINST NINST	
CHILE						
SCFA	ANTOFAGASTA/ AP. Cerro Moreno AS	6	4D	19 01	NPA NPA	
SCAR	ARICA/ AP. Chacalluta RS	6	4D	02 20	NPA NINST	
SCIE	CONCEPCIÓN/ AP. Altn. Carriel Sur AS	7	4D	02 20	PA1 NPA	
SCDA	IQUIQUE/ AP. Diego Aracena RS	6	4D	19 01	PA1 NPA	
SCTE	PUERTO MONTT/ AP. El Tepual RS	6	4D	17 35	NPA PA1	
SCCI	PUNTA ARENAS/ AP. Pdte. Carlos Ibañez del Campo AS	6	4D 4D 3B	07 25 12 30 01 19	NPA PA1 NPA NPA NINST NPA	
SCEL	SANTIAGO/ AP. Arturo Merino Benítez RS	9	4E 4E	17R 35L 17L 35R	PA1 NPA PA1 NPA	

SAM Region- International Aerodromes/ Aeródromos Internacionales-Región SAM						
City/Aerodrome/Designation Ciudad/Aeródromo/Designación		RFF Category Categoría RFF	Physical Characteristics/ Características Físicas			Remarks Comentarios
			RC	Rwy No	Rwy Type	
1		2	3	4	5	6
SCIP	ISLA DE PASCUA / AP Mataveri RS	8	4D	10 28	PA1 NPA	
COLOMBIA						
SKBQ	BARRANQUILLA/Ernesto Cortissoz/Atlantico RS	7	4E	05 23	PA1 NINST	
SKBO	Bogotá /Eldorado/Distrito Capital RS	10	4E 4E	13L 31R 13R 31L	PA1 NINST PA2 NINST	
SKBG	BUCARAMANGA/Palonegro RS	6	4C	17 35	PA1 NINST	
SKCL	CALI/Alfonso Bonilla Aragón/Valle RS	7	4D	01 19	PA1 NINST	
SKCG	CARTAGENA/Rafael Nuñez/Bolívar RS	7	4D	01 19	NINST NPA	
SKCC	CUCUTA/Camilo Daza/Norte de Santander RNS & AS	7	4C 4C	16 34 02 20	PA1 NINST NINST NINST	
SKLT	LETICIA/Alfredo Vásquez Cobo/Amazonas RNS & AS	6	4C	03 21	PA1 NINST	
SKPE	PEREIRA/Matecaña RS	7	4C	08 26	NPA NINST	
SKRG	RIONEGRO/José María Córdoba/Antioquia RS	8	4D	18 36	PA1 NINST	

SAM Region- International Aerodromes/ Aeródromos Internacionales-Región SAM						
City/Aerodrome/Designation Ciudad/Aeródromo/Designación		RFF Category Categoría RFF	Physical Characteristics/ Características Físicas			Remarks Comentarios
			RC	Rwy No	Rwy Type	
1		2	3	4	5	6
SKSP	SAN ANDRÉS/Gustavo Rojas Pinilla/San Andrés RS	7	4C	06 24	NPA NINST	
SKSM	SANTA MARTA/Simón Bolívar RS	6	3C	01 19	NPA NINST	
ECUADOR						
SEGU	GUAYAQUIL/José Joaquín Olmedo RS	9	4E	03 21	NPA PA1	
SELT	LATACUNGA/Cotopaxi RNS & AS	8	4E	19 01	PA1 NPA	
SEMT	MANTA/Eloy Alfaro RS	8	4E	06 24	NPA PA1	
SEQM	QUITO/Mariscal Sucre RS	9	4E	18 36	NPA PA1	
FRENCH GUIANA / GUYANA FRANCESA (France/Francia)						
SOCA	CAYENNE/Rochambeau RS	9	4E	08 26	PA1 NPA	
GUYANA						
SYCJ	Georgetown /Cheddi Jagan Int'l Airport RS	10	4E	06 24	PA1 NPA	
SYEC	Georgetown/ Eugene F. Correia International Airport RS	5	3C	07 25	NPA NPA	
PANAMÁ						
MPBO	BOCAS DEL TORO/Bocas del Toro RG & AS	4	3B	08 26	NPA NPA	

