



Agenda Item 4: Follow up to the implementation of safety and air navigation regional priorities

b) Implementation priorities of air navigation improvements

STATUS OF IMPLEMENTATION OF AIR NAVIGATION IMPROVEMENT PRIORITIES

(Presented by the Secretariat)

SUMMARY	
This working paper presents the progress made in the implementation of air navigation priorities established in the Declaration of Bogota in the period 2014-2016, as well as those planned for the period 2017-2019 to date.	
REFERENCES	
<ul style="list-style-type: none">• Report of the Thirteenth Meeting of the Civil Aviation Authorities of the SAM Region (RAAC/13) Bogota, Colombia, 4 to 6 December 2013.• Report of the Fourteenth Meeting of the Civil Aviation Authorities of the SAM Region (RAAC/14) Santiago, Chile, 27, 29 and 30 October 2015.• Fourth Meeting of Air Navigation and Flight Safety Directors of the SAM Region (AN&FS/4) Lima, Peru, 2 to 4 October 2017.	
ICAO Strategic objectives:	<i>A: Safety</i> <i>C: Security and Facilitation</i> <i>E: Environmental Protection</i>

1. Introduction

1.1 The Thirteenth Meeting of Civil Aviation Authorities (RAAC/13) approved Conclusion *RAAC/13-8 – Implementation of air navigation and safety priorities*, urging SAM States to implement air navigation and safety priorities in accordance with the regional goals defined in the Bogota Declaration for the period 2014-2016, and international organisations to support the priorities of the States.

1.2 The priorities established in the Bogota Declaration responded to regional requirements for the period 2014-2016, and do not reflect all the air navigation requirements of the Global Air Navigation Plan and the SAM Performance-based air navigation implementation plan (PBIP) in terms of integration, interoperability, and harmonisation of systems in support of the “Single Sky” concept for international civil aviation. However, they allowed States to focus their efforts on priority issues and offer a powerful and easy message to convey to the world and to the higher authorities of the States of the Region.

1.3 The Second Meeting of Air Navigation and Safety Oversight Directors (AN/FS/2) assessed the proposal of implementation of air navigation priorities for the period 2017-2019 based on the Aviation System Block Upgrade (ASBU) modules, included in the *SAM Performance-based air*

navigation implementation plan PBIP 1.1. The Fourteenth Meeting of the Civil Aviation Authorities of the SAM Region (RAAC/14) took note of implementation of the air navigation and safety priorities for the period 2017-2019.

1.4 The priorities of implementation 2017-2019 were established taking into consideration the high rate of growth of the air transport sector in recent years, and to the identification of possible bottlenecks the prevent sustained growth of air transport, improved connectivity and continuous safety improvement. These priorities include those contemplated in the Declaration of Bogota that could not be completed in the period 2014-2016.

2. Discussion

2.1 The implementation of air navigation improvement priorities set forth in the Declaration of Bogota and those established for 2017-2019, shows significant progress in the implementation of PBN and reduction in the CO₂ annual emissions, but in the implementation of priorities such as AMHS and AIDC interconnection, the progress has been minimal.

PBN implementation

PBN en-route

2.2 The SAM Region had continued optimising the route network, covering 65% of upper airspace routes, exceeding by 5% the 60% goal established in the Declaration of Bogota. In the interregional field, as a result of the PBN meetings held in the CAR Region in 2016, Brazil, Guyana, Suriname and Venezuela had optimised a set of 5 RNAV routes in their FIRs on 17 August 2017.

Standard Instrument Departure Route (SID) / Standard Arrival Routes (STAR)

2.3 To date, the implementation of PBN SID/STAR amounts to 72.9% exceeding the 60% established in the Declaration of Bogota.

Continuous descent operations (CDO) and continuous climb operations (CCO)

2.4 Methods CDO and CCO are connected with the design of procedures for arrival and departure and have reached 34% and 26% of implementation respectively. The goal set forth in the Declaration of Bogota was 40% by the end of 2016.

Approach procedures with vertical guidance (APV) - Resolution A37/11

2.5 Regarding compliance with ICAO Resolution A37-11 on the implementation of APV approach, the States continue striving to achieve the 100% goal that was to be achieved in 2016. At present, implementation is under the goal reaching 78.6%.

Fuel savings/CO₂ emission reduction estimates

2.6 Using the IFSET tool, it has been estimated that, between January 2014 and December 2016, airspace improvements in SAM States resulting from PBN implementation for the realignment of regional routes and the implementation of RNAV/RNP standard departure/arrival routes in terminal control areas has permitted a reduction in CO₂ emissions in the order of 211,098 tonnes, of which 51,132 tonnes corresponded to 2014, 74,483 to 2015 and 85,483 to 2016, respectively.

2.7 Consequently, the goal set forth in the Declaration of Bogota of reducing 40,000 tonnes of CO₂ emissions every year has been exceeded. It should be noted that the implementation of

improvements in the routes of the Region continued during the first semester of 2017, estimating that they have generated an additional reduction of 8,033 tonnes of CO₂.

Reduction of longitudinal separation

2.8 As a supplementary initiative to en-route airspace optimisation, letters of agreement have been signed between SAM States for the application of a longitudinal separation minimum of 40 NM, as a first phase leading to the application of a standard longitudinal separation minimum of 20 NM as specified in Doc 4444 PANS ATM, for aircraft equipped for receiving DME and/or GNSS distance data in continental airspace.

2.9 The workshop conducted on the first week of November 2017 highlighted the benefits of these initiatives, which make possible the flexible use and expanded capacity of airspace, since they allow for an optimum use of flight levels. Some letters of agreement that were required for consolidating the application of 40 NM were revised, and activities for the implementation of a 20-NM separation have started.

2.10 Within this context, the need was identified to promote the application of a 40 NM separation minimum in the La Paz FIR, where letters of agreement have not been fully implemented, thus hindering the implementation of an optimised longitudinal separation in adjacent FIRs and in several regional routes.

ATFM implementation

2.11 At present, the implementation of air traffic flow management (ATFM) in the ACCs of the SAM Region reaches a level of 63%. The goal of the Declaration of Bogota was 100% implementation of flow management positions (FMPs) or units (FMUs) by the end of 2016.

2.12 It is important for States to reinforce the functions of flow management positions (FMPs) or units (FMUs) with resources and trained personnel duly empowered to coordinate with ATS services the implementation of ATFM initiatives (TMIs) in the event of air traffic capacity/demand imbalances. Likewise, those States that have not done it yet must double their efforts to implement at least one ATFM position (FMP) in each ACC.

AIM implementation

2.13 Regarding the status of implementation of steps in Phase 1 of the Roadmap for the Transition from AIS to AIM, out of the four steps in the first phase (Consolidation), the one related to the implementation and certification of a quality management system (QMS) has experienced delays in some States.

2.14 QMS implementation faces a new scenario because ISO standard 9001, which is the basis for QMS, has undergone changes since September 2015, with the introduction of new requirements to be met by States. Likewise, all certifications issued under version 2008 of ISO standard 9001 will expire in September 2018.

