SAM/IG/16

INTERNATIONAL CIVIL AVIATION ORGANIZATION
South American Office

Regional Project RLA/06/901

SIXTEENTH WORKSHOP/MEETING OF THE SAM IMPLEMENTATION GROUP

(SAM/IG/16)

FINAL REPORT

Lima, Peru, 19 to 23 October 2015

INDEX

HISTORY OF THE MEETING

ii-1 PLACE AND DURATION OF THE MEETING

The Sixteenth Workshop/Meeting of the SAM Implementation Group (SAM/IG/16) was held at the premises of the ICAO South American Regional Office in Lima, Peru, from 19 to 23 October 2015, under the auspices of Regional Project RLA/06/901.

ii-2 OPENING CEREMONY AND OTHER MATTERS

Mr. Onofrio Smarrelli, on behalf of the Regional Director of the ICAO South American Office, greeted the participants for the continuous support provided to activities developed at regional scale by the South American Office, as well as the civil aviation authorities and national and private organizations of the ICAO South American Region for the continuous support to the activities of the SAM Implementation Group.

ii-3 SCHEDULE, ORGANIZATION, WORKING METHODS, OFFICERS AND SECRETARIAT

The Meeting agreed to hold its sessions from 09:30 to 15:30 hours, with appropriate breaks. The work was done with the Meeting as a Single Committee, Working Groups and Ad-hoc Groups.

Mr. Rafael Alberto Molina, delegate from Argentina, was unanimously elected as Chairman of the Meeting. Also, Mr. Iván Tulcán, delegate from Ecuador, was elected as Vice-Chairman.

Mr. Onofrio Smarrelli, RO/CNS SAM Office, Lima, acted as Secretary assisted by Messrs. Roberto Arca, RO/ATM/SAR and Mr. Jorge Fernandez RO/ATM/SAR/AIM Adviser.

In addition, the Secretariat counted with the support of Messrs. Julio Pereira, Rapporteur of the PBN Group; Omar Gouarnalusse, Rapporteur of the CNS Group; and Murilo Loureiro in the automation ad-hoc group supported by Jorge Merino.

ii-4 WORKING LANGUAGES

The working language of the Meeting was Spanish with simultaneous interpretation in English the first day (plenary) and the last day (review of the final report) and its relevant documentation was presented in Spanish and English.

ii-5 AGENDA

The following agenda was adopted:

Agenda Item 1: Follow up to conclusions and decisions adopted by SAM/IG meetings, tasks for the States regarding the new Electronic Air Navigation Plan (e-ANP) and to the State Industry collaborative processes for its transition of the current systems to those specified in the ASBU

Agenda Item 2: Optimization of the SAM air space

a) PBN in routes
b) PBN in Terminal Areas
c) PBN proceedings

Agenda Item 3 Implementation of the Air Traffic Flow Management (ATFM)

Agenda Item 4: Assessment of operational requirements to determine the implementation of improvements in communications, navigation and surveillance (CNS) capabilities for operations in route and terminal area

Agenda Item 5: Operational implementation of new ATM automated systems and integration of the existing systems

Agenda Item 6: Other business

ii-6 ATTENDANCE

The Meeting was attended by 56 participants from 12 States of the SAM Region (Argentina, Bolivia, Brazil, Colombia, Chile, Colombia, Ecuador, French Guyana, Panama, Paraguay, Peru, Uruguay and Venezuela), one International Organization (IATA) and 3 Observers from the aeronautical industry (ARINC, IACIT and SITA). The list of participants is shown in page iii-1.

ii.7 LIST OF CONCLUSIONS

No.	Title	Page
SAM/IG/16-1	Model amendment to the letter of operational agreement on AIDC between two centres	5-4

LISTA DE PARTICIPANTES / LIST OF PARTICIPANTS

ARGENTINA
1. Rafael Alberto Molina
2. Diego F. Agüero
3. Guillermo Cocchi
4. Omar Gouarnalusse
5. Gustavo Adolfo Chiri
6. Ricardo Sykes
7. Eduardo Berardi
8. Matías Valdata
9. Horacio García
10. Emilio Gómez
11. Antonio Coria

BOLIVIA
12. Reynaldo Cusi Mita
13. Iver Mijael Vargas Ponce de León

BRASIL / BRAZIL
14. Francisco Almeida da Silva
15. Eduardo Miguel Soares
16. Alessander de Andrade Santoro
17. Ricardo da Silva Miranda
18. Murilo Albuquerque Loureiro
19. Marcelo Marques Lobo
20. Luiz Antonio Dos Santos
21. José Airton Patricio

COLOMBIA
22. Pedro Velasco
23. Ricardo Cárdenas

CHILE
24. Alfonso De La Vega

ECUADOR
25. Iván Alfredo Tulcán Ormaza
26. Darwin Suárez
27. Germán Gavilanes

GUYANA FRANCESA (FRANCIA)
28. Jean-Michel Pubellier

PANAMA
29. Iván De León
30. Mario Facey

PARAGUAY
31. Víctor Morán
32. Diego Aldana
33. Liz Portillo

PERÚ
34. Fernando Hermoza Hübner
35. Martha Soto Ansaldi
36. Sady Beaumont Valdéz
37. Rodrigo Aguirre Herrera
38. Tatiana Mendoza Tinco
39. Tomás Macedo Cisneros
40. Renzo Gallegos Begazo
41. Jorge Merino Rodríguez
42. Guillermo Beleván Franco
43. Raúl Anastacio Granda
44. Jorge García Villalobos

URUGUAY
45. Fernando de Medina
46. Gabriel Falco

VENEZUELA
47. Vicmary Josefina Jiménez Figueredo
48. José Rafael González Castro

ARINC
49. Manuel Gongora

IACIT
50. Luiz Antonio Freitas De Castro

IATA
51. Pedro Miguel Abad Zapata (AVIANCA)
52. José Zarabia (AVIANCA)
53. Julio Pereira
54. Raymundo Hurtado (LAN Perú)

SITA
55. Erika Pitrowsky Esteves
56. Adriana Mattos

OACI / ICAO
57. Onofrio Smarrelli
58. Roberto Arca
59. Jorge Fernández

Agenda Item 1: Follow up to conclusions and decisions adopted by SAM/IG meetings, tasks for the States regarding the new Electronic Air Navigation Plan (e-ANP) and to the State Industry collaborative processes for its transition of the current systems to those specified in the ASBU

1.1 Under this agenda item, the Meeting reviewed the following papers:

a) WP/02 – *Follow-up to valid conclusions formulated by SAM/IG meetings and pending activities (*presented by the Secretariat);
b) WP/03 – *Amendment to the CAR/SAM ANP SSR Code Table* (presented by the Secretariat).

Conclusions and decisions adopted by SAM/IG meetings

1.2 The Meeting reviewed the conclusions still valid, as well as pending activities of the workshops/meetings of the SAM Implementation Group (SAM/IG), as shown in **Appendix A** to this part of the Report. The list of conclusions and activities covers:

a) tasks to be carried out and/or the corresponding conclusion in the areas being analysed;
b) specific tasks leading to the fulfilment of the main task;
c) outcome expected from each task;
d) completion dates;
e) the parties responsible for their execution;
f) members supporting the task; and
g) the status of implementation of the task and, when required for better understanding, comments are included to explain the status of implementation.

1.3 Likewise, the Meeting completed the table contained in **Appendix B** to this agenda item which shows, for monitoring purposes, the tasks under the responsibility of the States.

Progress in the development of the new electronic Air Navigation Plan (eANP) for the CAR/SAM Regions

1.4 Regarding this Agenda Item, the Meeting noted that:

a) Volumes I and II of the first new eANP electronic circulated among CAR/SAM States in August 2015, granting 30 calendar days for its approval through GREPECAS fast-track procedure. Final approval of same will be made through the application of ICAO proposals for amendment (PfAs) approval procedures; and

b) With reference to eANP Volume III, both Regional Offices are integrating the required information concerning performance based implementation regional plans of CAR (RPBANIP) and SAM (SAM IP) Regions, for the implementation planning of air navigation systems and their modernization, taking into consideration emerging programmes such as the ASBUs and associated technology roadmaps described in the GANP. It is expected to be ready for circulation among States by the first half of October 2015, granting as well 30 days to States for its approval through GREPECAS fast-track procedure.

1.5 Additionally the Secretariat steamed convenient to attach the information available at this Regional Office regarding the focal points nominee by States for the assessment coordination of the electronic regional air navigation Plan. This list is contained in **Appendix C** of this part of the report.

APPENDIX A

STATUS OF APPLICATION OF CONCLUSIONS AND/OR TASKS ORIGINATED IN SAM/IG MEETINGS

No.	Task to be developed	Specific tasks	Deliverables	Finalization date	Responsible	Supporting members to the task	Status of implementation
3. Implementation of Performance Based Navigation (PBN) in the SAM Region							
3-26	**Conclusion SAM/IG/12-2 PBN approach instrument procedures** That SAM States: a) publish the navigation specification corresponding to such SIDs and STARs RNAV not having such indication at present; b) complete the implementation of APV procedures for all instrument flight runway ends, whether as primary approach or as support to precision approach, with a view to completing 70% of PBN approaches by 2014 and 100% by 2016; and c) advise the Regional office of any changes in the status of implementation of instrument approach procedures, whether conventional or PBN, in each SAM/IG meeting, in order to update regional efficiency indicators.	Implement APV procedures for all instrument flight runway ends.	70% of APV approaches 100% of APV approaches Information papers in SAM/IG meetings	2014 2016 2016	States	RO/ATM	**VALID** Paragraph b) superseded by Bogota Declaration. Paragraph c) superseded by Conclusion SAM/IG/14-4.

No.	Task to be developed	Specific tasks	Deliverables	Finalization date	Responsible	Supporting members to the task	Status of implementation
3-29	**Conclusion SAM/IG/14-4 Follow-up of the PBN goals established in the Bogota Declaration** a) complete the template contained in Appendix E to this part of the report; b) do the calculations and/or collect data on (estimated and actual) fuel and CO_2 savings, using the IFSET tool for the estimates; c) send the data cited in a) and b) to the SAM Regional Office before 30 June and 31 December each year.	Complete details of PBN implementation at each international airport contained in the Air Navigation Plan Calculate fuel and CO2 savings achieved with the optimization of the air spaces	Submission of data to Regional office	SAM/IG/16	STATES	RO/ATM	**VALID** Note: literal b) for the estimation of fuel savings and C O_2 emissions, another tools approved by the Stares can be used
3-30	**Conclusion SAM/IG/14-5 National PBN implementation plans** That SAM States submit their updated national PBN implementation plans to the SAM/IG/15 meeting, using the model National PBN implementation plan shown in Appendix I to this part of the Report	Updating of PBN National Implementation Plans	PBN Plan updated	SAM/IG/16	STATES	RO/ATM	**VALID**

No.	Task to be developed	Specific tasks	Deliverables	Finalization date	Responsible	Supporting members to the task	Status of implementation
3-31	**Conclusion SAM/IG/14-6 Projects and/or action plans for PBN redesign of the main South American TMAs** That SAM States: a) send the **Project and/or Action Plans for PBN redesign of the main TMA(s)** selected by their Administration, in order to complete the SAM PBN Project that is contained in **Appendix J** to this part of the Report, to the SAM Regional Office by 31 December 2014; b) send the corresponding updates to the aforementioned Project and/or Plans to the SAM Regional Office as soon as possible, so as to ensure harmonisation of activities under the SAM PBN Project.	Determination of the selected air spaces to be optimized with the implementation of PBN	Inform selected airspace for its redesign or optimization Report updates	SAM/IG/16	STATES	RO/ATM	**VALID**
3-34	**Conclusion SAM/IG/15-1**: **Assessment of COPA and KLM proposals** Taking into account proposals made by COPA and KLM contained in Appendix A to this part of the report: a) SAM States concerned shall assess the feasibility of	Assess proposals by the corresponding States	Assessed routes	SAM/IG/16	States	RO/ATM	**VALID** Literal b) concluded.