SAM Region- International Aerodromes/ Aeródromos Internacionales-Región SAM						
City/Aerodrome/Designation Ciudad/Aeródromo/Designación		RFF Category Categoría RFF	Physical Characteristics/ Características Físicas			Remarks Comentarios
			RC	Rwy No	Rwy Type	
1		2	3	4	5	6
MPDA	DAVID/Enrique Malek RS	7	4D	04 22	NPA NINST	
MPMG	PANAMA/Marcos A. Gelabert RG & AS	6	3C	19 01	NINST NINST	
MPPA	PANAMA/Panamá Pacifico AS	7	4D	18 36	NINST NPA	
MPSM	PANAMA/Cap. Scarlett Martínez AS	7	4D	17 35	NPA PA1	
MPTO	PANAMA/Tocumen Intl RS	9	4E 4E	03R 21L 03L 21R	PA1 NPA NPA NPA	
PARAGUAY						
SGAS	LUQUE/Silvio Pettirossi Intl. RS	9	4E	02 20	NPA PA1	
SGES	MINGA GUAZÚ/Guaraní Intl. RS	9	4E	05 23	NPA PA1	
PERÚ						
SPQU	AREQUIPA/INTL Alfredo Rodríquez Ballón AS	7	4D	10 28	PA1 NINST	
SPHI	CHICLAYO/INTL Capitán FAP José Abelardo Quinoñes Gonzalez; Gran General del Aire del Peru AS	8	4D	01 19	PA1 NINST	
SPZO	Cusco/INTL Teniente FAP Alejandro Velazco Astete RS	7	4D	10 28	NINST NPA	

SAM Region- International Aerodromes/ Aeródromos Internacionales-Región SAM						
City/Aerodrome/Designation Ciudad/Aeródromo/Designación		RFF Category Categoría RFF	Physical Characteristics/ Características Físicas			Remarks Comentarios
			RC	Rwy No	Rwy Type	
1		2	3	4	5	6
SPQT	IQUITOS/ INTL Coronel FAP Francisco Secada Vignetta RS	8	4D	06 24	PA1 NINST	
SPJC	LIMA-CALLAO/ INTL Jorge Chávez RS	9	4E	15 33	PA3 NPA	
SPSO	PISCO/INTL Pisco AS	9	4E	04 22	NINST PA1	
SPTN	TACNA/ INTL Coronel FAP Carlos Ciriani Santa Rosa RS	7	4C	02 20	PA1 NINST	
SPRU	TRUJILLO/ INTL Capitán FAP Carlos Martínez de Pinillos AS	7	4C	02 20	PA1 NINST	
SURINAME						
SMJP	ZANDERY/Johan Adolf Pengel Intl RS	9	4E	11 29	PA1 NPA	
URUGUAY						
SULS	MALDONADO/Intl. C/C, Carlos A. Curbelo “Laguna del Sauce” RS	7	4C 3C	08 26 01 19	NPA NPA NPA NPA	
SUMU Cesáreo	MONTEVIDEO/ Intl. de Carrasco “Gral. L. Berisso” RS	9	4E 4E	06 24 01 19	NPA PA1 NPA PA1	

SAM Region- International Aerodromes/ Aeródromos Internacionales-Región SAM						
City/Aerodrome/Designation Ciudad/Aeródromo/Designación		RFF Category Categoría RFF	Physical Characteristics/ Características Físicas			Remarks Comentarios
			RC	Rwy No	Rwy Type	
1		2	3	4	5	6
VENEZUELA						
SVBC	BARCELONA/Gral. José Antonio Anzóategui Intl RS	9	4C	15 33 02 20	PA1 NINST NINST NPA	
SVMI	MAIQUETIA/Simón Bolívar Intl, RS	9	4E	10 28 09 27	PA1 NPA NINST	
SVMC	MARACAIBO/La Chinita Intl RS	9	4E	03 21	PA1 NPA	
SVMG	MARGARITA/Intl Del Caribe Gral. Santiago Marino RS	9	4E	09 27	PA1 NPA	
SVMT	MATURIN/General José Tadeo Monagas Intl. RS	7	4C	08 26	NPA NPA	
SVJC	PARAGUANA/Josefa Camejo Intl RS	7	4C	09 27	NPA NPA	
SVSA	SAN ANTONIO DEL TÁCHIRA/Gral. Juan Vicente Gómez Intl RG	7	3D	17 35	NPA NINST	
SVVA	VALENCIA/Arturo Michelena Intl RS	8	4D	10 28	NPA NPA	
SVBM	BARQUISIMETO/Gral. Jacinto Lara Intl. RS	7	4C	09 27	PA1 NPA	
SVPR	PUERTO ORDAZ/Gral. Manual Carlos Piar Intl RS	7	4C	08 26	NPA NPA	