2.15 Currently, there are delays in Bolivia, Guyana and Suriname. Furthermore, Colombia, Ecuador and Venezuela should make an additional effort to complete the implementation of QMS/AIM in view of the significant progress made.

Other AIM and MET considerations

2.16 Regarding implementations contemplated for the period 2017-2019, progress has been made in the AIM area with the implementation of AIXM, although not to the extent desired. However, regarding e-TOD, the progress made in Argentina, Brazil, Paraguay and Chile does not

cover all international airports. Accordingly, concern has been expressed, especially because the standard is effective since 12 November 2015. Furthermore, regarding the digital NOTAM, its implementation is foreseen to start in 2019.

2.17 With respect to MET area, QMS/MET improvement opportunities have been identified in five States (Bolivia, Ecuador, Guyana, Uruguay and Venezuela). Progress in the implementation has been observed in those countries, therefore the Secretariat encourage the completion of the QMS/MET implementation during 2018. Competences of MET personnel continue as deficiency in some States delaying the achievement of the QMS/MET implementation. Other concern is the lack of procedures in case of release of radioactive material in the SAM Region States.

2.18 Regarding QMS/MET, as in the case of QMS/AIM, systems that have been implemented and certified are also faced with changes made to ISO standard 9001, which they will have to comply with in order to obtain a new certification. The Secretariat congratulates the four States that have obtained the QMS certification, both AIM and MET during the present year, adjusting to the new requirements of ISO standard version 2015.

Implementation of AMHS interconnections

2.19 Significant progress has been made in the implementation of AMHS interconnections during the last year, with the operational implementation of AMHS interconnections between Brasilia and Bogota (May 2017), Brasilia and Montevideo (September 2017), Lima and Santiago (December 2016), and the implementation and commissioning of the AMHS interconnection between the Brasilia MTA and the Madrid MTA (September 2017), which represents the first interregional AMHS interconnection in the SAM Region. This last interconnection was implemented through CAFSAT, the AFI/SAM/EUR VSAT network that carries voice and data services to support air navigation in the SAT (South Atlantic) Region and the AMHS interconnection between the Brasilia MTA and the SITA Gateway.

2.20 In accordance with the Declaration of Bogota, the goal was to implement 26 AMHS interconnections by the end of 2016. To date, 14 AMHS interconnections have been implemented, 10 of which are in the operational phase and the remaining are in the pre-operational phase, waiting for States to migrate to the operational phase. Accordingly, implementation is 58% complete. It is expected that, by June 2019, 26 interconnections contemplated in the Declaration of Bogota and the remaining AMHS interconnections contemplated in the CAR/SAM Regional Air Navigation Plan (Doc 8733) will be completed.

Implementation of national IP networks

2.21 Regarding the implementation of national IP networks, to date have been installed in Argentina, Brazil, Colombia, Chile, Ecuador, Paraguay, Uruguay, and Venezuela. In this way has been reached the 62% over the 80% implementation goal set forth in the Declaration of Bogota for the end of 2016. Implementation is to be completed (100%) in the period 2018-2019.

Interconnection of automated systems (ATS interfacility data communication - AIDC)

2.22 Regarding the implementation of AIDC between ATS units in the SAM Region, only six AIDC interconnections are currently operational between domestic ACCs of Brazil. The goal set forth in the Declaration of Bogota is 15 AIDC interconnections. Since more than a year ago, there are 7 AIDC interconnections in the pre-operational phase. In view of the long period of time spent in this phase, the States involved should make the necessary efforts to migrate to the operational phase.

Detailed information of air navigation implementation priorities

2.23 Detailed information regarding the ATM implementation priorities (PBN and ATFM), AIM, MET and CNS (AMHS interconnection, national IP network and AIDC interconnection) is presented in Appendixes A, B, C and D.

3. Suggested action

3.1 The meeting is invited to:

- a) Take note of the information presented;
- b) examine the progress made in the implementation of air navigation improvement priorities presented in Section 2 of this working paper as well as Appendixes A, B, C, D and E and then inform the actions taken to comply with them; and
- c) analyse any other matters it may deem appropriate.

APPENDIX A

Current status of the implementation of air navigation improvements in ATM area

1. PBN Implementation

PBN en route

1.1 The implementation of PBN en route was based on route network versions to ensure that the best airspace structure was available. Information was provided on the results of the ATSRO/08 meeting held in September 2017, where 95 initiatives were analysed, based on Version 04 of the route network, of which 30 had been accepted and 3 rejected. The remaining 52 initiatives would be the subject of coordination.

1.2 Conclusion ATSRO/8-1 defined a 3-stage timetable for the publication of route modifications on AIRAC dates in June, August and October 2018, taking into account two AIRAC cycles prior to effective implementation.

1.3 The SAM Region had continued optimising the route network, covering 65% of upper airspace routes, exceeding by 5% the 60% goal established in the Declaration of Bogota.

1.4 As a result of the PBN meetings held in the CAR Region in 2016, Brazil, Guyana, Suriname and Venezuela had optimised a set of RNAV routes in their FIRs on 17 August 2017.

1.5 A meeting of SAM States has been scheduled for April 2018 for updating Letters of Agreement and Contingency Plans. This meeting would review data on aircraft transfer and ATS management on optimised routes, and coordinate with the Mexico NACC Office for the development of joint route improvement initiatives based on NAM and CAR flows.

PBN in TMAs

1.6 Regarding recent implementations, the new PBN airspace of the Asunción FIR and TMA became effective in August 2017. Likewise, *Aerocivil* of Colombia implemented the new Bogota TMA with RNAV/RNP standard routes and approach procedures on 12 October 2017.

1.7 In Brazil, through the PBN SUL project that also became effective on 12 October 2017, several main TMAs, such as Curitiba, Florianopolis and Porto Alegre, had been optimised.

1.8 Regarding progress made by Argentina, PBN procedures had been implemented at the airports of Aeroparque, Córdoba, Salta and Iguazú, amongst others. In this respect, Suriname is taking action to implement PBN routes and procedures for the Paramaribo international airport airspace by February 2018.

1.9 Panama is currently defining a process for airspace improvement and redesign at the Tocumen TMA. It expected to initiate the project in early 2018 and a roadmap with deadlines would be available by then. They also expected to implement a new National air navigation plan.

1.10 Argentina, Brazil and Paraguay have completed the tripartite implementation of the FOZ TMA in October 2017 (covering operations at the airports of Foz de Iguazú, Cataratas and Guaraní). Argentina and Paraguay informed that the bipartite PBN planning for the Posadas TMA (covering the

airspace of the Encarnación and Posadas airports), is under development in order to be implemented in February 2019.

1.11 The progress made in PANS-OPS training of staff in the administrations of Argentina, Bolivia, Ecuador, Guyana, Peru and Uruguay, shows that the number of designers in the Region was gradually increasing.