No.	Task to be developed	Specific tasks	Deliverables	Finalization date	Responsible	Supporting members to the task	Status of implementation
	implementing the proposals made by COPA; b) Colombia shall assess the proposals made by KLM.						
4. Standards and procedures for performance based navigation operations approval							
4-11	**Para 4.9 SAM/IG/6 report-** Establish standard criteria for the Regional System on ground and flight Validation of flight procedures through satellite-based PBN instruments.	Prepare standardised criteria.	Uniform application of Validation criteria on ground and flight procedures through satellite-based PBN instruments.	SAM/IG/9	RLA/99/901	RO/FLS	**VALID** The draft CA 91-012 – Flight validation (FV) of satellite-supported instrument flight procedures (IFP) of performance based navigation (PBN) was presented during the SAM/IG/6. On this respect, the Meeting requested the Secretariat to send a survey of flight inspection experts for comments and further approval. The Secretariat will consult with SAM RO/FLS on the status of this Conclusion.

No.	Task to be developed	Specific tasks	Deliverables	Finalization date	Responsible	Supporting members to the task	Status of implementation
4-12	**Conclusion SAM/IG/14-9 Aircraft and operator PBN capacity database** That the ICAO SAM Office send to SAM States information on the use of the aircraft and operator PBN capacity database, requesting that the aforementioned database be completed by 15 March 2015.	Complete the implementation of the capacity of aircraft and operators PBN database; and circulate a letter to States requesting to complete the data.	**a)** Application accessible from web b) Data base updated	SAM/IG/16	RO/TC		**VALID** Pending letter to States. Consultations with the SRVSOP are being made regarding procedures with administrations to keep database updated once it is published. Link: http://srvsop.icao.int/CapacidadAeronaves/login
5- ATFM implementation							
5-11	**Conclusion SAM/IG/5-7 ATFM Teleconferences in the SAM Region** That SAM States continue to hold weekly ATFM teleconferences between flow management units or flow management positions (FMU / FMP) to improve the exchange of information among participating States.	Implement ATFM teleconferences	Coordination between FMU/FMP carried out.	Permanent	States	RO/ATM	**VALID** REDDIG II includes a speech communications sub-network to support this application. States are exchanging significant information on the operational status of their air spaces and airports by e-mail on daily basis.
5-16	**Conclusion SAM/IG/6-8 ATFM AIP SUPP/AIC Model** That the States of the ICAO South American Region, when preparing their national AIC, use as a reference the ATFM AIP SUPP/AIC model shown in Appendix E to this part of the report.	Prepare AIC	Harmonised publications in the SAM Region	October 2016	States	RO/ATM	**VALID**

No.	Task to be developed	Specific tasks	Deliverables	Finalization date	Responsible	Supporting members to the task	Status of implementation
5-24	**Conclusion SAM/IG/14-10 ATFM preparatory activities** That SAM States do their utmost to: a) increase the number of ATFM-trained personnel to the extent required to fulfil ATFM functions; and b) provide ATFM training to their personnel through national courses conducted by instructors trained in courses provided within the framework of Project RLA/06/901, with a view to multiplying training.	Establish the minimum staff to provide the ATFM system Deliver at national level the ATFM training courses	Sufficient human resources Trained national staff	SAM/IG/15	STATES	RO/ATM	**VALID paragraph (b)** Task described in paragraph (a) is finalized
5-26	**Conclusion SAM/IG/15-4: Reduction of the longitudinal separation between aircraft in the SAM airspace** That, taking into account the operational benefits to be gained from reducing the longitudinal separation of aircraft in the SAM airspace, States: a) investigate the possibility of reducing the longitudinal separation of aircraft at 40 NM between adjacent FIRs using the	Analysis of the application of the longitudinal separation of 40 NM	Implementation	SAM/IG/18	States	RO/ATM	**VALID**

No.	Task to be developed	Specific tasks	Deliverables	Finalization date	Responsible	Supporting members to the task	Status of implementation
	Mach number technique; a) b) their application be included in the Letters of Operational Agreement; and b) c) the Secretariat include this implementation in the GREPECAS ATFM Project and its Action Plan.						
No.	**Task to be developed**	**Specific tasks**	**Deliverables**	**Finalization date**	**Responsible**	**Supporting members to the task**	**Status of implementation**
6. Assessment of operational requirements in order to determine the implementation of communications and surveillance (CNS) capabilities improvement for en-route and terminal area operations							
6-15	**Conclusion SAM/IG/12-3 International AMHS interconnection** That, with regard to international operational AMHS interconnections and with the aim of solving apparent incompatibility problems between the systems installed in Argentina, Brazil and Venezuela with the AMHS in Peru, these States carry out corresponding efforts so: a) their providers determine and inform the precise	a) Determine the precise causes preventing the AMHS interconnection between Argentina, Brazil and Venezuela with Peru. b) Present the results to SAM/IG/13.	Procedures to complete the AMHS interconnection between Argentina, Brazil and Venezuela with Peru.	December 2015	Argentina, Brazil, Peru and Venezuela	RO/CNS	**COMPLETED** Positive trials have been made between Brazil and Peru, applying the trial protocol used by Brazil with Spain. These trials confirmed the interconnection feasibility of Brazil' AMHS system to be extended to Argentina and Venezuela' AMHS systems.

No.	Task to be developed	Specific tasks	Deliverables	Finalization date	Responsible	Supporting members to the task	Status of implementation
	causes preventing the interconnections, and appropriately indicate the procedures to solve them; and b) they inform the results of the evaluation at SAM/IG/13 meeting.						
6-17	**Conclusion SAM/IG/13-7 Implementation of the RAIM availability prediction service in the SAM Region** That, with the aim of achieving a successful implementation of the RAIM availability prediction service and its effective use by States: a) SAM States, the Secretariat and the RAIM service provider carry out necessary coordination through web teleconferences to define, among other aspects, the website format, the mode of access to the service with the assignment of a password, as well as verification of the veracity of the information; b) The Secretariat make the amendments required to the SAM advisory circulars on PBN procedures to mention the existence of the RAIM availability prediction service; c) States of the Region that have not adhered to the	a) Website format, the mode of access to the service; b) Amendment to advisory circulars; c) Inclusion of new States; d) Use of the service.	RAIM availability prediction service in operation	Dec 2015	States, Regional Office	RO/CNS RO/FLS	**COMPLETED** a) Completed b) Completed c) Completed. No interest expressed by Guiana, French Guyana and Suriname in adhering the RAIM availability prediction service. d) Completed

No.	Task to be developed	Specific tasks	Deliverables	Finalization date	Responsible	Supporting members to the task	Status of implementation
	prediction service inform of their intent to join same; and d) RLA/06/901 member States, once the service is operational, make use of it and motivate its use by all interested parties.						
6-19	**Conclusion SAM/IG/14-13 AMHS interconnection trial procedures** That SAM States, when conducting AMHS interconnection trials, use as a reference the list of procedures aligned with the SAM AMHS interconnection guide shown in **Appendix B** to this agenda item.	Use of the list of procedures for the AHMS interconnection trials	Implementation of the list of procedures for the AHMS interconnection trials	December 2016	SAM STATES	ICAO	**VALID**
6-21	**Conclusion SAM IG/14-15 Use of the RAIM availability prediction service** That the operational implementation of the RAIM prediction service be carried out in two stages: a first stage of free dissemination from 15 December 2014 to 15 October 2015, and a second phase, to be analysed at the SAM/IG/16, to define whether or not the prediction service will continue to have free access.	Implementation of the RAIM availability prediction service via WEB in two stages	RAIM availability prediction service via WEB implemented in two states as indicated in the conclusion	SAM/IG/16	Member States of Project RLA/06/901	ICAO SAM Office	**VALID** Free dissemination has not been implemented by all States. Service will continue operations under previous means.

No.	Task to be developed	Specific tasks	Deliverables	Finalization date	Responsible	Supporting members to the task	Status of implementation
6-22	**Conclusion SAM IG/15-05 Requirements for ATS Speech communications between ATS adjacent boundary dependencies** That, SAM States and territories consider the following requirements for all ATS speech services between adjacent ATS dependencies, agreed upon through currently existing or future arrangements: a) Access by REDDIG, provided that the States involved deem it necessary and that local sections do not add additional satellite hops. b) Radio link (VHF FM or any other stipulated bilaterally) in all cases, either as a primary or secondary means. c) International telephony, as a secondary or tertiary means. d) Recording of all communications regardless of the means used.	ATS speech service implementation between ATS boundary dependencies a) Trough REDDIG and local access not adding satellite hops b) VHF link c) International telephony d) Recording communications	Implementation of ATS speech services between ATS boundary dependencies Taking into consideration a), b), c) and d).	December 2018	States	Secretariat ICAO REDDIG Administra-tion	**VALID** At the SAM/IG/16 Brazil reported the acquisition of VHF FM equipment to be installed in all their ATS boundary dependencies.

No.	Task to be developed	Specific tasks	Deliverables	Finalization date	Responsible	Supporting members to the task	Status of implementation
6-23	**Conclusion SAM/IG/15-06: SITA AMHS Interconnection with AMHS Systems installed in the SAM Region** In order to analyse the feasibility of implementing the SITA AMHS interconnection with some AMHS systems installed in the SAM Region based on the SITA AMHS Interconnection version 1.0 document which is presented as Appendix D to this Agenda Item: a) The Secretariat shall send to all SAM Region States the interconnection document no later than 15 June 2015. b) The States send their comments and interest in interconnecting their AMHS system with SITA's AMHS by 31 August 31 2015 to the ICAO South American Regional Office. c) The Secretariat shall send the comments and decisions made by the SITA States at the beginning of September 2015. **d)** SITA propose an AMHS interconnection plan with the States that have expressed their interest and to submit to the SAM/IG/16.	SITA AMHS interconnection with AMHS systems installed in the SAM Region a) Sending of the interconnection document to States b) Comments from States c) Forwarding to SITA d) SITA proposal	Feasibility of implementing the AMHS connection between one SAM State and SITA	October 2015	Secretariat States SITA	Secretariat ICAO	**VALID** Brazil reported interest in connecting its AMHS system with SITA and SITA sent a schedule of activities for the implementation, fulfilling the conclusion.