SAM Region- International Aerodromes/ Aeródromos Internacionales-Región SAM						
City/Aerodrome/Designation Ciudad/Aeródromo/Designación		RFF Category Categoría RFF	Physical Characteristics/ Características Físicas			Remarks Comentarios
			RC	Rwy No	Rwy Type	
1		2	3	4	5	6
SVSO	SANTO DOMINGO DEL TACHIRA/May. Buenaventura Vivas Intl. RG	7	4C	12 30	NPA	
SVCS	CARACAS/Oscar Machado Zuloaga Intl. RG	4	3B	10 28	PA1 NPA	

References / Referencias:

RS - International scheduled air transport, regular use /
Transporte aéreo internacional regular, uso regular

RNS - International non-scheduled air transport, regular use /
Transporte aéreo internacional no regular, uso regular

AS - International scheduled air transport, alternate use /
Transporte aéreo internacional regular, de alternativa de destino

ANS - International non-scheduled air transport, alternate use /
Transporte aéreo internacional no regular, de alternativa de destino

NINST - Non-instrument runway /
Pista de vuelo visual

NPA - Non-precision approach runway /
Pista para aproximaciones que no sean de precisión

PA1 - Precision approach runway, Category I /
Pista de aproximaciones de precisión, Categoría I

PA2 - Precision approach runway, Category II /
Pista de aproximaciones de precisión, Categoría II

PA3 - Precision approach runway, Category III /
Pista de aproximaciones de precisión, Categoría III

MODELO TABLA DE CONTROL DE IMPLANTACION PBN - DDB

FECHA DE RECOLECCIÓN DE DATOS: DRAFT

				APV/LNAV					STAR		SID					
1													(14)	(15) CDO	(16) CCO	(17)
(1) ESTADO	(2) AEROPUERTOS INTERNACIONALES SEGUN TABLA AOP II-1 eANP CAR/SAM	(3) Umbrales	(4) TIPO RWY TABLA AOP II- 1	(5) LNAV / VNAV	(6) IAP RNPAR	(7) LNAV/VNAV o RNP AR (APV)	(8) LNAV	(9) LNAV/VNAV o RNP AR o LNAV Consolidado	(10) STAR PBN	(11) STAR PBN AIRPORT	(12) SID PBN	(13) SID PBN AIRPORT	SID o STAR PBN AIRPORT	AIRPORT o TMA	AIRPORT o TMA	OBSERVACIONES
PERU	SPQU AREQUIPA/Rodríguez Ballón Intl	09	PA1	2	1	1	2	1	1	1	NA	1	1	1	1	IAP RNPA AR TAILORED LATAM
		27	NINST	2	1	1	2	1	1		1					IAP RNPA AR TAILORED LATAM STAR COMUN PARA IAP RNP AR AMBAS PISTAS
	SPHI CHICLAYO/Cap. José Quinoñes Gonzalez	01	PA1	2	2	2	1	1	1	1	2	1	1	1	2	SE REQUIERE ACTUALIZAR TABLA AOP II
		19	NINST	2	1	1	1	1	1		1					SE REQUIERE ACTUALIZAR TABLA AOP II
	SPZO CUZCO/Velazco Astete	10	NINST	NA	NA	NA	NA	NA	NA	1	1	1	1	2	2	
		28	NPA	NA	1	1	NA	1	1		NA					
	SPQT IQUITOS/Crnel. FAP Francisco Secada Vignetta	06	PA1	1	2	1	1	1	1	1	2	2	1	2	2	
		24	NINST	2	2	2	2	2	2		2					
	SPJC LIMA-CALLAO/Jorge Chávez Intl	15	PA2	2	1	1	2	1	1	1	1	1	1	1	1	SE REQUIERE ACTUALIZAR TABLA AOP II
		33	NPA	2	2	2	2	2	2		1					
	SPSO PISCO/Pisco	04	NINST	2	2	2	2	2	2	2	2	2	2	2	2	
		22	PA1	2	2	2	2	2	2		2					
	SPTN TACNA/Crnel. FAP Carlos Ciriani Santa Rosa	02	PA1	2	1	1	2	1	1	1	2	2	1	1	2	
		20	NINST	2	1	1	2	1	1		2					
	SPRU TRUJILLO/Capitan Carlos Martínez de Pinillos	01	PA1	2	2	2	2	2	1	1	2	1	1	1	1	SE REQUIERE ACTUALIZAR TABLA AOP II
		19	NINST	NA	1	1	NA	1	1		1					SE REQUIERE ACTUALIZAR TABLA AOP II
	RESULTADOS % >>>			7.69%	53.33%	60.00%	23.08%	66.67%	73.33%	87.50%	42.86%	62.50%	87.50%	62.50%	37.50%	