1.12 The tentative dates for PBN implementation in the remaining TMAs of the Region is shown in the following table:

Redesign of selected TMA airspaces based on PBN planning			
State		Implementation	
Argentina	BAIRES	Phase 1.- October 2017. Optimisation of available resources. Phase 2.- 2017-2020. Introduction of the PBN concept. (See SAM/IG/20-NI/04)	
Bolivia	Cochabamba	Phase 1.- July 2018. PBN design but also considering conventional procedures. Phase 2.- August 2019. Definitive PBN design, considering airspace with ATS surveillance.	
	La Paz		
	Santa Cruz		
Brazil	Brasilia	12 Nov 2015 (implemented)	
	Belo Horizonte	12 Nov 2015 (implemented)	
	Sao Paulo (partial modifications)	12 Nov 2015 (implemented)	
	Salvador	27 Apr 2017 (implemented)	
	Manaus	17 Aug 2017 (implemented)	
	(PBN SUR)	Curitiba	12 Oct 2017 (implemented)
		Florianopolis	
		Joinville	
		Navegantes	
		Porto Alegre	
		São Paulo (modifications)	
	Red de ruta FIR CW		
	Fortaleza, Natal and Maceió	September 2019	
	Vitória	October 2018	
Belém, Campo Grande and Sao Luis	October 2021		
Cuiabá, Boa Vista, Porto Velho and Rio Branco	October 2023		
Sao Paulo	TBD		
Chile	Santiago (South)	08 Dec 2016 (implemented)	
	Santiago FIR route network		
Colombia	Bogota	12 Oct 2017 (implemented)	

Redesign of selected TMA airspaces based on PBN planning		
State		Implementation
Ecuador	Guayaquil	21 Jul 2016 (implemented)
Panama	Panamá	Project start-up in 2018. (See SAM/IG/20-IP/10)
Paraguay	Asunción	17 Aug 2017 (implemented)
Peru	Arequipa	December 2018
	Cusco	December 2018
	Juliaca	December 2018
	Puerto Maldonado	December 2018
Uruguay	Carrasco and Laguna del Sauce	First semester of 2018 * The Carrasco TMA will be optimised in accordance with Phase 2 of the Baires TMA.
Venezuela	Maiquetía	December 2017
	Isla Margarita	Second semester of 2018

Implementation of PBN SIDs, STARs and approach procedures

1.13 Taking into account recent implementations in Argentina, Brazil, Colombia and Paraguay, PBN SIDs/STARs implementation as of 12 October 2017 reached 72.9%, exceeding the 60% goal of the Declaration of Bogota.

1.14 Associated to the design of arrival and departure procedures was the application of CDO and CCO, which had reached 34% and 26% implementation, respectively.

1.15 Regarding compliance with ICAO Resolution A37-11 concerning the implementation of PBN approaches, the States continued making efforts to reach 100%, which was to be achieved in 2016. As of 12 October 2017, implementation had reached 78.6%.

Estimated fuel savings/CO2 emissions reduction

1.16 With IFSET tool, it was estimated that, between January 2014 and December 2016, the airspace improvements in the States of the SAM Region resulting from PBN application for the realigning of regional routes and the implementation of standardized departure and arrival RNAV/RNP routes in Terminal Control Areas, has allowed to generate CO₂ reduction in the order of 211.098 tonnes, according to the following charts:

<i>Year</i>	<i>Reduction in CO₂ Tonnes generating routes optimizations</i>
2014	51.132
2015	23.351
2016	11.000

Chart 1: Reduction of CO2 due to routes optimization

<i>Year</i>	<i>Tonnes CO₂</i>	<i>CO₂ Tonnes Cumulative Reduction</i>
2014	51.132	51.132
2015	23.351 + 51.132	74.483
2016	11.000 + 74.483	85.483
	Total 2014 a 2016	211.098

Chart 2: Cumulative CO2 reduction due to routes optimization in 2014 – 2016 period

1.17 Consequently, the goal of 40.000 Tonnes of CO2 emissions reduction per year, considered in the Declaration of Bogota for 2016, has been exceeded. It should be emphasized that the implementation of routes optimization in the Region has continued during the first semester of 2017, estimating that this generates an additional reduction of 8.033 CO2 Tons.

Standardization of longitudinal separations minima

1.18 As a complementary initiative to en route space optimization, letters of agreement between SAM States have been subscribed to apply longitudinal separation minima (LSM) of 40 NM, as a first phase that will involve the application of 20 NM LSM standardized in Doc 4444 PANS ATM, for aircraft equipped to received DME distance data and/or GNSS distance in continental spaces.

1.19 In the workshop carried out the first week of November 2017, the implementation of 40 NM LSM was analyzed, at a regional and interregional basis, and the actions to implement a separation of 20 NM, highlighting Brazil's initiative presented in SAMIG/20 to apply 20 NM LSM to every aircraft entering their FIRs.

1.20 In this context, the need to encourage the application of 40 NM separation minima in La Paz FIR has been identified, where letters of agreement have not yet been totally implemented and is complicating the implementation of optimized longitudinal separation in adjacent FIRs in regional routes and important flows, as Panama – Argentina / Uruguay.

1.21 Coordination with Argentina is also required, since a separation of 40 NM is not totally being applied to transfer aircraft to the Resistencia FIR, which affects, inter-alia, the coordination with Asunción ACC.

Follow-up to ATFM implementation

2.1 The goals in relation to ATFM implementation are not yet consolidated in the Region, although States and RLA/06/901 efforts in preparing and developing guidance material and enabling ATFM training courses.

2.2 In order to analyse compliance with ATFM goals, the following indicators have been considered:

- Percentage of States that have performed runway and ATC sector capacity calculations
- Percentage of States that have implemented ATFM at flow management units (FMUs) or flow management positions (FMPs)

2.3 85% of the States of the Region have performed runway capacity calculations as a task prior to implementation. During the meeting, Paraguay reported that it had completed ATC sector calculations, totalling 9 States of the Region--that is 64%--that have performed such calculations.

2.4 The metrics for flow unit implementation in the SAM Region remains at 63%.

2.5 Bolivia intended to promote ATFM implementation activities at the DGCA, without that meaning that the provider (AASANA) would no longer participate in the provision of the ATFM service at the ACC.

Issuance of NOTAMs on flow control measures

2.6 Conclusion SAM/IG/19-01 called for the strengthening of FMP/FMU functions by means of resources and trained personnel with powers to coordinate with ATS services the implementation of ATFM initiatives (TMI) in case of air traffic capacity/demand imbalances caused by scheduled or unforeseen events.

2.7 It is of utmost importance the implementation of the actions specified in conclusion SAM/IG/19-01, urging States that had not yet implemented ATFM to install at least one ATFM management position (FMP) in order to balance the demand of aircraft operations with service capacity in the airspace and international aerodromes.

Updating of the ATFM CONOPS

2.8 SAM/IG/20 Meeting analysed a proposal to review the contents of the Concept of Operations - ATFM CONOPS and the status of implementation of ATFM. It also agreed that the ATFM CONOPS should be geared towards the development of a second implementation phase consisting of the identification and measurement of the expected performance objectives. Accordingly, it should be updated based on the following guidelines:

- It should fall within the framework of the new edition of ICAO Doc 9971.
- To date, different results have been obtained in ATFM implementation. In general, the ATFM has allowed for demand/capacity balancing in runways and ATS airspaces, and a reduction of delays in major airports through the application of domestic air traffic initiatives.
- Progress has been made in runway and ATC sector capacity measurements, in view of the availability of a methodology and the respective training. It is necessary to promote a periodic review and updating of these measurements when the scenarios change.
- Regarding the efficiency of en-route operations and management of overflying aircraft, a better application and understanding of the ATFM concept is perceived upon having reduced the issuance of NOTAMs with unilateral flow control measures. However, the application of initiatives between adjacent FMPs/FMUs must be emphasized.