No.	Task to be developed	Specific tasks	Deliverables	Finalization date	Responsible	Supporting members to the task	Status of implementation
7. Operational implementation of new ATM automated systems and integration of the existing systems							
7-12	**Conclusion SAM IG/14-18 Exception in the insertion of alternate aerodromes** That: a) Airlines operating to the United States that will apply exceptions to the insertion of the alternate aerodrome, insert "ZZZZ" in box 16 of the FPL and specify ALTN//NIL in box 18. b) States include such procedures in the respective AIPs.			December 2015	Airlines and SAM States	ICAO SAM Office	**VALID** No progress reported during the SAM/IG/16 Meeting.
7-13	**Conclusion SAM/IG/14-17 Updating of FASID Table CNS4** That SAM States send to the Secretariat at the ICAO SAM Office the updated FASID Table CNS4 by 15 December 2014.	Updating of the FASID Table CNS 4	FASID Table CNS 4 updated	July 2015	SAM Region States	ICAO SAM Office	**VALID** Pending updating of the CNS 4 Table by SAM States.
7-14	**Conclusion SAM/IG/15-07 Activities to migrate from the AIDC pre-operational to the operational phase between ACCs Colombia, Ecuador and Peru** That, Colombia, Ecuador and Peru carry out the activities referred to in paragraph 5.12 of this agenda item for the migration from the AIDC	Migration phase from the AIDC pre-operational between ACC Lima – ACC Guayaquil ACC Lima – ACC Bogota ACC Bogota - ACC Guayaquil	AIDC pre-operational phase	3 August 2015	Concerned States: Colombia Ecuador Peru	Secretariat ICAO	**VALID** On 3 August, the AIDC between ACC Lima and ACC Guayaquil started operations. Pre-operational phase is foreseen between the ACC Lima-ACC Bogota and ACC Guayaquil – ACC Bogota. Operational phase is

No.	Task to be developed	Specific tasks	Deliverables	Finalization date	Responsible	Supporting members to the task	Status of implementation
	pre-operational phase to the operational, between the ACC Bogota and the ACC Guayaquil, the ACC Bogota with the ACC Lima and the ACC Lima with the ACC Guayaquil, in order to begin with the operational phase on 3 August 2015.						foreseen for October 2015. It is expected that during the SAM/IG/16 Meeting Colombia, Ecuador and Peru report the corresponding progress.
7-15	**Conclusion SAM/IG/15-08 Provision of facilities for the staff in charge of the operational implementation of the AIDC by the aeronautical authorities of the States** That the Aeronautical Authorities of the SAM Region States involved in the implementation of the AIDC systems interconnection, in order to comply with the requirements of the Bogota Declaration in this regard, provide the necessary facilities for the staff designated for the implementation of this activity, especially the focal points, could carry out the work within the time specified in the schedules of activities listed in Appendix C of this agenda item.	Provision of facilities for the staff in charge of the operational implementation of the AIDC by the aeronautical authorities of the States	Facilities for the staff in charge of the operational implementation of the AIDC by the aeronautical authorities of the States	December 2016	States	Secretariat ICAO	**VALID** It was reported during the SAM/IG/16 meeting the lack of support to the focal points in the implementation process, by the aeronautical authorities.

No.	Task to be developed	Specific tasks	Deliverables	Finalization date	Responsible	Supporting members to the task	Status of implementation
7-16	**Conclusion SAM/IG/15-09 Review and approval of the Guideline on technical/operationalconsiderations for multilateration (MLAT) implementation** In order to proceed with the review and approval of the Guidance with technical/operational considerations for the multilateration implementation (MLAT): a) The Secretariat proceed to send the Guidance to all States and Territories of SAM Region not later than 30 June 2015. b) SAM Region States and territories review the guidance and send comments to ICAO SAM Office by 14 August 2015. c) The SAM/IG/16 meeting approves the revised guidance so that it can serve as reference to interested States in implementing a multilateration system.	Review of the Guidance with technical/operational considerations for the multilateration implementation (MLAT)	Guidance with technical/operational considerations for the multilateration implementation (MLAT)	October 2015	Secretariat SAM States	Secretariat ICAO	**VALID** Comments received from Bolivia, Brazil, Ecuador and Chile Taking into consideration the comments received, the SAM/IG/16 will proceed to review and approved the guidance

No.	Task to be developed	Specific tasks	Deliverables	Finalization date	Responsible	Supporting members to the task	Status of implementation
8. Follow up to conclusions and decisions adopted by SAM/IG meetings, results of the thirty-eighth session of the ICAO Assembly (A38) and thirteenth meeting of Civil Aviation Authorities of the SAM Region (RAAC/13) and progress made in the development of the new electronic Air Navigation Plan (e-ANP)							
8-1	**Conclusion SAM/IG/13-1 Alignment of the national air navigation plans with the ICAO Global Air Navigation Plan (GANP) and SAM Performance-Based Air Navigation Implementation Plan (PBIP)** That SAM States amend their national air navigation plans, with the aim of aligning them with the new ICAO Global Air Navigation Plan (GANP, 4th Edition) and SAM Performance-Based Air Navigation Implementation Plan (PBIP) approved at the thirteenth meeting of Civil Aviation Authorities of the SAM Region (RAAC/13), and present any progress made in October 2014, at SAM/IG/14 meeting		National air navigation plans aligned with ASBU	SAM/IG/16	States	ICAO SAM Office	**VALID** No progress reported at SAM/IG/16.
8-2	**Conclusion SAM/IG/13-2 Designation of national focal points to coordinate activities in support of the ICAO position at the ITU WRC-15** That SAM States, if they have not done so yet, designate a national focal point to coordinate, as necessary, between ICAO and the national bodies	Designate focal points	Focal point	31 June 2014	States	RO/CNS	**VALID** Not all States have designated focal points. Colombia, French Guiana, Guyana, Suriname and Uruguay are still pending.

No.	Task to be developed	Specific tasks	Deliverables	Finalization date	Responsible	Supporting members to the task	Status of implementation
	responsible for managing the radio frequency spectrum, with a view to supporting the ICAO position at the ITU WRC-15 shown in Appendix C to this part of the Report, notifying the Regional Office no later than 31 May 2014.						
8-3	**Conclusion SAM/IG/13-3 Designation of a national focal point for the drafting of the new regional e-ANP** That, with the aim that SAM States can coordinate with the ICAO SAM Regional Office the provision of the data necessary for the drafting of the new regional electronic air navigation plan (e-ANP): a) The ICAQ SAM Regional Office will send a State letter in early June 2014, requesting the nomination of a national focal point; and b) SAM States will officially inform by 1 August 2014 the name of the designated focal point, and provide a brief resumé, telephone number and electronic mail of the incumbent.	Designate focal points	Focal point	1 Aug 2014	States	RO/ATM	**VALID** Secretariat sent letter SA280 on 12 June 2014. Information of Bolivia, Guyana, Panama, and Suriname is still pending.

No.	Task to be developed	Specific tasks	Deliverables	Finalization date	Responsible	Supporting members to the task	Status of implementation
9. Matters related to safety							
9-1	**Conclusion SAM/IG/13-9 IATA safety events indicators for SAM States** Encourage States to develop, jointly with operators, Secretariat and other ATM community stakeholders deemed relevant, the methodology allowing the use of the data on safety events and indicators registered by airlines through IATA, in order to identify and mitigate any potential risk to operations, setting goals, priority areas and action plan.	Activities of States with operators for the analysis of safety events	SMS analysis and mitigating measures	Inform at each SAM/IG meeting	States	RO/ATM	**VALID**

APPENDIX B

FOLLOW-UP OF CONCLUSIONS AND PENDING TASKS OF THE SAM/IG MEETING

Conclusión/Tarea Conclusion/Task	ARG	BOL	BRA	CHI	COL	ECU	FGY	GUY	PAN	PAR	PER	SUR	URU	VEN	OBSERVACIONES REMARKS
Conclusion SAM/IG/6-9 **Actions required for AMHS interconnection** That SAM States, in view of the delays in the interconnection of the AMHS, proceed with the following actions:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Actions corresponding to parts a), b) and c) of this Conclusion have been completed, pending only part d). French Guiana (France) has no AMHS. Uruguay installed its AMHS in March 2014.
a) Require from their AMHS providers the necessary support to successfully end the necessary interconnections;	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**N/A**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	
b) Make necessary arrangements to train personnel in the interconnection tasks, with the aim of minimizing the dependency with their providers;	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**N/A**	**YES**	**NO**	**YES**	**YES**	**YES**	**N/A**	**YES**	
c) Maximize pertinent coordination; and	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**N/A**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	
d) States that have not yet done so, complete the drafting and signature of the MoU.	**O/G**	**N/A**	**O/G**	**O/G**	**O/G**	**O/G**	**N/A**	**O/G**	**O/G**	**YES**	**O/G**	**O/G**	**N/A**	**O/G**	
Conclusion SAM/IG/11-4 - International AMHS interconnection That, with regard to international operational AMHS interconnections, if bilateral arrangements conducted by States do not permit another solution, same should make adjustments in their systems in order that they are compatible with mode TP0 as a whole and in accordance with Regulation RFC 1006.	**NO**	**YES**	**NO**	**YES**	**YES**	**YES**	**N/A**	**YES**	**YES**	**NO**	**YES**	**YES**	**N/A**	**NO**	**SUPERSEDED** By Conclusion SAM/IG/12-3
Conclusion SAM/IG/11-5 - Use of the radio frequency spectrum **That, the States of the SAM Region:** a) Ensure the VSAT networks operating in the band between 3.4 to 4.2 Ghz with regard to the IMT services, informing of any interference to both the pertinent national entity and the ICAO SAM Regional Office;	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	Regarding part a), only one interference occurred in REDDIG node in Lima which was reported and corrected. In the other nodes no interferences occurred, for which only one "YES" is included for Peru.