NOTA 1 .- LAS COLUMNAS 1, 2, 3, 4 ESTAN BLOQUEADAS CON CLAVE. LOS ESTADOS DEBEN CORROBORAR LOS DATOS DE COLUMNA 4 Y, SI ES EL CASO, SOLICITAR A SAM RO LA ACTUALIZACION / ENMIENDA DEL ANP EN TABLA AOP II.

NOTA 2 .- 1= IMPLANTADO, 2= PENDIENTE IMPLANTACION, NA = NO APLICA LLENAR LAS COLUMNAS DE 5 A 16 CON DATOS DE IMPLANTACION EFECTIVA A MAYO 2017. ANOTAR COMENTARIOS EN COLUMNA 17.

APPENDIX D

LONGITUDINAL SEPARATION LEVEL OF IMPLEMENTATION IN THE SAM REGION

ARGENTINA						
ACC	ACC ADJ	Longitudinal separation				Comments
		40 NM GNSS/ DME	Date of implementation	20 NM GNSS/ DME	Date of implementation	
CORDOBA	IQUIQUE	OG				
	LA PAZ	YES	01/01/17			
	EZEIZA			YES	13/10/2016	
	MENDOZA			YES	13/10/2016	
	RESISTENCIA			YES	13/10/2016	Some problems with VHF Com.
RESISTENCIA	ASUNCION	YES	01/01/17			
	LA PAZ	YES	01/01/17			
	CORDOBA			YES	13/10/2016	
	CURITIBA	YES	01/01/17			
	EZEIZA			YES	13/10/2016	
	MONTEVIDEO	YES	01/01/17			
EZEIZA	COMODORO RIVADAVIA			YES	13/10/2016	
	MENDOZA			YES	13/10/2016	
	PUERTO MONTT	OG				
	CORDOBA			YES	13/10/2016	
	RESISTENCIA			YES	13/10/2016	
	MONTEVIDEO	YES	01/01/17	YES	2010	PAPIX, KUKEN and DORBO 20NM
MENDOZA	EZEIZA			YES	13/10/2016	
	SANTIAGO	OG				
	CORDOBA			YES	13/10/2016	
COMODORO RIVADAVIA	EZEIZA			YES	13/10/2016	
	PUNTA ARENAS	OG				
	PUERTO MONTT	OG				

BOLIVIA						
ACC	ACC ADJ	Longitudinal separation				Comments
		40 NM GNSS/ DME	Date of Implementation	20 NM GNSS/ DME	Date of implementation	
LA PAZ	AMAZÓNICO	YES	01/01/17			
	ASUNCION	YES	01/01/17			
	CURITIBA	YES	01/01/17			
	CORDOBA	YES	01/01/17			
	LIMA	OG				
	IQUIQUE	OG				
	RESISTENCIA	YES	01/01/17			

BRAZIL						
ACC	ACC ADJ	Longitudinal separation				Comments
		40 NM GNSS/ DME	Date of Implementation	20 NM GNSS/ DME	Date of implementation	
AMAZÓNICO	BRASILIA	---	---	---	---	10NM
	BOGOTÁ	YES	13/10/16			
	CAYENNE	---	---	---	---	10 Minutes
	CURITIBA	---	---	---	---	10NM
	GEORGETOWN	YES	07/01/16			
	LA PAZ	YES	01/01/17			
	LIMA	YES	31/03/16			COM/SUR required, does not apply, overflights from/to La Paz FIR
	MAIQUETIA	YES	23/10/16			
	PARAMARIBO	YES	13/10/16			
	RECIFE	---	---	---	---	10NM
	ATLANTICO	---	---	---	---	10 Minutes
BRASILIA	AMAZÔNICO	---	---	---	---	10NM
	CURITIBA	---	---	---	---	5NM
	RECIFE	---	---	---	---	5NM
CURITIBA	ASUNCION	YES	Mar/2016			
	AMAZONICO	---	---	---	---	10NM
	BRASILIA	---	---	---	---	5NM
	LA PAZ	YES	01/01/17			
	MONTEVIDEO	YES	01/01/17			
	RECIFE	---	---	---	---	5NM
	RESISTÊNCIA	YES	01/01/17			
	ATLÂNTICO	---	---	---	---	10 Minutes
RECIFE	AMAZÔNICO	---	---	---	---	10NM
	BRASÍLIA	---	---	---	---	5NM
	CURITIBA	---	---	---	---	5NM
	ATLÂNTICO	---	---	---	---	10 Minutes
ATLÁNTICO	AMAZÔNICO	---	---	---	---	10 Minutes VHS Com. problems
	CURITIBA	---	---	---	---	
	RECIFE	---	---	---	---	
	CAYENNE	---	---	---	---	