- Although they are implemented separately, there is a strong linkage and interaction between runway and airspace ATFM and aircraft operations (AOP) to/from parking stands, pushback and start-up area, and taxiways. Accordingly, their linkage to A-CDM processes being implemented at some international airports of the Region is also essential.

CADENA CDM sessions

2.9 Conducting ATFM teleconferences is of utmost importance for the Region, as well as promoting a communication routine in support of CDM and TMIs, while facilitating linkage between ACCs or ATFM units at the FIR boundaries of the CAR/SAM Regions.

2.10 Participation in the CANSO CADENA sessions as an observer is being carried out since July 2017. The aforementioned teleconferences link up ATFM units, generating a communication and collaboration routine among the participants. These teleconferences are also attended by the airlines, IATA, FAA and other organisations, favouring feedback. The ANSPs of Argentina and Brazil have been participating in the initiative since its inception.

2.11 Chile, Panama, Paraguay, Peru and Venezuela are participating in the weekly sessions of CADENA, and would provide their input at the ATFM workshop/meeting to be held in March 2018 for its corresponding analysis.

- END -

APPENDIX B

AIM AREA

B0 – DATM: Service improvement through digital aeronautical information management 2017-2019				
ELEMENTS	SCOPE	INDICATORS/ METRICS	GOALS: %/ Date	STATUS
1 - AIXM	All States	Indicator: % of States that have implemented AIXM in an AIS database. Metrics: Number of States that have implemented AIXM in an AIS database.	Tests 2016 (4 States: ARG, BRA, PAN, URU) 28% by 2017 49% by 2018 100% by 2019	XX% (X States)
2 – electronic AIP	All States	Indicator: % of States that have implemented an IAID to manage the production of the electronic AIP (eAIP). Metrics: Number of States that have implemented an IAID to manage the production of the electronic AIP (eAIP).	30% by 2017 60% by 2018 100% by 2019	XX% (X States)
3 – Electronic terrain and obstacle data (e-TOD)	All States	Indicator: % of States that have implemented the terrain data set. Metrics: Number of States that have implemented the terrain data set. Indicator: % of States that have implemented the obstacle data set. Metrics: Number of States that have implemented the obstacle data set.	Area 1: Terrain: 100% by 2016 Obstacles: 49% by 2016 51% by 2017	Area 1: Terrain: XX% (XX States) Obstacles: XX% (XX States)

B0 – DATM: Service improvement through digital aeronautical information management 2017-2019				
ELEMENTS	SCOPE	INDICATORS/ METRICS	GOALS: %/ Date	STATUS
Cont.: 3 – Electronic terrain and obstacle data (e-TOD)	All States	Indicator: % of States that have implemented the data set on terrain and obstacles that penetrate the terrain and obstacle data collection surface. Metrics: Number of States that have implemented the data set on terrain and obstacles that penetrate the terrain and obstacle data collection surface.	AREA 2b, 2c and 2d Terrain: 100% by 2017 Obstacles: 100% by 2017	AREA 2b, 2c and 2d Terrain: XX% (XX States) Obstacles: XX% (XX States)
4 - Digital NOTAM	All States	Indicator: % of States that have included the digital NOTAM in their National plan for the transition from AIS to AIM. Metrics: Number of States that have included the digital NOTAM in their National plan for the transition from AIS to AIM.	28% by 2017 56% by 2018 100% by 2019	XX% (XX States)
5- Integrated aeronautical information databases (IAID)	All States	Indicator: % of States that have developed integrated aeronautical information databases (IAID). Metrics: Number of States that have developed integrated aeronautical information databases (IAID).	28% by 2017 56% by 2018 100% by 2019	XX% (XX States)

CONSIDERATIONS REGARDING AIM AREA IMPLEMENTATIONS

- QMS/AIM implementation
 - Excessive delays in the implementation in Bolivia, Guyana and Suriname.
 - Delays in completing implementation in Colombia, Ecuador and Venezuela.
 - Lack of plans for adjusting to ISO 9001 version 2015 in Argentina and Uruguay.

- e- TOD implementation
 - Implementation plans with remote horizons.
 - Several States have not even submitted implementation plans.
 - High compliance cost.
 - Cost-benefit analyses should be carried out in the Region.
 - At present, it is a GANDD deficiency.

- AIXM
 - Some progress has been made, but more investment is needed.
 - It must be accompanied by AMHS interconnections.

- E-AIP
 - Brazil, Peru, Colombia, Panama and Venezuela showed significant progress.
 - States need to invest more in order to meet the deadlines.

- Digital NOTAM
 - The initial horizon must be modified to 2019.

APPENDIX C

MET AREA

<i>B0 – AMET: Meteorological information supporting enhanced operational efficiency and safety</i>						
ELEMENTS	SCOPE	INDICATORS / METRICS	GOALS: %/ Date			STATUS
			2017	2018	2019	
MET/QMS as per ISO 9001:2015	All States	Indicator: % of States that have implemented the MET/QMS (100% by the end of 2018) Support metrics: Number of States that have implemented the MET/QMS	10	12	14	All States should update their MET/QMS documentation to align it with the modified ISO 9001. At present, seven States have implemented and certified the MET/QMS in their aeronautical meteorological services
Implementation of SIGMET messages in graphical format	All States	Indicator: % of international aerodromes /MWOs that have implemented graphical procedures Support metrics: Number of international aerodromes /MWOs that have implemented graphical SIGMET procedures	6	8	12	At present, 3 States have implemented SIGMET messages in graphical format.
Implementation of the IAVW procedure	All States	Indicator: % of international aerodromes /MWOs that have implemented IAVW procedures Support metrics: Number of international aerodromes/ MWOs that have implemented IAVW procedures	7	9	12	
Implementation of the OPMET messages in XML/GML format	All States	Indicator: % of States that have implemented OPMET messages in XML/GML format Support metrics: Number of States that have implemented OPMET messages in XML/GML format	4	6	9	

<i>B0 – AMET: Meteorological information supporting enhanced operational efficiency and safety</i>						
ELEMENTS	SCOPE	INDICATORS / METRICS	GOALS: %/ Date			STATUS
			2017	2018	2019	
Implementation of tropical cyclone watch procedures	States that require this procedure	Indicator: % of international aerodromes /MWOs that have tropical cyclone watch Support metrics: Number of international aerodromes/ MWOs with tropical cyclone watch	2	3	4	Only Colombia, Guyana, French Guiana, Panama, Suriname and Venezuela might be affected by tropical cyclones in the SAM Region.
Watch procedures implemented for the release of radioactive material	All States	Indicator: Percentage of Meteorological Watch Offices (MWOs) that have implemented watch procedures for the release of radioactive material Support metrics: Number of MWOs that have signed operational cooperation agreements with ACCs for the transmission of radioactive material release reports.	2	4	7	
Implementation of wind shear warning and alert procedures	All States	Indicator: Percentage of international aerodromes /AMOs that have implemented wind shear warning and alert procedures Support metrics: Number of international aerodromes /AMOs that have implemented wind shear warning and alert procedures	6	9	12	

CONSIDERATIONS REGARDING MET AREA IMPLEMENTATIONS

- QMS/MET implementation
 - Concern of the Secretariat for the delay in the implementation in some States. Note should be taken on the support provided by the Secretariat and World Meteorological Organization (WMO) for the implementation of the QMS/MET.
 - Lack of plans to adapt to ISO 9001 version 2015 in some States that have already completed QMS/MET implementation.