Conclusión/Tarea Conclusion/Task	ARG	BOL	BRA	CHI	COL	ECU	FGY	GUY	PAN	PAR	PER	SUR	URU	VEN	OBSERVACIONES REMARKS
b) Examine lists COM 1 to 3 and confirm the use of the frequencies assigned, notifying of any changes therein; and	**O/G**	**O/G**	**O/G**	**O/G**	**YES**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	
c) Count with a mechanism agreed upon with the national authority enabling detection and solving the use of unauthorized transmissions causing inconveniences to the aeronautical services.	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	
Conclusion SAM/IG/12-3 - International AMHS interconnection That, with regard to international operational AMHS interconnections and with the aim of solving apparent incompatibility problems between the systems installed in Argentina, Brazil and Venezuela with the AMHS in Peru, these States carry out corresponding efforts so: a) Their providers determine and inform the precise causes preventing the interconnections, and appropriately indicate the procedures to solve them; and b) They inform the results of the evaluation at SAM/IG/13 meeting.	**O/G**		**YES**								**YES**			**O/G**	**CONCLUDED** The Brazil-Peru AMHS interconnection proved the match of AMHS systems. Argentina and Venezuela will adopt same changes applied by Brazil to complete their AMHS interconnection.
Conclusion SAM/IG/13-1 – Alignment of the national air navigation plans with the ICAO Global Air Navigation Plan (GANP) and SAM Performance-Based Air Navigation Implementation Plan (PBIP) That SAM States amend their national air navigation plans, with the aim of aligning them with the new ICAO Global Air Navigation Plan (GANP, 4th Edition) and SAM Performance-Based Air Navigation Implementation Plan (PBIP) approved at the thirteenth meeting of Civil Aviation Authorities of the SAM Region (RAAC/13), and present any progress made in October 2014, at SAM/IG/14 meeting.	**YES**	**O/G**	**YES**	**YES**	**YES**	**O/G**	**YES**	**NO**	**O/G**	**O/G**	**O/G**	**NO**	**O/G**	**O/G**	

Conclusión/Tarea Conclusion/Task	ARG	BOL	BRA	CHI	COL	ECU	FGY	GUY	PAN	PAR	PER	SUR	URU	VEN	OBSERVACIONES REMARKS
Conclusion SAM/IG/13-2 – Designation of national focal points to coordinate activities in support of the ICAO position at the ITU WRC-15 That SAM States, if they have not done so yet, designate a national focal point to coordinate, as necessary, between ICAO and the national bodies responsible for managing the radio frequency spectrum, with a view to supporting the ICAO position at the ITU WRC-15 shown in Appendix C to this part of the Report, notifying the Regional Office no later than 31 May 2014.	**YES**	**YES**	**YES**	**YES**	**NO**	**YES**	**NO**	**NO**	**YES**	**YES**	**YES**	**NO**	**NO**	**NO**	
Conclusion SAM/IG/13-3 – Designation of a national focal point for the drafting of the new regional e-ANP That, with the aim that SAM States can coordinate with the ICAO SAM Regional Office the provision of the data necessary for the drafting of the new regional electronic air navigation plan (e-ANP): a) The ICAO SAM Regional Office will send a State letter in early June 2014, requesting the nomination of a national focal point; and b) SAM States will officially inform by 1 August 2014 the name of the designated focal point, and provide a brief resumé, telephone number and electronic mail of the incumbent.	**YES**		**YES**	**YES**	**YES**	**YES**	**YES**			**YES**	**YES**		**YES**	**YES**	Pending information from Bolivia, Guyana, Panama and Suriname

Conclusión/Tarea Conclusion/Task	ARG	BOL	BRA	CHI	COL	ECU	FGY	GUY	PAN	PAR	PER	SUR	URU	VEN	OBSERVACIONES REMARKS
Conclusion SAM/IG/13-6 – Review of the advanced RNP (A-RNP) and RNP 0.3 advisory circulars That, with the aim of approving Advisory Circulars AC 91-007 and AC 91-012 for Advanced RNP (A-RNP) and RNP 0.3 operations: a) the ICAO South American Regional Office will send the States of the SAM Region and by 15 May 2014, the AC 91-007 and AC 91-012, for their review and comments; b) SAM States will submit their comments by 15 August 2014; and c) The SAM/IG Secretariat will include the comments received in the advisory circulars and present them at SAM/IG/14 meeting, for their approval.				**YES**											
Conclusion SAM/IG/13-7 – Implementation of the RAIM availability prediction service in the SAM Region That, with the aim of achieving a successful implementation of the RAIM availability prediction service and its effective use by States: a) SAM States, the Secretariat and the RAIM service provider carry out necessary coordination through web teleconferences to define, among other aspects, the website format, the mode of access to the service with the assignment of a password, as well as verification of the veracity of the information; b) The Secretariat make the amendments required to the SAM advisory circular son PBN procedures to mention the existence of the RAIM availability prediction service; c) States of the Region that have not adhered to the prediction service inform of their intent to join same; and d) RLA/06/901 member States, once the service is operational, make us of it and motivate its use by all	**YES** **O/G**	**YES** **O/G**	**YES** **O/G**	**YES** **O/G**	**YES** **O/G**	**YES** **O/G**	 **NO**	 **NO**	**YES** **O/G**	**YES** **O/G**	**YES** **O/G**	 **NO**	**YES** **O/G**	**YES** **O/G**	

Conclusión/Tarea Conclusion/Task	ARG	BOL	BRA	CHI	COL	ECU	FGY	GUY	PAN	PAR	PER	SUR	URU	VEN	OBSERVACIONES REMARKS
interested parties.															
Conclusion SAM/IG/13-8 – Actions on air traffic flow control measures That in view of air traffic flow operational restrictions, SAM States adopt following measures: a) consider the text on flow control measures used in the ATS 06/14 Multilateral Meeting, or similar, for inclusion in the Letters of Operational Agreement between ATS dependencies; b) consider of utmost priority to take necessary and urgent actions to avoid the adoption of unilateral flow restrictions that could severely affect air traffic flow; c) implement air traffic flow control measures, if necessary, based on well-founded studies of ATS sector capacities, and coordinate same previously with ATC dependencies responsible for ATS supply in adjacent FIRs. d) consider the application of gradual control measures using as far as possible separations based on distance, by taking advantage of existing ATS surveillance tools; e) use in messages established for communicating flow control measures, terminology and format as detailed in Manual on Air Traffic Flow Management for CAR/SAM Regions, Version 1.1, October 2010, Chapters 12 and 13.	**YES**	**YES**	**YES**			**YES**				YES					**Argentina:** Used text shown under paragraph a) in their national Letters of Agreement, as well as with Bolivia, Chile and Paraguay. **Bolivia**: Used text shown under paragraph a) in their LOAs with Argentina and Paraguay. **Ecuador:** Used the text shown under paragraph a) in their LOA between Guayaquil and Bogota. **Paraguay**: Used the text shown under paragraph a) in their LOAs with Bolivia and Argentina.
Conclusion SAM/IG/13-9 **IATA safety events indicators for SAM States** Encourage States to develop, jointly with operators, Secretariat and other ATM community stakeholders deemed relevant, the methodology allowing the use of the data on safety events and indicators registered by			**YES**	**YES**			**YES**								

Conclusión/Tarea Conclusion/Task	ARG	BOL	BRA	CHI	COL	ECU	FGY	GUY	PAN	PAR	PER	SUR	URU	VEN	OBSERVACIONES REMARKS
airlines through IATA, in order to identify and mitigate any potential risk to operations, setting goals, priority areas and action plan.															
Conclusion SAM/IG/14-4 **Follow-up of the PBN goals established in the Bogota Declaration** a) complete the template contained in Appendix E to this part of the report; b) do the calculations and/or collect data on (estimated and actual) fuel and CO_2 savings, using the IFSET tool for the estimates; c) send the data cited in a) and b) to the SAM Regional Office before 30 June and 31 December each year.	**YES** **YES**	**YES**	**YES** **YES**	**YES** **YES**		**YES**	**YES**				**YES**			**YES**	
Conclusion SAM/IG/14-5 **National PBN implementation plans** That SAM States submit their updated national PBN implementation plans to the SAM/IG/15 meeting, using the model National PBN implementation plan shown in Appendix I to this part of the Report	**YES**	**NO**	**YES**	**YES**	**NO**	**NO**	**SI**	**NO**	**NO**	**SI**	**NO**	**NO**	**NO**	**NO**	
Conclusion SAM/IG/14-9 **Aircraft and operator PBN capacity database** That the ICAO SAM Office send to SAM States information on the use of the aircraft and operator PBN capacity database, requesting that the aforementioned database be completed by 15 March 2015.				**O/G**											Letter pending submitting to States; in parallel consultations through the SRVSOP are being made to States to receive procedures as how to keep database updated once it is published.
Conclusion SAM/IG/14-10 **ATFM preparatory activities** That SAM States do their utmost to: a) increase the number of ATFM-trained personnel to the extent required to fulfil ATFM functions; and	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**			**YES**	**YES**	**YES**		**YES**	**YES**	Paragraph (a) concluded

Conclusión/Tarea Conclusion/Task	ARG	BOL	BRA	CHI	COL	ECU	FGY	GUY	PAN	PAR	PER	SUR	URU	VEN	OBSERVACIONES REMARKS
b) provide ATFM training to their personnel through national courses conducted by instructors trained in courses provided within the framework of Project RLA/06/901, with a view to multiplying training.															
Conclusion SAM/IG/14-12 **Requirement for a basic course on CISCO routers and switches for personnel in charge of REDDIG II maintenance and operation** That the Fifteenth Meeting of the REDDIG Coordination Committee, to be held in Lima, in March 2015 consider approving the conduction of a basic course on CISCO IP routers and switches, the content of which is presented in **Appendix A** to this agenda item.	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**N/A**	**YES**	**YES**	**YES**	**YES**	**YES**	RCC/18 Meeting approved to conduct a basic course on CISCO IP routers and switches.
C**onclusion SAM/IG/14-13** **AMHS interconnection trial procedures** That SAM States, when conducting AMHS interconnection trials, use as a reference the list of procedures aligned with the SAM AMHS interconnection guide shown in **Appendix B** to this agenda item.	**O/G**	**O/G**	**YES**	**O/G**	**O/G**	**O/G**	**N/A**	**O/G**	**O/G**	**O/G**	**YES**	**O/G**	**O/G**	**O/G**	Implementation of procedure in progress.
Conclusion SAM/IG/14-14 **Implementation of the SITA data link service through the REDDIG II** That SITA provides to the Fifteenth meeting of the Coordination Committee of Project RLA/03/901 (RCC/15) to be held in Lima, Peru, on 2-4 March 2015, detailed technical information on bandwidth requirements for each of the States of the Region that use SITA data link, and on the costs that the States of the Region currently pay through the SITA communication network, so that the RCC/15 meeting may analyse the feasibility of using the REDDIG to transport the data links to SITA data processors in Brazil through the Recife node.			**YES**	**YES**											RCC/18 Meeting approved the implementation of the SITA data link service through the REDDIG II beginning trials with Chile. At present, only Chile and Brazil are involved.

Conclusión/Tarea Conclusion/Task	ARG	BOL	BRA	CHI	COL	ECU	FGY	GUY	PAN	PAR	PER	SUR	URU	VEN	OBSERVACIONES REMARKS
Conclusion SAM IG/14-15 **Use of the RAIM availability prediction service** That the operational implementation of the RAIM prediction service be carried out in two stages: a first stage of free dissemination from 15 December 2014 to 15 October 2015, and a second phase, to be analysed at the SAM/IG/16, to define whether or not the prediction service will continue to have free access.	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**N/A**	**N/A**	**O/G**	**O/G**	**O/G**	**N/A**	**O/G**	**O/G**	The implementation of the RAIM prediction service via WEB in fee access phase, is in process in RLA/06/901 Member States. The RAIM service will continue in operation as initially foreseen, it means, access by password
Conclusion SAM/IG/14-16 **Approval of the 2015 Plan of Activities for AIDC implementation** That the Coordination Meeting (RCC/8) review and approve the 2015 timetable of activities for AIDC implementation, shown in **Appendix B** to this agenda item.	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**N/A**	**N/A**	**YES**	**YES**	**YES**	**N/A**	**YES**	**YES**	**CONCLUDED** RCC/8 Meeting approved the activities for the implementation of the AICD
Conclusion SAM/IG/14-17 **Updating of FASID Table CNS4** That SAM States send to the Secretariat at the ICAO SAM Office the updated FASID Table CNS4 by 15 December 2014.	**YES**	**NO**	**O/G**	**YES**	**NO**	**NO**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**NO**	Activity incomplete.
Conclusion SAM IG/14-18 **Exception in the insertion of alternate aerodromes** That: a) Airlines operating to the United States that will apply exceptions to the insertion of the alternate aerodrome, insert "ZZZZ" in box 16 of the FPL and specify ALTN//NIL in box 18. b) States include such procedures in the respective AIPs.	**O/G**	**O/G**	**YES**	**YES**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	**O/G**	Activity under implementation process.
Conclusion SAM/IG/15-1: **Assessment of COPA and KLM proposals** Taking into account proposals made by COPA and KLM contained in Appendix A to this part of the report:							**N/A**	**N/A**				**N/A**			Paragraph (b) implemented.