CHILE						
ACC	ACC ADJ	Longitudinal separation				Comments
		40 NM GNSS/ DME	Date of Implementation	20 NM GNSS/ DME	Date of implementation	
SANTIAGO	IQUIQUE					5NM
	LIMA	OG				
	MENDOZA	OG				
	PUERTO MONTT					5NM
IQUIQUE	CORDOBA	OG				
	LA PAZ	OG				
	LIMA	OG				
PUERTO MONTT	SANTIAGO					5NM
	PUNTA ARENAS					5NM
	EZEIZA	OG				
	COMODORO RIVADAVIA	OG				
PUNTA ARENAS	PUERTO MONTT					5NM
	COMODORO RIVADAVIA	OG				

COLOMBIA						
ACC	ACC ADJ	Longitudinal separation				Comments
		40 NM GNSS/ DME	Date of Implementation	20 NM GNSS/ DME	Date of implementation	
BOGOTÁ	AMAZÔNICO	YES	13/10/16			
	CENAMER					No available information
	GUAYAQUIL	YES	13/10/16			Reduced separation of 40 NM is applied. Memorandum of Understanding among ATC service providers signed.
	LIMA	YES	31/03/16			COM SUR required, does not apply overflights
	MAIQUETIA	YES				Informed on 23/3/2017
	PANAMÁ	YES	Oct/16			
	BARRANQUILLA					No available information
BARRANQUILLA	MAIQUETIA	YES				Informed on 23/3/2017
	PANAMÁ	YES	Oct/16			
	BOGOTÁ					No available information
	KINGSTON					No available information
	CURAÇAO					No available information

ECUADOR						
ACC	ACC ADJ	Longitudina separationl				Comments
		40 NM GNSS/ DME	Date of Implementation	20 NM GNSS/ DME	Date of implementation	
GUAYAQUIL	BOGOTÁ	YES	13/10/16			Reduced separation of 40 NM is applied. Memorandum of Understanding among ATC service providers signed.
	LIMA	YES	31/03/16			COM/SUR required, does not apply overflights. Updated with signing of LoA during SAM/IG/18, limitations on overflights is eliminated since 10/11/16.
	CENAMER	NO	---	N/A	---	Oceanic Separation

FRENCH GUIANA						
ACC	ACC ADJ	Longitudinal separation				Comments
		40 NM GNSS/ DME	Date of Implementation	20 NM GNSS/ DME	Date of implementation	
CAYENNE	AMAZÔNICO	---	---	---	---	10 Minutes
	PARAMARIBO	---	---	---	---	10 Minutes
	PIARCO					No available information

GUYANA						
ACC	ACC ADJ	Longitudinal separation				Comments
		40 NM GNSS/ DME	Date of Implementation	20 NM GNSS/ DME	Date of implementation	
GEORGETOWN	AMAZONICO	YES				
	PIARCO					No available information
	MAIQUETIA	OG				
	PARAMARIBO	YES				

PANAMÁ						
ACC	ACC ADJ	Longitudinal separation				Comments
		40 NM GNSS/ DME	Date of Implementation	20 NM GNSS/ DME	Date of implementation	
PANAMÁ	BOGOTÁ	YES	Oct/16			
	BARRANQUILLA	YES	Oct/16			
	CENAMER	OG	Oct/16			

PARAGUAY						
ACC	ACC ADJ	Longitudinal separation				Comments
		40 NM GNSS/ DME	Date of Implementation	20 NM GNSS/ DME	Date of implementation	
ASUNCION	CURITIBA	YES	Mar/16			
	LA PAZ	YES	01/01/17			
	RESISTÊNCIA	YES	01/01/17			