- Release of radioactive material
 - Coordinate procedures between the ANSP and the MET provider for cases of release of radioactive material.

- Implementation of other MET elements
 - State civil aviation authorities should ask the MET provider to implement these elements.

APPENDIX D

AMHS INTERCONNECTION REQUIREMENT AND DATE OF IMPLEMENTATION

STATES	AMHS INTERCONNECTION REQUIREMENTS	DATE OF IMPLEMENTATION	COMMENTS
Argentina	Bolivia	Dec 2018	Pending initial coordination
	Brazil	Nov 2017	Final operational tests for AMHS interconnection between Brasilia and Ezeiza were successfully completed on 18 May 2016. Pending decision from authorities of Argentina and Brazil for operational implementation.
	Chile	Nov 2017	Positive operational tests carried out on mid December 2016. Pending decision from authorities of Argentina and Chile for operational implementation.
	Paraguay	Mar 2012	Implemented and operational
	Peru	Nov 2017	Positive operational tests carried out at the end of 2016. Pending decision from authorities of Argentina and Peru for operational implementation.
	South Africa	Jun 2019	Coordination began on December 2016. Interconnection implementation will be made through CAFSAT. Modernization of CAFSAT node Ezeiza is foreseen by mid-2018.
	Uruguay	Dec 2017	Connectivity in Protocol P1 level between MTA Ezeiza – Montevideo. Operational test foreseen November 2017.
	Venezuela	Dec 2017	Implemented and operational (out of service- failure in AMHS Venezuela) since Dec 2016. Operational since 20 September 2017. Tests foreseen for November 2017.
	SITA (Atlanta)	Dec 2017	Positive connectivity tests carried out. Operation foreseen December 2017.
Bolivia	Argentina	Dec 2018	Pending initial coordination
	Brazil	Jun 2018	Pending initial coordination
	Peru	Mar 2018	IP connectivity between La Paz and Lima MTAs achieved.
Brazil	Argentina	Nov 2017	Final operational tests for AMHS interconnection between Brasilia and Ezeiza were successfully completed on 18 May 2016. Pending decision from authorities of Argentina and Brazil for operational implementation.
	Bolivia	Jun 2018	Pending initial coordination
	Colombia	May 2017	Operational May 2017.

STATES	AMHS INTERCONNECTION REQUIREMENTS	DATE OF IMPLEMENTATION	COMMENTS
	Spain	Dec 2017	Operations scheduled December 2017. AMHS circuit implemented through CAFSAT. To date in pre-operational phase. For beginning operations, Brazil is expecting confirmation from Spain to migrate to operational phase.
	United States	Jun 2018	Coordination began between Brazil and United States. Circuit implementation will be made through MEVAIII/REDDIGII.
	Guyana	Sep 2017	Operations in Protocol P1 level begun on 16 December 2016 at 17:00 UTC. On mid-February 2017 returned to AFTN configuration. AMHS tests resume on May 2017. Connection resume on July 2017.
	French Guiana	Dec 2018	Operation of an AMHS (CONSOFT) system is schedule by January 2018. AMHS interconnection scheduled October 2018.
	Paraguay	Dec 2017	Positive P1 connectivity tests were carried out. Pending operational tests by October 2017.
	Peru	Dec 2015	Implemented and operational 14 December 2015
	Senegal	Dec 2018	Coordination began between Brazil and Senegal (Dec 2016). Interconnection will be made through AFISNET satellite network which Brazilian node was installed in Recife.
	Sita (Atlanta)	Dec 2017	Successful operational and IP interoperability tests carried out in August 2017. Operation foreseen by last quarter of 2017.
	Suriname	Mar 2018	Entered into operation on 15 Dec 2016 at 17:00 UTC. On mid-February 2017 returned to AFTN configuration. Pending updating of AMHS system by Suriname.
	Uruguay	Sep 2017	IP connectivity completed. (First week October 2016). IP Protocol tests successfully concluded the week of 28 Nov 2016 (30 Nov and 1 Dec). Positive operational tests made in August 2017 and commissioning in September 2017.
	Venezuela	Dec 2017	Positive connectivity in Protocol P1 level between Brasilia and Caracas (Oct 2016). Operational since 20 September 2017. Tests foreseen November 2017.
Chile	Argentina	Nov 2017	Positive operational tests carried out in mid-December 2016. Pending decision from authorities of Argentina and Chile

STATES	AMHS INTERCONNECTION REQUIREMENTS	DATE OF IMPLEMENTATION	COMMENTS
			for operational implementation.
	Peru	Dec 2016	Began operations on mid-December 2016.
Colombia	Brazil	May 2017	Operational May 2017.
	Ecuador	Dec 2017	Successful IP connectivity tests Pending resume of operational tests
	Panama	Mar 2018	Circuitual interconnection has been configured through MEVA III/REDDIG II (Mid-February 2017). Positive operational tests August 2017. Operational implementation will be carried out once Colombia and Panama contract the AMHS circuit with MEVA III communication provider in MEVAIII/REDDIGII interconnection.
	Peru	Sep 2010	Implemented and operational
	Venezuela	Dec 2017	Operational since 20 September 2017 with new AMHS System. Tests foreseen November 2017.
Ecuador	Colombia	Dec 2017	IP connectivity tests successfully made. Pending resume of operational tests.
	Peru	Jul 2012	Implemented and operational
	Venezuela	Dec 2017	Operational since 20 September 2017 with new AMHS System. Tests foreseen November 2017.
French Guiana (France)	Brazil	Dec 2018	French Guiana has scheduled for January 2018 the commissioning of an AMHS (CONSOFT) system. AMHS interconnection foreseen to begin October 2018.
	Venezuela	Dec 2018	French Guiana has scheduled for January 2018 the commissioning of an AMHS (CONSOFT) system. AMHS interconnection foreseen to begin on October 2018.
Guyana	Brazil	Jul 2017	Began operations on 15 Dec 2017 at 17:00 UTC. At mid-February 2017 returned to AFTN configuration. AMHS tests resumed on May 2017. Operational connection resumed on July 2017.
	Suriname	Jun 2011	Implemented and operational
	Trinidad & Tobago	Dec 2018	Pending coordination
	Venezuela	Dec 2017	Operational since 20 September 2017 with new AMHS System. Tests foreseen November 2017.
Panama	Colombia	Mar 2018	Circuitual interconnection has been configured through MEVA III/REDDIG II (mid-February 2017). Positive operational tests made on August