Conclusión/Tarea Conclusion/Task	ARG	BOL	BRA	CHI	COL	ECU	FGY	GUY	PAN	PAR	PER	SUR	URU	VEN	OBSERVACIONES REMARKS
a) SAM States concerned shall assess the feasibility of implementing the proposals made by COPA; b) Colombia shall assess the proposals made by KLM.															
Conclusion SAM/IG/15-05: Requirements for ATS Speech communications between ATS adjacent boundary dependencies That, SAM States and territories consider the following requirements for all ATS speech services between adjacent ATS dependencies, agreed upon through currently existing or future arrangements: a) Access by REDDIG, provided that the States involved deem it necessary and that local sections do not add additional satellite hops. b) Radio link (VHF FM or any other stipulated bilaterally) in all cases, either as a primary or secondary means. c) International telephony, as a secondary or tertiary means. d) Recording of all comunications regardless of the means used.	O/G	O/G	O/G	YES	O/G	O/G	O/G	O/G	O/G	O/G	O/G	O/G	O/G	O/G	
Conclusion SAM/IG/15-06: SITA AMHS Interconnection with AMHS Systems installed in the SAM Region In order to analyse the feasibility of implementing the SITA AMHS interconnection with some AMHS systems installed in the SAM Region based on the SITA AMHS Interconnection version 1.0 document which is presented as Appendix D to this Agenda Item:	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	**VALID** Only Brazil expressed interest in interconnecting its AMHS system with SITA

Conclusión/Tarea Conclusion/Task	ARG	BOL	BRA	CHI	COL	ECU	FGY	GUY	PAN	PAR	PER	SUR	URU	VEN	OBSERVACIONES REMARKS
a) The Secretariat shall send to all SAM Region States the interconnection document no later than 15 June 2015. b) The States send their comments and interest in interconnecting their AMHS system with SITA's AMHS by 31 August 31 2015 to the ICAO South American Regional Office. c) The Secretariat shall send the comments and decisions made by the SITA States at the beginning of September 2015. d) SITA propose an AMHS interconnection plan with the States that have expressed their interest and to submit to the SAM/IG/16.															
Conclusion SAM/IG/15-07: Activities to migrate from the AIDC pre-operational to the operational phase between ACCs Colombia, Ecuador and Peru That, Colombia, Ecuador and Peru carry out the activities referred to in paragraph 5.12 of this agenda item for the migration from the AIDC pre-operational phase to the operational, between the ACC Bogota and the ACC Guayaquil, the ACC Bogota with the ACC Lima and the ACC Lima with the ACC Guayaquil, in order to begin with the operational phase on 3 August 2015.	N/A	N/A	N/A	N/A	O/G	O/G	N/A	N/A	N/A	N/A	O/G	N/A	N/A	N/A	**VALID** Pending migration AIDC operational phase between: ACC Lima ACC Bogota ACC Guayaquil ACC Bogota
Conclusion SAM/IG/15-08: Provision of facilities for the staff in charge of the operational implementation of the AIDC by the aeronautical authorities of the States That the Aeronautical Authorities of the SAM Region States involved in the implementation of the AIDC systems interconnection, in order to comply with the requirements of the	O/G	N/A	O/G	O/G	O/G	O/G	N/A	N/A	O/G	O/G	O/G	N/A	O/G	O/G	**VALID**

Conclusión/Tarea Conclusion/Task	ARG	BOL	BRA	CHI	COL	ECU	FGY	GUY	PAN	PAR	PER	SUR	URU	VEN	OBSERVACIONES REMARKS
Bogota Declaration in this regard, provide the necessary facilities for the staff designated for the implementation of this activity, specially the focal points, could carry out the work within the time specified in the schedules of activities listed in Appendix C of this agenda item.															
Conclusion SAM/IG/15-09: Review and approval of the Guideline on technical/operational considerations for multilateration (MLAT) implementation In order to proceed with the review and approval of the Guidance with technical/operational considerations for the multilateration implementation (MLAT): a) The Secretariat proceed to send the Guidance to all States and Territories of SAM Region not later than 30 June 2015. b) SAM Region States and territories review the guidance and send comments to ICAO SAM Office by 14 August 2015. **c)** The SAM/IG/16 meeting approves the revised guidance so that it can serve as reference to interested States in implementing a multilateration system.	NO	YES	YES	YES	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	**CONCLUDED** The Guide was examined and approved at SAM/IG/16

eANP NATIONAL FOCAL POINTS

STATE	ADMINISTRATION	NAME	TITLE	TELEPHONE	E-MAIL
ARGENTINA	Administración Nacional de Aeronáutica Civil - ANAC	Moira Callegare	Chief CNS Department, DNINA	+54 11 5941 3097	mcallegare@anac.gov.ar
BOLIVIA					
BRAZL	Departamento de Control del Espacio Aéreo - DECEA	Cristiano de Uzêda Pinto	Chief AIS Planning Section, Operations Subdepartment	+55 21 2101 6936 +55 21 98269 8300	dpln4@decea.gov.br
COLOMBIA	Unidad Administrativa Especial de Aeronáutica Civil - UAEAC	Nibia Lucia Morales Galindo	Aeronautical specialist General Subdirection	+57 1 296 2080 +57 313 333 0021	nmorales@aerocivil.gov.co
CHILE	Dirección General de Aeronáutica Civil - DGAC	Alfonso de la Vega Sepúlveda	In charge of Air Navigation Section, Planning Department	+56 2 439 2952	adelavega@dgac.gob.cl
ECUADOR	Dirección General de Aviación Civil - DGAC	Iván Tulcán Ormaza		+5932 294 7400 Ext. 4078	ivan.gulcan@aviacioncivil.gob.ec
GUYANA					
FR. GUIANA					
PANAMA					
PARAGUAY	Dirección Nacional de Aeronáutica Civil - DINAC	CTA Liz Rocío Portillo Castellanos	Air Navigation Standards Manager	+595 21 205 365	nyrlrpc@dinac.gov.py lizroportillo@gmail.com
PERU	Dirección General de Aeronáutica Civil - DGAC	Fernando Hermoza	Air Navigation Technical Coordinator	+51 1 615 7880	fhermoza@mtc.gob.pe
SURINAME					
URUGUAY	Dirección Nacional de Aviación Civil e Infraestructura Aeronáutica - DINACIA	Rosanna Barú	Chief Aeronautical Services Department	+598 2 604 0409 Int. 4461	rbaru@dinacia.gub.uy navegacionaerea@dinacia.gub.uy
		Adriana San Germán	Chief CTA Technical Department	+598 2 604 0408 Int. 5109	asangerman@gmail.com
VENEZUELA	Instituto Nacional de Aviación Civil - INAC	Pablo Cecilio Rattia Rodríguez	Air Traffic Controller VI	+ 58 426 531 06 16	p.rattia@inac.gob.ve

Updated: 30 de noviembre de 2015

Agenda Item 2: Optimisation of the SAM airspace
a) PBN in routes
b) PBN in terminal areas
c) PBN proceedings

2.1 Under this Agenda Item, the Meeting analysed the following working papers:

a) WP/04 - *Results of the Fourth workshop on PBN design in the SAM Region. Analysis of PBN action plans* (presented by the Secretariat);
b) WP/05 - *Update of PBN approach implementation data (Res. A37-11)* (presented by the Secretariat);
c) WP/12 - *Follow-up to PBN implementation related to the goals of the Bogota Declaration* (presented by the Secretariat);
d) WP/13 - *Air navigation implementation priorities focused on airspace optimization for the period 2017-2019* (presented by the Secretariat);
e) IP/03 - Planning the transition to the new PBN airspace concept in the Belo Horizonte TMA (presented by Brazil);
f) IP/08 - *PBN training* (presented by Argentina); and
g) DP/01 *SAM Airspace Optimization Programme* (presented by the Secretariat)

Results of the Fourth Workshop on PBN Design in the SAM Region. Analysis of PBN Action Plans

2.2 The Meeting recalled that the SAM/IG/15 meeting considered that, in order to continue applying the established PBN implementation strategy, the States would have to complete the validation phase and, if some requirements were met, conduct the PBN/4 Workshop. Accordingly, it formulated Conclusion SAM/IG/15-2: *PBN implementation in South American TMAs.*

2.3 Based on the aforementioned conclusion, the Fourth Workshop on PBN design in SAM Airspace was held at the South American Regional Office, on 7-11 September 2015, with the participation of experts of the aeronautical Administrations, air navigation service providers, as well as aircraft operators of the South American Region.

2.4 Following the presentations by SAM States and an exchange of opinions and experiences, the PBN/4 Workshop reached a conclusion on the status of PBN implementation in South American TMAs, as shown in the following table. The phases foreseen in ICAO Doc 9992 were used as criteria to assess the status of implementation: Planning, Design, Validation, and Implementation.

STATE	TMA	TENTATIVE DATE	STATUS OF IMPLEMENTATION
Argentina	BAIRES	30 March 2017	PLANNING
	09 TMAs (SACO, SAME, SAZS, SAZN, SARI, SAVC, SASA, SANT, SAWG)	November 2015 / September 2016	PLANNING
	SAWC	30 April 2015	IMPLEMENTED
Bolivia	Cochabamba, La Paz, Santa Cruz	28 April 2017	PLANNING
Brazil	Brasilia, Belo Horizonte, Sao Paulo (changes)	12 November 2015	IMPLEMENTATION
	PBN SUR - Route Network + Curitiba, Florianópolis and Porto Alegre	30 March 2017	DESIGN
Chile	Santiago - PAMPA SUR	15 September 2016	IMPLEMENTATION
Paraguay	Asuncion	23 June 2016	IMPLEMENTATION
Ecuador	Guayaquil	23 June 2016	IMPLEMENTATION
Panama	Panama	23 November 2016	IMPLEMENTATION
Peru	Arequipa, Cuzco, Juliaca and Puerto Maldonado	31 March 2016	DESIGN
Uruguay	Carrasco and Laguna del Sauce	30 March 2017	DESIGN
Venezuela	Maiquetia	28 April 2016	IMPLEMENTATION

Details of the status of implementation in each SAM State

Survey on the PBN/4 Workshop

2.5 In the PBN/4 Workshop evaluation survey, an average of 4.61 (values from 1 to 5) was obtained. 67.33% of participants rated the workshop as excellent and 30.28% as good.