PERU						
ACC	ACC ADJ	Longitudinal separation				Comments
		40 NM GNSS/ DME	Date of Implementation	20 NM GNSS/ DME	Date of implementation	
LIMA	AMAZONICO	YES	31/03/16			COM/SUR required, does not apply overflights to/ from La Paz FIR
	BOGOTÁ	YES	31/03/16			COM/SUR required, does not apply overflights
	SANTIAGO	OG				
	IQUIQUE	OG				
	GUAYAQUIL	YES	31/03/16			COM/SUR required, does not apply overflights. With updated LoA signed during SAM/ IG/18, overflights limitation is eliminated since 10/11/16.
	LA PAZ	OG				

SURINAME						
ACC	ACC ADJ	Longitudinal separation				Comments
		40 NM GNSS/ DME	Date of Implementation	20 NM GNSS/ DME	Date of implementation	
PARAMARIBO	AMAZÓNICO	YES	13/10/16			OG
	GEORGETOWN	YES	29/03/16			Signed
	PIARCO	N/A				Oceanic Separation
	CAYENNE	N/A	---	---	---	Oceanic Separation

URUGUAY						
ACC	ACC ADJ	Longitudinal separation				Comments
		40 NM GNSS/ DME	Date of Implementation	20 NM GNSS/ DME	Date of implementation	
MONTEVIDEO	CURITIBA	YES	01/01/17			
	EZEIZA	YES	01/01/17	YES	2010	PAPIX KUKEN DORBO 20NM
	RESISTENCIA	YES	01/01/17			

VENEZUELA						
ACC	ACC ADJ	Longitudinal separation				Comments
		40 NM GNSS/ DME	Date of Implementation	20 NM GNSS/ DME	Date of implementation	
MAIQUETIA	AMAZONICO	YES	23/10/15			
	BOGOTA	YES				Informed on 23/3/2017
	BARRANQUILLA	YES				Informed on 23/3/2017
	PIARCO					Negotiating
	CURAZAO	NO				Curazao does not accept.
	SAN JUAN	NO				San Juan has no conditions to implement
	GEORGETOWN	OG				

APPENDIX E / APÉNDICE E

LIST OF CONTACTS FOR OPERATIONAL PBN FOCAL POINTS

LISTA DE CONTACTOS PARA PUNTOS FOCALES PBN

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State/ Estado	PBN FOCAL POINTS PUNTOS FOCALES PBN
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State/ Estado	PBN FOCAL POINTS PUNTOS FOCALES PBN
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** Updated SAM/IG/18 / Actualizados en la SAM/IG/18*

APPENDIX F

ADOPTION AND DISSEMINATION OF AMENDMENT 7 TO DOC. 4444

INDICATE IF AMENDMENT 7 TO DOC. 4444 HAS BEEN ADOPTED AND DISSEMINATED

Notes:

a) Insert YES or NO in the field corresponding to the State. If answer is NO, please include comments
b) Insert the legislation of the State in which the Amendment was adopted and the means of dissemination of the information (AIC, NOTAM, etc.)

STATES	YES / NO	LEGISLATION	MEANS OF DISSEMINATION (AIC NOTAM, ETC)	COMMENTS / REMARKS
ARG				
BOL				
BRA				
CHI				
COL				
ECU				
FGI				
GUY				
PAN				
PAR				
PER				
SUR				
URU				
VEN				

APPENDIX G

AIC 2/17

STANDARD INSTRUMENT DEPARTURE AND

STANDARD TERMINAL ARRIVAL CHANGES

NAVCANADA

AERONAUTICAL INFORMATION CIRCULAR 2/17

STANDARD INSTRUMENT DEPARTURE AND STANDARD TERMINAL ARRIVAL CHANGES

About this circular

The International Civil Aviation Organization (ICAO) has developed new standard instrument departure (SID) / standard terminal arrival (STAR) phraseology, which is being implemented in Canada on 27 April 2017.

The intent of the new phraseology is to clarify expectations for air traffic control (ATC) and pilots. Use of the word VIA means that pilots must follow all charted altitude constraints and speed restrictions along the SID/STAR profile. With a VIA SID/STAR clearance, ATC will specify the altitude that a pilot is cleared to climb or descend to. When ATC assigns an altitude, the pilot climbs or descends to the ATC-assigned altitude. The use of a SID/STAR designator without a cleared altitude does not authorize a pilot to climb or descend on the SID/STAR vertical profile. For STARs, if the aircraft is level and cleared to descend VIA STAR, the pilot may start descent at the optimal top of descent.