STATES	AMHS INTERCONNECTION REQUIREMENTS	DATE OF IMPLEMENTATION	COMMENTS
			2017. Operational implementation will take place once Colombia and Panama contract AMHS circuit to the MEVA III communications provider in MEVAIII/REDDIGII interconnection.
Paraguay	Argentina	Mar 2012	Implemented and operational
	Brazil	Dec 2017	IP interconnectivity tests began mid July 2016. Pending of operational tests on October 2017.
Peru	Argentina	Nov 2017	Positive operational tests carried out at the end of 2016. Pending decision from authorities of Argentina and Chile for operational implementation.
	Bolivia	Mar 2018	Successful IP connectivity between La Paz MTA and Lima MTA.
	Brazil	Dec 2015	Implemented 14 December 2015
	Chile	Dec 2016	Entered into operations the second half of Dec 2016.
	Colombia	Sep 2010	Implemented
	Ecuador	Jul 2012	Implemented
	United States	Dec 2018	Initial coordination has begun for the AMHS connection through the MEVAIII/REDDIGII interconnection.
	Venezuela	Dec 2017	Operational since 20 September 2017 with new AMHS System. Tests foreseen October 2017.
Suriname	Brazil	Mar 2018	Began operations on 15 Dec 2016 at 17:00 UTC. At mid-February 2017 returned to AFTN configuration. Pending Suriname AMHS system updating.
	Guyana	Jun 2011	Implemented and operational
	Venezuela	Mar 2018	Pending operational tests to be made when Venezuela has implemented its new AMHS system (September 2017) and Suriname has updated its AHMS system (date TBD). New AMHS system operative in Venezuela since 20 September 2017.
Uruguay	Argentina	Dec 2017	Positive P1 connectivity between Ezeiza and Montevideo achieved. Operational tests foreseen November 2017.
	Brazil	Sep 2017	IP connectivity tests completed (first week October 2016) Protocol P1 successfully concluded the week of 28 November 2016 (30 November and 1 December). Positive operational test made on August 2017. Commissioning September 2017.

STATES	AMHS INTERCONNECTION REQUIREMENTS	DATE OF IMPLEMENTATION	COMMENTS
Venezuela	Argentina	Dec 2017	Implemented and operational (out of service- failure in AMHS Venezuela) New AMHS system started operations in Venezuela on 20 September 2017. Tests foreseen November 2017.
	Brazil	Dec 2017	New AMHS system started operations in Venezuela on 20 September 2017. Tests foreseen November 2017.
	Colombia	Dec 2017	New AMHS system started operations in Venezuela on 20 September 2017. Tests foreseen November 2017.
	Spain	Dec 2018	Pending initial coordination. Interconnection will be made through a communication circuit rented to a local provider.
	United States	Dec 2018	Pending initial coordination. AMHS circuit will be implemented through MEVAIII/REDDIGII interconnection.
	Ecuador	Dec 2017	New AMHS system started operations in Venezuela on 20 September 2017. Tests foreseen November 2017.
	Guyana	Dec 2017	New AMHS system started operations in Venezuela on 20 September 2017. Tests foreseen November 2017.
	French Guiana	Dec 2018	French Guiana has scheduled for January 2018 the commissioning of an AMHS (CONSOFT) system. AMHS interconnection foreseen to begin on October 2018.
	Peru	Dec 2017	New AMHS system started operations in Venezuela on 20 September 2017. Tests foreseen November 2017.
	Suriname	May 2018	Pending operational tests to be made when Venezuela has implemented its new AMHS system (September 2017) and Suriname has updated its AHMS system (date TBD).
Trinidad & Tobago	Dec 2018	New AMHS system started operations in Venezuela on 20 September 2017. Tests foreseen November 2017.	

Green highlighted: AMHS interconnection operative

Light green: almost operational

(AIDC) GROUND-GROUND DATA INTERCONNECTION LEVEL REQUIREMENTS IN THE SAM REGION

ARGENTINA						
ACC	ACC ADJ	Flight plan				Comments
		Interconnection levels *				
		1 4444 Manual	2 4444 Auto	3 (OLDI)	4 (AIDC)	
CORDOBA (AUT. INDRA AIRCON2100) (2007)	IQUIQUE	XI			X	Positive AIDC tests - March 2016 As a result of the tests, the transmission speed has to be incremented from 2400 to 9600 bit/seg AIDC foreseen to be operational at the end of the second semester of 2018.
	LA PAZ	XI			X	AIDC foreseen for period - 2019
	EZEIZA	XI			XI	AIDC in pre-operational phase since December 2015. Operational phase foreseen by the first semester of 2017
	MENDOZA	XI			X	AIDC pre-operational phase by the second semester of 2017
	RESISTENCIA	XI			X	AIDC pre-operational phase by the second semester of 2017
RESISTENCIA (AUT. INDRA AIRCON2100) (May 2016)	ASUNCION	XI			X	Positive AIDC tests were conducted in 2015 between Ezeiza and Asuncion. Tests between Resistencia and Asuncion were conducted in the end of 2016. AIDC foreseen to be operational by the first semester of 2018.
	CORDOBA	XI			X	AIDC pre-operational by the second semester of 2017
	CURITIBA	XI			X	AIDC foreseen by the first semester of 2018
	EZEIZA	XI			X	AIDC pre-operational by the second semester of 2017
	MONTEVIDEO	XI			X	AIDC foreseen by the first semester of 2018
EZEIZA (AUT. INDRA)	COMODORO RIVADAVIA	XI			X	AIDC pre-operational by the second semester of 2017

AIRCON2100) (2007)	MENDOZA	XI			X	AIDC pre-operational by the second semester of 2017
	PUERTO MONTT	XI			X	AIDC by the first semester of 2018
	CORDOBA	XI			XI	AIDC in pre-operational phase since December 2015. Operational phase foreseen by the second semester of 2017
	RESISTENCIA	XI			X	AIDC pre-operational by the second semester of 2017
	JOHANNESBURG	XI			X	AIDC tests foreseen by the second semester of 2017
	MONTEVIDEO	XI			X	AIDC foreseen by the first semester of 2018
MENDOZA (AUT INDRA AIRCON2100) (May 2016)	EZEIZA	XI			X	AIDC pre-operational by the first semester of 2017
	SANTIAGO	XI			X	AIDC foreseen for period 2018-2019
	CORDOBA	XI			X	AIDC pre-operational by the second semester of 2017
COMODORO RIVADAVIA (AUT INDRA AIRCON2100) (June 2016)	EZEIZA	XI			X	AIDC pre-operational by the first semester of 2017
	PUNTA ARENAS	XI			X	AIDC by the end of the second semester of 2017
	PUERTO MONTT	XI			X	AIDC by the end of the second semester of 2017