TMA PBN implementation strategy

2.6 The Meeting discussed the TMA PBN implementation strategy for next year, and agreed on the following 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, as needed.

2.7 In this regard, and taking into account the implementation dates foreseen for the main TMAs, the Meeting concluded that PBN implementation workshops should be distributed as follows:

First PBN Implementation Workshop (PBN/IMP/1) - April 2016	
State	**Implementation**
Argentina (low-complexity TMA)	May 2016
Brazil (Brasilia, Belo Horizonte, Sao Paulo) (changes)	12 November 2015
Chile (Santiago - PAMPA Phase 2)	15 September 2016
Ecuador (Guayaquil)	23 June 2016
Peru (Arequipa, Cuzco, Juliaca and Puerto Maldonado)	31 March 2016
Venezuela (Maiquetia)	28 April 2016
French Guiana (Cayenne)	April 2016

Second PBN Implementation Workshop (PBN/IMP/2) - September 2016	
State	**Implementation**
Argentina (BAIRES)	30 March 2017
Bolivia (Cochabamba, La Paz, Santa Cruz)	28 April 2017
Brazil (PBN SUR)	23 June 2017
Panama (Panama)	TBD
Paraguay (Asuncion)	23 November 2016
Uruguay (Carrasco)	02 March 2017

2.8 In general, it was noted at the PBN/4 Workshop that all States had evolved in their TMA PBN implementation action plans.

2.9 It was recognised that the main factors that enabled this evolution were as follows:

- Continuity in the participation of experts;
- Sharing of lessons learned;
- In some States, participation of the lead operator;
- Support by most Administrations to PBN projects;
- Investment in personnel training in some States (Argentina, Ecuador, Peru).

Updating of PBN approach implementation data (Res. A37-11)

2.10 Upon discussing this agenda item, the Meeting took note of the various requirements for the follow-up of the PBN goals established in the Bogota Declaration. It also recalled that the SAM/IG/14 meeting had felt the need for periodic updates of the status of implementation of arrival, departure and approach procedures, and had formulated Conclusion SAM/IG/14-4: *Follow-up to the PBN goals established in the Bogota Declaration.*

2.11 Pursuant to the aforementioned conclusion, State representatives were requested to update the template contained in **Appendix A** to this part of the report.

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

2.12 The Meeting took note that the Second Meeting of Air Navigation and Safety Directors (Lima, Peru, 14-16 September 2015), *inter alia*, reviewed the status of PBN implementation with respect to the optimisation of routes, terminal areas (SIDs, STARs, CCO and CDO), PBN approach procedures, and 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 Bogota Declaration (Conclusion RAAC/13-8 - *Implementation of air navigation and safety priorities)*. In addition to specific issues, it also reviewed the status of activities associated to such implementations.

Updating of National PBN Plans and Action Plans

2.13 The activities associated to the implementation goals include the National PBN Implementation Plans, in accordance with Conclusion SAM/IG/14-5. Accordingly, SAM States must submit their updated National PBN Plans at SAM/IG meetings. The status of presentation of the updated national PBN plans is shown in **Table 1** below. The goal to be attained before the end of 2015 is 50% and 100% in 2016. Headquarters is requesting these plans in order to update those submitted in 2007.

2015 42%	**ARG**	**BOL**	**BRA**	**CHI**	**COL**	**FGI**	**ECU**	**GUY**	**PAN**	**PAR**	**PER**	**SUR**	**URU**	**VEN**
	YES	NO	YES	YES	NO	NO	YES	NO	NO	YES	YES	NO	NO	NO

Table 1 - States that have presented their updated national PBN plans

2.14 As a supplement to PBN Plans, the States of the SAM Region must present their Action Plan for the application of PBN to the redesign of selected airspaces, using the model Action Plan approved to that end. The status of updating of Action Plans is shown in **Table 2**.

2015 78%	**ARG**	**BOL**	**BRA**	**CHI**	**COL**	**FGI**	**ECU**	**GUY**	**PAN**	**PAR**	**PER**	**SUR**	**URU**	**VEN**
	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	NO	YES	YES

Table 2 – States that have presented their updated Action Plans on PBN redesign of selected airspaces

2.15 The progress made in the drafting of the Action Plans for the PBN airspace redesign is 78%. The target of 50% for 2015 has been exceeded; the goal for 2016 is 100% completion of the PBN Action Plans.

PBN in routes

2.16 The en-route PBN implementation is discussed during ATS/RO meetings, based on the route network version concept. The use of route network versions reflects the need for a periodic, integrated review to ensure that the best possible airspace structure is always in place within an integrated development concept.

2.17 Excluding the implementation planned at the ATSRO/7 meeting (October 2015), the progress made in the implementation of RNAV routes in the upper airspace has been 60%, thus attaining the 60% goal set in the Bogota Declaration. In order to have a more clear view, **Table 3** below shows the number of regional conventional and PBN upper airspace routes, as well as the percentage of PBN routes.

Total ATS routes in the upper airspace	Conventional routes	PBN routes	% of PBN routes implemented	Bogota Declaration indicator: % PBN routes
165	66	99	60%	60%

Table 3 - (Conventional and PBN) ATS routes in the upper airspace

PBN in TMA

2.18 The main South American terminal areas are being fully redesigned using PBN, through PBN workshops sponsored by Regional Project RLA/06/901. Since the GREPECAS/17 meeting, four workshops have been conducted, addressing the Planning, Design, Validation, and Implementation phases, respectively.

2.19 It has been recognised at PBN workshops that the participation of one or more leading operators in the various phases of PBN implementation contributes to a collaborative decision-making process and improves the results of the Planning, Design, and Validation phases.

2.20 Another positive aspect of this implementation was the investment in personnel training, mainly in the PANS-OPS area, with courses such as Basic PANS-OPS and PBN conducted in several countries of the Region.

Implementation of SID, STAR and PBN approach procedures

2.21 The Bogota Declaration urges States to implement PBN SIDs and STARs at international aerodromes, based on CDO and CCO techniques with a view to achieving the established goals. The aforementioned Declaration also calls upon States to implement APV approach procedures, pursuant to Resolution A37-11 of the 37th. ICAO Assembly. The data contained in **Table 4** was updated by States during this Meeting. The following aspects of **Table 4** should be emphasised:

a) The information highlighted in yellow indicates the share of each State in the attainment of each of the goals of the Bogota Declaration. The information in red shows the status of the SAM Region, which is the main indicator to be considered since the goal to be achieved is regional in nature.

b) The APV or RNP AR or LNAV IAP column considers that the threshold has an APV procedure, either through an IAC APV based on an RNP APCH with VNAV or through an IAC RNP AR APCH. The threshold is considered to meet the requirements of the Bogota Declaration if it has an LNAV procedure, in accordance with Resolution A37-11 of the 37th. ICAO Assembly. However, States are expected to implement APV procedures.

c) The information was obtained from SAM States and their AIPs. The data for Colombia, Guyana, and Suriname was collected only from the respective AIPs since no information has been received directly from these States to date.

d) Where no navigation specifications were available for RNAV SIDs and STARs, they were considered PBN SIDs and STARs.

e) The data associated with CDO and CCO implementation metrics is based on information provided by SAM States. States are expected to conduct a full assessment based on the guides contained in ICAO CDO and CCO manuals, in order to determine if airports have implemented CDO and CCO.

f) Airports with at least one threshold with IFR operations were taken into account, in accordance with FASID Table AOP-1.

g) Only thresholds with IFR operations have been considered, in accordance with FASID Table AOP-1.

ESTADO/ STATE	IAC							SID		STAR		PBN SID OR STAR AIRPORT	CCO	CDO
	APV/LNAV													
	IAP APV	IAP RNPAR	APV or RNP AR IAP	APV or RNP AR IAP AIPORT	RNP AR IAP "ONLY" AIRPORT	LNAV IAP	APV or RNP AR or LNAV IAP	PBN SID AIRPORT	PBN SID	PBN STAR AIRPORT	PBN STAR			
Argentina	16,00%	0,00%	16,00%	25,00%	0,00%	16,00%	16,00%	17,65%	12,00%	47,06%	36,00%	50,00%	12,50%	16,67%
Bolivia	20,00%	0,00%	20,00%	33,33%	0,00%	40,00%	40,00%	33,33%	20,00%	0,00%	0,00%	33,33%	0,00%	0,00%
Brasil /Brazil	82,26%	4,84%	82,26%	85,71%	10,71%	88,71%	88,52%	89,29%	91,94%	35,71%	46,77%	92,86%	36,17%	36,17%
Chile	60,00%	30,00%	75,00%	75,00%	50,00%	85,00%	85,00%	75,00%	61,11%	87,50%	80,00%	87,50%	35,29%	41,18%
Colombia	0,00%	8,33%	8,33%	9,09%	9,09%	75,00%	75,00%	81,82%	83,33%	66,67%	66,67%	83,33%	0,00%	0,00%
Ecuador	0,00%	25,00%	25,00%	25,00%	25,00%	25,00%	25,00%	25,00%	25,00%	25,00%	25,00%	25,00%	0,00%	0,00%
Guyana Francesa / Fr. Guiana.	0,00%	0,00%	0,00%	0,00%	0,00%	100,00%	100,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Guyana	0,00%	0,00%	0,00%	0,00%	0,00%	75,00%	75,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Panama	28,57%	57,14%	57,14%	50,00%	40,00%	57,14%	71,43%	20,00%	28,57%	20,00%	28,57%	20,00%	0,00%	0,00%
Paraguay	100,00%	0,00%	100,00%	100,00%	0,00%	100,00%	100,00%	50,00%	50,00%	0,00%	0,00%	50,00%	0,00%	0,00%
Peru	0,00%	33,33%	33,33%	37,50%	37,50%	11,11%	44,44%	12,50%	22,22%	87,50%	77,78%	87,50%	12,50%	12,50%
Suriname	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Uruguay	0,00%	0,00%	0,00%	0,00%	0,00%	62,50%	62,50%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Venezuela	100,00%	0,00%	100,00%	100,00%	0,00%	100,00%	100,00%	100,00%	100,00%	0,00%	0,00%	100,00%	0,00%	0,00%
Región SAM / SAM Region	46,29%	10,86%	50,86%	52,58%	14,29%	65,71%	67,82%	55,56%	56,07%	42,00%	41,71%	69.70%	17,53%	18,83%

Table 4 - Status of implementation of PBN SIDs, STARs and IAC as of 06/11/2015

2.22 The Meeting considered that the data associated with CDO and CCO implementation metrics should be based on information supplied by SAM States. States are expected to make a full assessment based on the guides contained in ICAO CDO and CCO Manuals in order to determine if airports have already implemented CDO and CCO. One possibility mentioned during the Meeting to assess the implementation of these techniques was the publication of an AIC to describe the procedures to be followed by pilots and ATCOs for the use of CDO and CCO.