Watch air traffic controller Mark Leblanc and Air Transat pilot Matthew Jackson discuss these changes in the NAV CANADA video "New Phraseology for SIDs and STARs" at the following website:

<https://vimeo.com/185967957/12a87e0395>

Read the full text of State Letter 54 Amendment 7 to PANS-ATM on the International Civil Aviation Organization (ICAO) website: ICAO State Letter AN 13/2.1-16/54

<www.icao.int/airnavigation/sidstar>
State Letter 54 Amendment 7 to PANS-ATM

Background

SIDs and STARs provide a safe and efficient way of prescribing a large amount of information through procedure design. Both depict the lateral profile of an instrument departure or arrival route and the altitude constraints and speed restrictions associated with it.

Over time, the benefits of SIDs and STARs have been eroded through the development of non-harmonized practices and inconsistences in certain elements of SID/STAR phraseology. Consequently, air traffic services (ATS) and pilot expectations may be out of sync when SID/STAR phraseology is used, and certain terms misinterpreted. This presents a safety risk that requires a renewed effort to adopt harmonized SID/STAR phraseology.

To develop a common understanding, harmonized phraseology that is most likely to be implemented globally was drafted by ICAO. The established solution was designed to provide pilots with explicit direction regarding expected speed and altitude at all times. The new procedures rely on key phraseology (CLIMB VIA/DESCEND VIA) to indicate the altitude constraints and speed restrictions associated with a given procedure. Specific phraseology is introduced to instruct a pilot to cancel an altitude constraint and speed restriction, as well as to leave and rejoin a procedure.

Benefits

These changes will:

- Provide core phraseology that positively reinforces that the lateral, vertical, and speed requirements embedded in a SID/STAR continue to apply, unless explicitly cancelled or amended by the controller.
- Enhance the understanding and consistency of the procedures, which will enable ATS and pilots to share similar expectations.

Procedures

Upon implementation of the new SID/STAR procedures, assume the following:

- Unless a pilot is cleared direct to a waypoint, or specifically given a vector, the pilot must always comply with the lateral profile of the SID/STAR.
- When ATC assigns an altitude, the pilot must climb or descend to the ATC-assigned altitude and follow the guidance in this AIC regarding adherence to altitude constraints and speed restrictions.
- Before an aircraft can climb or descend on the SID/STAR vertical profile, ATC must clear it to an altitude.
- When no charted restrictions exist, or when no charted altitude constraints or speed restrictions remain on the SID/STAR, the phrase CLIMB TO (altitude) or DESCEND TO (altitude) will be used.
- When unable to meet a charted restriction, a pilot must inform ATC as soon as possible.

Use of the Term VIA

Effective 27 April 2017, in Canadian airspace, CLIMB VIA and DESCEND VIA phraseology will indicate that pilots are to follow all charted restrictions on a SID/STAR procedure.

The term VIA will no longer be used when issuing lateral routing clearances.

VIA will still appear in controller-pilot data link communications (CPDLC) messages, but not in direct controller pilot communications (DCPC).

ATS will still use VIA in ground and taxi instructions.

Core Phraseology

The following are the fundamental changes to current ATC clearances and ensuing pilot actions:

	ATC Clearance	Pilot Action
Core Phraseology	CLIMB VIA SID [TO] (altitude) *or* DESCEND VIA STAR [TO] (altitude)	▪ Follow the lateral profile of the procedure. ▪ Climb/descend to the cleared altitude in accordance with charted altitude constraints and speed restrictions.
Phraseology for removal of speed or altitude restrictions	CLIMB VIA SID [TO] (altitude), CANCEL SPEED RESTRICTION(S) *or* DESCEND VIA STAR [TO] (altitude), CANCEL ALTITUDE RESTRICTION(s) AT (point(s))	▪ The lateral profile of the procedure continues to apply. ▪ Altitude constraints or speed restrictions that have not been referred to will continue to apply.
Phraseology for variations to lateral profile of the SID/STAR	PROCEED DIRECT (waypoint) *or* VECTORING	▪ Altitude constraints and speed restrictions associated with the bypassed waypoints are cancelled.
Phraseology to return to SID/STAR	PROCEED DIRECT (waypoint) ON COURSE *or* REJOIN SID/STAR	▪ Altitude constraints and speed restrictions associated with the waypoint where the rejoin occurs, as well as those associated with all subsequent waypoints, must be complied with.

Readbacks

If cleared VIA a SID/STAR, inform ATC on initial contact. CLIMB VIA and DESCEND VIA clearances must be read back.