BRAZIL						
ACC	ACC ADJ	Flight plan				Comments
		Interconnection levels				
		1 4444 Manual	2 4444 Auto	3 (OLDI)	4 (AIDC)	
AMAZÓNICO (MANAUS) AUTO. SAGITARIO ATECH	BRASILIA	XI			XI	AIDC implemented June 2016
	BOGOTÁ	XI			X	AIDC operational foreseen by first semester 2018
	CAYENNE	XI			X	AIDC foreseen for period 2018-2019
	CURITIBA	XI			XI	AIDC implemented July 2016
	GEORGETOWN	XI			X	AIDC foreseen for period 2018-2019
	LA PAZ	XI			X	AIDC foreseen for period 2019

	LIMA	XI			X	AIDC foreseen first semester 2018
	MAIQUETIA	XI	X		X	AIDC foreseen for period 2018-2019
	PARAMARIBO	XI			X	AIDC foreseen for period 2018-2019
	RECIFE	XI			X	AIDC implemented since 2 May 2016
	ATLÂNTICO	XI			X	Second semester 2017
BRASILIA AUTO. SAGITARIO ATECH	AMAZÔNICO	XI			XI	AIDC implemented June 2016
	CURITIBA	XI			XI	AIDC implemented July 2016
	RECIFE	XI			XI	AIDC implemented June 2016
CURITIBA AUTO. SAGITARIO ATECH	AMAZONICO	XI			XI	AIDC implemented July 2016
	ASUNCION	XI			X	AIDC foreseen second semester 2018
	BRASÍLIA	XI			Xi	AIDC implemented July 2016
	LA PAZ	XI			X	AIDC foreseen for period 2018-2019
	MONTEVIDEO	XI			X	AIDC foreseen for the first semester of 2018
	RECIFE	XI			XI	AIDC implemented July 2016
	RESISTÊNCIA	XI			X	AIDC foreseen by the first semester of 2018
	ATLÂNTICO	XI			X	Second Semester 2017
RECIFE AUTO. SAGITARIO ATECH	AMAZÔNICO	XI			XI	AIDC Implemented on 2 May 2016
	BRASÍLIA	XI			XI	AIDC implemented June 2016
	CURITIBA	XI			XI	AIDC implemented July 2016
	ATLÂNTICO	XI			X	Second Semester 2017
ATLÂNTICO AUTO. SAGITARIO ATECH	AMAZÔNICO	XI			X	Second Semester 2017
	CURITIBA	XI			X	Second Semester 2017
	DAKAR	XI			X	AIDC TBD
	JOHANNESBURG	XI			X	AIDC TBD
	LUANDA	XI			X	AIDC TBD
	MONTEVIDEO	XI			X	AIDC foreseen for period 2018-2019
	RECIFE	XI			X	Second Semester 2017
	CAYENNE	XI			X	AIDC foreseen for period 2018-2019

BOLIVIA						
ACC	ACC ADJ	Flight plan				Comments
		Interconnection levels				
		1 4444 Manual	2 4444 Auto	3 (OLDI)	4 (AIDC)	
LA PAZ (MANUAL)	AMAZÓNICO	XI			X	AIDC foreseen for period 2019
	ASUNCION	XI			X	AIDC foreseen for period 2019
	CURITIBA	XI			X	AIDC foreseen for period 2019
	CORDOBA	XI			X	AIDC foreseen for period 2019
	LIMA	XI			X	AIDC foreseen for period 2019
	IQUIQUE	XI			X	AIDC foreseen for period 2019

CHILE						
ACC	ACC ADJ	Flight plan				Comments
		Interconnection levels				
		1 4444 Manual	2 4444 Auto	3 (OLDI)	4 (AIDC)	
SANTIAGO (AUTO THALES TOPSKY)	IQUIQUE	XI			X	AIDC foreseen for period 2018-2019
	LIMA	XI			X	AIDC foreseen for period 2018-2019
	MENDOZA	XI			X	AIDC foreseen for period 2018-2019
	PUERTO MONTT	XI			X	AIDC foreseen for period 2018-2019
IQUIQUE (AUTO INDRA AIRCON 2100)	CORDOBA	XI			X	Positive AIDC tests - March 2016. Tests results indicate the requirement of increase transmission speed from 2400 to 9600 bit/sec. AIDC operational foreseen by the first semester of 2018
	LA PAZ	XI			X	AIDC foreseen for period 2018-2019
	LIMA	XI			X	Positive AIDC tests conducted in February 2016. AIDC foreseen to be operational by the second semester of 2017
PUERTO MONTT (INDRA AUTOMATED)	SANTIAGO	XI			X	AIDC foreseen for period 2018-2019
	PUNTA ARENAS	XI			X	AIDC pre operational since November 2016.
	EZEIZA	XI			X	AIDC by the first semester of 2018
	COMODORO RIVADAVIA	XI			X	AIDC by the first semester of 2018

PUNTA ARENAS (INDRA AUTOMATED)	PUERTO MONTT	XI			X	AIDC pre operational since November 2016
	COMODORO RIVADAVIA	XI			X	AIDC by the first semester of 2018

COLOMBIA						
ACC	ACC ADJ	Flight plan				Comments
		Interconnection levels				
		1 444 4 Man ual	2 444 4 Aut o	3 (OLDI)	4 (AIDC)	
BOGOTÁ (AUTO INDRA AIRCON 2100)	AMAZÔNICO	XI			X	AIDC operational foreseen first semester 2018
	CENAMER	XI			X	AIDC foreseen for period 2018- 2019
	GUAYAQUIL	XI			XI	Positive AIDC tests conducted AIDC in pre-operational phase (August 2015). Implementation foreseen December 2017.
	LIMA	XI			XI	Positive AIDC tests conducted. AIDC pre-operational (August 2015) Operational letter of agreement incorporating AIDC was signed on November 2016 Operational phase foreseen last quarter 2017
	MAIQUETIA	XI			X	AIDC foreseen for period 2018- 2019
	PANAMA	XI			X	Positive AIDC tests conducted. AIDC foreseen to be operational by first semester 2018.
	BARRANQUILLA	XI			XI	AIDC pre-operational (March 2016)
BARRANQUILLA (AUTO INDRA AIRCON 2100)	MAIQUETIA	XI			X	AIDC foreseen for period 2018- 2019
	PANAMA	XI			X	Positive AIDC tests conducted. AIDC foreseen to be operational by first semester 2018.
	BOGOTA	XI			XI	AIDC pre-operational (March 2016)
	KINGSTON	XI			X	AIDC TBD
	CURAO	XI			X	AIDC TBD
APP Rio Negro (AIRCON 2100)	PANAMA	XI			X	Tests on first semester 2018
APP Cali (AIRCON 2100)	PANAMA	XI			X	Tests on first semester 2018

ECUADOR						
ACC	ACC ADJ	Flight plan				Comments
		Interconnection levels				
		1 4444 Manual	2 444 4 Auto	3 (OLDI)	4 (AIDC)	
GUAYAQUIL AUTO INDRA AIRCON 2100	BOGOTA	XI			XI	Positive AIDC tests conducted. AIDC pre-operational (August 2015) implementation foreseen December 2017
	LIMA				XI	AIDC operational implementation (31 March 2016) Migrated to pre-operational phase since Nov 2016. Resume to operational phase foreseen for last quarter 2017.
	CENAMER	XI			X	Positive AIDC tests conducted. AIDC foreseen for period 2018-2019