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

2.23 As a result of the teleconferences held for the implementation of Stage 1 of Version 03, the route network was optimised through Amendment SAM 15/01-ATM. In that sense, 13 RNAV routes were added, 7 RNAV routes and 3 conventional routes were realigned, and 6 conventional and one RNAV routes were eliminated. In 2014, the annual goal of 40,000 tonnes set out in the Bogota Declaration was surpassed by more than 11,000 tonnes of CO_2 reduction. The South American Region achieved 51,132 tonnes of CO_2 reduction. So far in 2015, the Region had saved 2,133 tonnes of fuel, as calculated with the IFSET tool, equivalent to a reduction of **6,738 tonnes** of CO_2.

2.24 During this Meeting, the States provided new information on fuel savings resulting from the optimisation of each airspace section. In this sense, the Meeting took note of the 2015 annual savings obtained in Argentina: 3,850,800 kgs. of fuel and a CO_2 reduction equivalent to **12,168.5 tonnes**.

2.25 Ecuador reported a CO_2 reduction of **227.52 tonnes**, corresponding to savings of 72,000 kgs. of fuel in the new Galapagos-Guayaquil route during 2015, and Brazil presented an analysis of the inbound and outbound flows at the Belo Horizonte terminal, with fuel savings of 1,787 kgs. per day, totalling 652,255 kgs. per year, equivalent to an annual reduction of **2,061 tonnes** of CO_2 emissions.

2.26 Peru presented the results of the study made on fuel savings for the route Cuzco-Lima, resulting from the use of the new standard departure GAXUN 1B for route UT321, which was designed as a complement to the implementation of PROESA/PBN airspace.

2.27 Since 17 September, LAN PERU has been using the SID RNAV GAXUN 1B, estimating that 40% of their Lima-Cuzco flights can run it, because the SID RNAV is subject to daytime schedules as well as specific aircraft parameters and visibility conditions.

2.28 Annual savings generated by flights using SID RNAV GAXUN 1B correspond to 682,400 kgs. of fuel, resulting in an annual reduction of **2,156 tonnes** of CO_2 emissions calculated with the IFSET tool.

2.29 The Meeting took note that CO_2 reduction so far in 2015 was **23,351 tonnes.** The Secretariat encouraged other States to report as soon as possible on all the savings obtained in 2015 as a result of airspace optimisation.

2.30 In summary, under the auspices of Project RLA/06/901, SAM States have continued to receive support for PBN implementation in the selected airspaces. PBN training history in the SAM Region and the number of experts trained in the different seminars, courses, and workshops can be seen in **Appendix B** to this part of the report.

2.31 The progress made in the PBN Project in the SAM Region since the GREPECAS/17 meeting with respect to the goals agreed in the Bogota Declaration, is as follows:

a) Annual CO_2 reduction: 51,132 tonnes in 2014. During 2015, a reduction of **23,351 tonnes of CO_2** was obtained. These figures show that the reduction planned for 2015 of 40,000 tonnes annually, has not yet been reached. Nevertheless, it was also recognised that as airspace is optimised, CO_2 reductions would be minor and it is estimated that the implementation of Version 04 of route network optimisation will offer other CO_2 reduction opportunities in the near future.

b) Implementation of RNAV routes: 22%, totalling 60%, thus **achieving the 60% goal** established in the Bogota Declaration for 2016.

c) **55.56%** implementation of PBN SIDs and **42.00%** of PBN STARs, noting that the goal of 60% established in the Bogota Declaration for SID and STAR considered individually, has not yet been achieved.

d) Implementation of CDO and CCO operational techniques: 4.52% progress, *i.e.* 10% of the goal set out in the Bogota Declaration, which aims at reaching 40% of application of these techniques.

e) Regarding the progress in the implementation of instrumental procedures based on PBN (IAP APV or RNP AR or LNAV), it reached an implementation level of 67.82%. However, efforts must be increased to comply with the goals established in the Bogota Declaration and Assembly Resolution A37-11.

Air navigation implementation priorities focused on airspace optimisation for the period 2017-2019

2.32 The Meeting noted that during the Second Meeting of Air Navigation and Safety Directors of the SAM Region it became clear that some of the air navigation implementation priorities planned for late 2016 required an additional effort on the part of States to attain the proposed PBN goals. However, the participating Air Navigation Directors considered that, except for CCO and CDO operational techniques, it was possible to achieve the proposed goals within the established timeframe.

2.33 Likewise, in order to start drafting the implementation plans for the 2017-2019 triennium, the Meeting analysed which air navigation improvements would be necessary to increase airspace capacity, efficiency and safety in the SAM Region, establish indicators and associated metrics, and determine the goals for that period.

2.34 In this regard, the Meeting discussed a series of templates showing possible air navigation improvements, as well as a series of indicators and metrics to measure their evolution within the framework of defined goals. After an intense discussion, the Meeting felt that airspace improvements could be introduced in the short and medium term, and agreed on a series of improvements for the period 2017-2019. The airspace optimisation program agreed by the States appears in **Appendix C** to this part of the report.

2.35 The Meeting considered that the metrics associated with the implementation of PBN SIDs and STARs for the period 2017-2019 should take into account the following aspects:

- The evaluation must be conducted separately, with a specific metric for SIDs and another one for STARs;

- The STAR metric should only take into account international airports with regular international operations;

- Implementation values to date, considering the new criteria to be applied in the 2017-2019 triennium are 55.56% for PBN SIDs and 42.00% for PBN STARs.

Planning the transition to the new PBN airspace concept in the Belo Horizonte TMA

2.36 One of the TMAs assessed during the PBN/4 workshop was the Belo Horizonte TMA. The implementation focus in the aforementioned TMA was safety improvement, taking into account that this airspace was affected by the various airspace changes made in the route network as well as in the TMAs that generate the main air traffic flows to Belo Horizonte (Rio de Janeiro, Sao Paulo and Brasilia). It is expected that this project will generate annual savings of 2,061 tonnes of CO_2/year.

2.37 One of the essential parts of the implementation process is the Transition Plan to the new airspace concept. The transition must take into account all the necessary technical and operational aspects that will ensure that changes made to the procedures applied in the airspace are controlled and are seamless to users. Furthermore, there must be a close relationship between the mitigation measures established as a result of the safety assessment and the Transition Plan, with a view to ensuring that such measures were actually taken.

2.38 The Transition Plan for the Belo Horizonte TMA is contained in **Appendix D** to this part of the report (*only in Portuguese*).

PBN training (Argentina)

2.39 The National Civil Aviation Administration (ANAC), the Directorate General of Air Traffic Control (DGCTA), and other aviation community representatives are working together to modernise the Argentinian airspace based on PBN concepts.

2.40 Within the framework of the PBN Implementation Plan in Argentina, and in relation to ANAC Resolution N° 961/14 dated 18 December, 2014, which established the "PBN Task Force", the National Civil Aviation Administration, through the National Directorate of Air Navigation Inspection, has organised training sessions on the "Introduction to PBN concepts" for ANS inspectors, airspace planners/designers, ATS operational personnel, pilots, and members of the aeronautical community in general, to allow participants to learn about the tools and gain the necessary knowledge to perform RNP and RNAV operations.

2.41 To this end, seminars to introduce the PBN concepts were delivered at the various airports of Neuquen, Resistencia, Iguazu, Rio Gallegos, on the first half of this year. Training was provided to 43 participants from the control towers and ARO/AIS offices of the abovementioned airports, 116 instructors and operators of airports such as Ezeiza, Aeroparque, Cordoba, Mendoza, Comodoro Rivadavia, San Martin de los Andes, San Fernando, Parana, and Sauce Viejo, in a first stage.

2.42 Likewise, at the headquarters of the Training, Improvement and Experimentation Centre *(Centro de Instrucción, Perfeccionamiento y Experimentación* - CIPE), attached to ANAC, the first course on RNP APCH and RNP AR APCH in the Comprehensive Design of Performance-Based Navigation (PBN) was conducted in Argentina. The course was attended by 12 airspace planners/ designers, representatives of the aviation authority, the air navigation service provider, and the main user, Aerolineas Argentinas. The course was given by instructors from the ICAO South American Regional

Office and took place during the months of July and August, in response to the Argentinian airspace modernisation policy.

2.43 Thus, the participants were trained and certified in compliance with the regional requirements contained in the 2013 Bogota Declaration and other international standards related to the development of the Global Air Navigation Plan.

SAM airspace optimisation plan

2.44 The ASTRO/7 meeting recognised that airspace optimisation, including PBN implementation, has high priority within the ATM Work Programme of the South American Regional Office and should also have the appropriate priority for the SAM Region State Administrations.

2.45 In this regard, the ATSRO/7 meeting reviewed the ATS Route Network Optimisation Action Plan presented by the Secretariat and noted that according to the progress made to date, such plan should be reviewed more thoroughly and include not only aspects inherent to the optimisation of the route network, but also activities such as the design of standard arrivals and departures in terminal areas to achieve the TMA-route interface, as well as others, which although not directly linked to the routes, could significantly improve airspace management in the Region.

2.46 The Meeting recalled that, according to the Performance-based Implementation Plan (PBIP) for the SAM Region, one of the issues to consider for airspace optimisation was the application of the RNP 2 specification in the continental, remote and oceanic ATS route network.

2.47 It was also noted that the SAM/IG/16 meeting would assess the application of a 40 NM longitudinal separation between aircraft at the same flight level in FIR boundaries, gradually reducing longitudinal separation to 20 NM and subsequently to 10 NM, in accordance with the requirements of ICAO Doc 4444.

2.48 In view of the above, the Meeting reviewed the new Action Plan for the optimisation of South American airspace, proposed by the ATSRO/7 meeting, which, in addition to route network optimisation, also included RNP 2 implementation and the gradual reduction of longitudinal separation at FIR boundaries. The new Action Plan approved by the Meeting, which harmonises the plans of States and users, appears in **Appendix E** to this part of the report.

2.49 Taking into account the need to proceed with PBN implementation in the SAM Region, the Meeting concluded that Regional Project RLA/06/901 should be requested to conduct the following activities in 2016, with a view to ensuring compliance with the goals established in the Declaration of Bogota.

Activities and resources needed for the implementation of the Action Plan for the optimisation of South American airspace, with the support of Project RLA/06/901

2.50 Based on the activities contained in the Action Plan for the optimisation of the South American airspace, the Meeting selected the following activities and resources for 2016 that required the support of Project RLA/06/901:

Activity	Tentative date	Fellow-ships	Objective	Remarks
First Workshop on PBN implementation in TMAs	April 2016	2 per State	Contribute to, verify, and monitor PBN implementation activities in the TMAs of Argentina (COR; MDZ, BRC, FTE, NQN, IGR, CRD, SLA, TUC, MVD, RGL and USH), Brazil (Brasilia, Belo Horizonte and changes in Sao Paulo), Chile (Santiago - PAMPA SUR), Ecuador (Guayaquil), Peru (Arequipa, Cuzco, Juliaca and Puerto Maldonado), and Venezuela (Maiquetia).	
Second Workshop on PBN implementation in TMAs	September 2016	2 per State	Contribute, verify, and monitor PBN implementation activities in the TMAs of Argentina (Baires), Bolivia (Cochabamba, La Paz, Santa Cruz), Brazil (PBN Sur), Chile (Santiago - PAMPA SUR), Panama (Panama), Paraguay (Asuncion), and Uruguay (Carrasco and Laguna del Sauce).	
PANS-OPS Workshop	October 2016	2 per State	Harmonise criteria for implementation of PANS-OPS and publication of SID/STAR/IAC, as well as the corresponding Coding Tables.	
Version 04 of the SAM Route Network	October 2016	----	Give continuity to the detailed study of the SAM ATS route network, with a view to developing Version 04 of the Route Network.	Hiring/ "secondment" of 2 experts for a period of 3 weeks to develop the preliminary draft. Invitation to experts from States and users to participate in the study
ATSRO/8	November 2016	2 per State	Preliminary review of Version 04 of the SAM Route Network (final version)	

APPENDIX A

STATUS OF IMPLEMENTATION OF SIDs AND STARs

AT INTERNATIONAL AERODROMES

APPENDIX B

PBN TRAINING IN THE SAM REGION

1. PBN training events in the SAM Region 2009-2015

1.1 Since 2009 to date, 15 PBN training events funded by Technical Cooperation Projects, Special Implementation Projects, with funds from the regular programme or direct State funding have been carried out.