Speed

When an ATC speed restriction is assigned to a pilot, followed by DESCEND VIA STAR, the speed restrictions on the STAR are to be disregarded (pilots must still follow Canadian Aviation Regulations with respect to speed).

Resume normal speed

To cancel an ATC-assigned speed restriction, ATC will inform the pilot to RESUME NORMAL SPEED. This will ensure that upcoming speed restrictions on the SID/STAR will be adhered to. When applicable, normal speed implies “published” speeds.

Cancelling Altitude Constraints and Speed Restrictions

Use of the term VIA includes both speed and altitude. To cancel both altitude constraints and speed restrictions for an aircraft on a SID/STAR, ATC will use either of the following options:

- CLIMB/DESCEND UNRESTRICTED [TO] (altitude)
- CLIMB/DESCEND [TO] (altitude) SPEED AND ALTITUDE RESTRICTIONS CANCELLED

Proceed Direct

If ATC clears a pilot to PROCEED DIRECT to a point further along on the SID/STAR, all altitude constraints and speed restrictions at the bypassed points are cancelled. The pilot is to conform to the altitude constraints and speed restrictions at the cleared waypoint, and at any downstream points.

Vectors

As is the practice today, when ATC initiates vectors, a reason must be provided. All altitude constraints and speed restrictions related to that SID/STAR are cancelled. When initiating vectors, ATC must now restate the cleared altitude, along with any required altitude constraints and speed restrictions. If ATC vectors the pilot off a SID/STAR, they will indicate if they anticipate that the pilot will re-intercept the SID/STAR, and of the point at which the pilot should expect to re-intercept the SID/STAR.

Re-intercept

If ATC has removed an aircraft from a SID/STAR without advising the pilot to plan a re-intercept, ATC will state the name of the SID/STAR in the subsequent clearance. ATC will also restate the cleared altitude, and the position at which the pilot is to re-intercept the procedure.

Changes in SID Phraseology

CLIMB VIA will be used only with SIDs that have charted altitude constraints, speed restrictions, or both. The new phraseology, CLIMB VIA SID, indicates that the pilot must comply with all charted speed and altitude restrictions on the SID.

Altitude Assignment

ATS will always specify an altitude in conjunction with a departure clearance. This is a new part of the new phraseology standard, and affects all SID departures.

Initial Clearance

ATC must now include an altitude with a departure clearance. The word VIA will no longer be used in conjunction with the route portion of the clearance.

Cancelled restrictions

If ATC does not require the pilot to comply with restrictions on the SID, those restrictions will be specifically cancelled.

Changes in STAR Phraseology

ATC will use this phraseology at all times, starting with the initial descent clearance, provided that subsequent charted altitude constraints or speed restrictions exist along the remaining route of flight, and the pilot is cleared to descend on the STAR. Once the pilot has passed the last charted altitude constraint or speed restriction on the STAR, ATC is no longer required to use the new phraseology. If ATC cancels any STAR restrictions, new phraseology must be used to communicate with the pilot.

Transition Change

When ATC needs to change the STAR transition, they will restate the STAR and transition name, waypoint, and routing as applicable. ATC will then use the phrase VIA STAR to confirm the descent clearance.

When Ready

The phrase WHEN READY is implied in a DESCEND VIA clearance. When ATC clears the pilot VIA STAR, they are expected to start descent at the calculated top of descent and follow all charted restrictions on the STAR.

Canada Air Pilot (CAP) Changes

Beginning in April 2017, the following textbox will be removed (in phases) from the CAP charts. VIA replaces this text:

- When a lower altitude is issued, pilots shall descend on the STAR profile to the ATC assigned altitude. Charted restrictions above the assigned altitude remain mandatory.

Federal Aviation Administration (FAA) Differences

Canada will be among the first countries to adopt the new SID/STAR procedures. The United States has already adopted similar phraseology, with slight differences from ICAO.

These differences are of particular importance to Canada, due to our proximity to the US, as many of the pilots operating in our airspace also operate in US airspace. In some circumstances, pilots may be accustomed to US phraseology that could be misinterpreted here.

Conclusion

Discrepancies in the application of existing SID/STAR procedures were identified as posing a threat to flight safety. Implementation of the new SID/STAR phraseology is deemed by the international community to be of the utmost importance for global harmonization and compliance with SID/STAR procedures. Canada's implementation on 27 April 2017 ensures compliance with these important safety changes.

Expiry

This aeronautical information circular (AIC) will remain in effect until 27 April 2018.

Further Information

For further information please contact:

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