FRENCH GUIANA						
ACC	ACC ADJ	Flight plan				Comments
		Interconnection levels				
		1 4444 Manual	2 4444 Auto	3 (OLDI)	4 (AIDC)	
CAYENNE AUTO ADACEL AIDC not installed	AMAZÔNICO	XI			X	AIDC foreseen for period 2018-2019
	PARAMARIBO	XI			X	AIDC foreseen for period 2017-2019
	PIARCO	XI			X	AIDC foreseen for period 2018-2019
	DAKAR	XI			X	AIDC foreseen for period 2018-2019
	ATLANTICO	XI			X	AIDC foreseen for period 2018-2019

GUYANA						
ACC	ACC ADJ	Flight plan				Comments
		Interconnection levels				
		1 4444 Manual	2 4444 Auto	3 (OLDI)	4 (AIDC)	
GEORGETOWN AUTO INTELCAN AIDC not installed	AMAZONICO	XI			X	AIDC foreseen for period 2018-2019
	PIARCO	XI			X	AIDC foreseen for period 2018-2019
	MAIQUETIA	XI			X	AIDC foreseen for period 2018-2019
	PARAMARIBO	XI			X	AIDC foreseen for period 2018-2019

PANAMA						
ACC	ACC ADJ	Flight plan				Comments
		Interconnection levels				
		1 4444 Manual	2 444 4 Auto	3 (OLDI)	4 (AIDC)	
PANAMA (AUTO THALES)	BOGOTA	XI			X	Positive AIDC tests conducted. AIDC foreseen to be operational by first semester 2018.
	BARRANQUILLA	XI			X	Positive AIDC tests conducted. AIDC foreseen to be operational by first semester 2018.
	CENAMER	XI			X	Positive AIDC tests conducted. Pre operational phase. AIDC foreseen to be operational by first semester 2018.
	APP CALI	XI			X	Tests on first semester 2018.
	APP RIO NEGRO	XI			X	Tests on first semester 2018.
	KINGSTON	XI			X	Pre-operational phase by first semester 2018

PARAGUAY						
ACC	ACC ADJ	Flight plan				Comments
		Interconnection levels				
		1 4444 Manual	2 4444 Auto	3 (OLDI)	4 (AIDC)	
ASUNCION AUTO AIRCON 2100 INDRA	CURITIBA	XI			X	AIDC foreseen for second semester 2018
	LA PAZ	XI			X	AIDC foreseen for period 2018-2019
	RESISTENCIA	XI			X	Positive AIDC tests conducted in 2015 between Ezeiza and Asuncion. Tests between Resistencia and Asuncion were held by the end of 2016. AIDC foreseen to be operational by the first semester 2018.

PERU						
ACC	ACC ADJ	Flight plan				Comments
		Interconnection levels				
		1 4444 Manual	2 4444 Auto	3 (OLDI)	4 (AIDC)	
LIMA AUTO AIRCON 2100 INDRA	AMAZONICO	XI			X	AIDC foreseen to be operational by first semester 2018
	BOGOTA	XI			XI	Positive AIDC tests conducted. AIDC pre-operational phase (August 2015). Amendment to the operational agreement including the AIDC signed in November 2016. Operational phase foreseen last quarter 2017
	SANTIAGO	XI			X	AIDC foreseen for period 2018-2019
	IQUIQUE	XI			X	Positive AIDC tests conducted in February 2016. AIDC foreseen to be operational by the second

						semester of 2017.
	GUAYAQUIL	XI			XI	AIDC operational (31 March 2016) migrated to pre-operational phase on November 2016. Expected to resume operational phase the las quarter 2017.
	LA PAZ	XI			X	AIDC foreseen for period 2019

SURINAME						
ACC	ACC ADJ	Flight plan				Comments
		Interconnection levels				
		1 4444 Manual	2 4444 Auto	3 (OLDI)	4 (AIDC)	
PARAMARIBO (AUTO INTELCAN) AIDC not installed	AMAZÓNICO	XI			X	AIDC foreseen for period 2018-2019
	GEORGETOWN	XI			X	AIDC foreseen for period 2018-2019
	PIARCO	XI			X	AIDC foreseen for period 2018-2019
	CAYENNE	XI			X	AIDC foreseen for period 2018-2019

URUGUAY						
ACC	ACC ADJ	Flight plan				Comments
		Interconnection levels				
		1 4444 Manual	2 4444 Auto	3 (OLDI)	4 (AIDC)	
MONTEVIDEO (AUTO INDRA AIRCON2100)	CURITIBA	XI			X	AIDC foreseen by first semester 2018
	EZEIZA	XI			X	AIDC foreseen by the first semester 2018
	RESISTENCIA	XI			X	AIDC foreseen by first semester 2018
	ATLANTICO	XI			X	AIDC foreseen for period 2018-2019
	JOHANNESBURG	X			X	AIDC TBD

VENEZUELA						
ACC	ACC ADJ	Flight plan				Comments
		Interconnection levels				
		1 4444 Manual	2 4444 Auto	3 (OLDI)	4 (AIDC)	
MAIQUETIA (AUTO ATECH X4000) AIDC not installed	AMAZONICO	XI	XI		X	AIDC foreseen for period 2018-2019
	BOGOTA	XI			X	AIDC foreseen for period 2018-2019
	BARRANQUILLA	XI			X	AIDC foreseen for period 2018-2019
	PIARCO	XI			X	AIDC TBD
	CAYENNE	XI			X	AIDC foreseen for period 2018-2019
	CURAZAO	XI			X	AIDC TBD
	SAN JUAN	XI			X	AIDC TBD

* X PLANNED

*XI IMPLEMENTED AND IN PRE-OPERATIONAL OR OPERATIONAL PHASE

**IMPLEMENTATION OF DOMESTIC IP NETWORKS /
 IMPLANTACION DE REDES IP NACIONALES**

STATE/ESTADO	IP APPLICATIONS IMPLEMENTED/ APLICACIONES IP IMPLANTADAS	IMPLEMENTATION DATE OF DOMESTIC IP NETWORK FOR ALL IP APPLICATIONS/ FECHA DE IMPLANTACION DE RED IP NACIONAL PARA TODAS LAS APLICACIONES EN IP
Argentina	AMHS, DATA RADAR, IP VOICE/VOZ IP	2005
Bolivia	AMHS	2016
Brazil/Brasil	AMHS, DATA RADAR, IP VOICE/VOZ IP	2015
Chile	AMHS	2015
Colombia	AMHS, RADAR	2016
Ecuador	AMHS, RADAR	2014
French Guiana (France) / Guyana Francesa (Francia)	No	2018
Guyana	AMHS	2018
Panamá	AMHS, RADAR	2016
Paraguay	AMHS	2014
Perú	AMHS, RADAR	2016
Suriname/Surinam	AMHS	2018
Uruguay	AMHS RADAR	2014
Venezuela	AMHS	2010

Green = Implemented

Verde = Implantada

- END / FIN -