1.2 During the events detailed below, 325 experts of the Region have been trained in PBN:

- **Course on RNAV/RNP instrument procedures design**

Under the support of RLA/06/901 Regional Project, a Special Implementation Project (SIP) and the collaboration of Brazil and Chile, a course on RNAV/RNP instrument procedures design was held from 1 to 11 September 2009 in Lima, Peru. As a result, 12 experts from 9 States of the Region have been trained in the design of such procedures.

- **Course on RNP AR approach procedures**

Under the support of RLA/06/901 Regional Project, a Special Implementation Project (SIP) and the collaboration of Brazil and Chile, a course on RNP AR approach design procedures (RNP AR APCH) was held from 5 to 16 October 2009 in Lima, Peru. As a result, 12 experts from 9 States of the Region have been trained in the design of such procedures.

- **Course on RNAV approvals Curso de aprobaciones RNAV**

This course on aircraft and operators approval for RNAV operations intended for airworthiness and operations safety inspectors was carried out in Lima, Peru, from 22 to 26 March 2010, under the auspices of RLA/06/901 Regional Project and the support of RLA/99/901 Regional Project, SRVSOP. 37 experts from 11 States of the SAM Region (Argentina, Bolivia, Brazil, Colombia, Chile, Ecuador, Panama, Paraguay, Peru, Uruguay and Venezuela), 1 State of the CAR Region (Costa Rica) and 1 airline were trained.

- **Course on design of approach procedures with vertical guidance (APV) using RNAV and VNAV-APV Baro/VNAV avionics systens**

This course was held in Lima, Peru, from 6 to 16 April 2010, under the support of RLA/06/901 Regional Project and the collaboration of Brazil and Chile. As a result, 12 experts from 9 States of the SAM Region and 1 expert of the CAR Region were trained in the design of APV Baro/VNAV approach procedures.

- **PBN course**

In this course, held in Santiago de Chile from 12 to 15 July 2010, 28 experts from 7 States of the SAM Region and 4 experts from the airlines were trained. It was conducted by 4 speakers from EUROCONTROL and 2 speakers from the FAA.

- **Course on safety assessment required for RNAV 5 implementation and the implementation of Version 01 of the ATS route network, applying a quantitative methodology using SMS**

This course was held from 2 to 6 August 2010 in Lima, Peru. 18 experts from 10 States of the Region and 2 experts from airlines were trained. This activity was complemented with the hiring of one expert who supported the Secretariat during the course.

- **Course on RNP approvals**

This course for airworthiness and operations safety inspectors was sponsored by RLA/06/901 Regional Project, with the support of RLA/99/901 Regional Project. It was carried out in Lima, Peru, from 17 to 21 May 2010. The objective of the course was to train experts in the approval of aircraft and operators for RNP operations. 36 experts from 10 SAM States, 1 CAR State and 1 airline participated. 14 fellowships were granted.

- **Seminar/Workshop on airspace planning**

This Seminar was held from 11 to 22 March 2013 in Miami, Florida. 11 participants from 5 States were trained in the design of airspace based on PBN.

- **Train-the-trainer course**

This course aimed to train trainers for States in operational approval. It was carried out in Miami, Florida, from 11 to 15 March 2013. 4 inspectors from 3 States of the SAM Region were trained for the training in PBN operational approval.

- **First Workshop on the design of PBN airspace (planning and design)**

This workshop was held from 12 to 23 May 2014 in Bogota, Colombia. 42 participants from 10 States of the SAM Region were trained in the design of PBN airspace.

- **PBN Seminar**

This Seminar was held in the ICAO Regional Office in Lima, Peru, from 27 to 29 August 2014, sponsored by Airbus ProSky. 35 experts from 5 States and 22 specialists from airlines were trained.

- **Second Workshop on the design of PBN airspace (panning and design)**

This Workshop was held from 8 to 12 September 2014, in Lima, Peru. 34 experts from 11 States of the SAM Region were trained. 14 fellowships were assigned.

- **Course on the design of approach procedures based on PBN**

This course, funded by the Special Implementation Project (SIP) for CAR/SAM Regions, was held in Mexico City, Mexico, from 17 to 28 November 2014. 3 States of the SAM Region attended the course and 4 experts were trained.

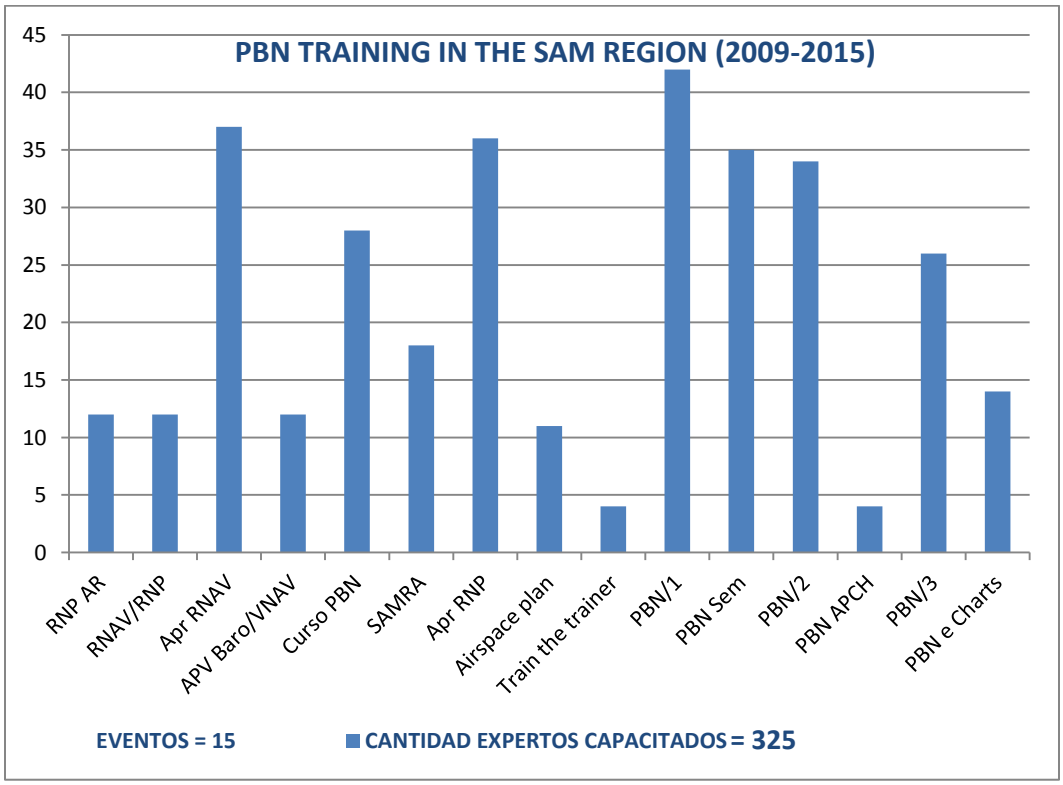
- **Third Workshop on the design of PBN airspace (Validation)**

This Workshop focused on the validation tasks of airspace designs based on PBN. 10 States of the SAM Region participated and 26 experts as well as 9 specialists of airlines were trained.

- **CAR/SAM Electronic Aeronautical Charts of Performance Based Navigation (PBN), Terminal Procedures and Aerodrome Mapping Seminar**

This Seminar was held in Mexico City, Mexico, from 24 to 27 August 2015. 10 States of the SAM Region participated and 14 experts were trained.

1.3 Following chart visually shows the information detailed above:



1.4 In addition to these events, Ecuador and Argentina conducted training courses on PANS OPS design procedures, basic and advanced, with the support of the Regional Office, Brazil and Peru, which provided the instructors, achieving to strengthen a very sensitive area in the design of procedures with PBN.

APPENDIX C

AIR NAVIGATION IMPLEMENTATION PLAN PERIOD 2017- 2019

APPROVED TEMPLATES IN THE ATFM AREA

B0 - NOPS: Improve traffic flows through the implementation of ATFM 2017-2019				
ELEMENTS	**SCOPE**	**INDICATORS/ METRICS**	**GOALS: % / Date**	**STATUS**
1- Implementation of regional ATFM	All States	Indicator: % of ACC FMUs/FMPs interconnected in a network Metrics: Number of ACC FMUs/FMPs interconnected in a network.	50% by 2017 100% by 2018	XX % (Nr. of FMPs/FMUs)

APPROVED TEMPLATES IN THE 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 on an AIS database. Metrics: Number of States that have implemented AIXM on an AIS database.	2016 **trials** (4 States: ARG, BRA, PAN, URU) 28% by 2017 49% by 2018 100% by 2019	XX% (Nr. of 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).	28% by 2017 56% by 2018 100% by 2019	XX% (Nr. of States)

B0 - DATM: Service improvement through digital aeronautical information management 2017-2019				
ELEMENTS	**SCOPE**	**INDICATORS/ METRICS**	**GOALS: % / Date**	**STATUS**
3- Electronic terrain and obstacle data (eTOD)	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. Indicator: % of International Airports by State that have implemented the data set for Terrain and Obstacles that penetrate the terrain and obstacle data collection surface. Metrics: Number of International Airports by State that have implemented the data set for Terrain and Obstacles that penetrate the terrain and obstacle data collection surface.	**Area 1**: Terrain: 100% by 2016 Obstacles: 28% by 2016 49% by 2017 100% by 2018 **Area 2b, 2c and 2d** Terrain: 28% by 2017 49% by 2018 100% by 2019 Obstacles: 28% by 2017 49% by 2018 100% by 2017	**Area 1**: Terrain: XX% (Nr. of States) Obstacles: XX% (Nr. of States) **Area 2b, 2c and 2d** Terrain: XX% (Nr. of International Airports by State) Obstacles: XX% (Nr. of International Airports by State)

B0 - DATM: Service improvement through digital aeronautical information management 2017-2019				
ELEMENTS	**SCOPE**	**INDICATORS/ METRICS**	**GOALS: % / Date**	**STATUS**
4- Digital NOTAM	All States	Indicator: % of States that have included the digital NOTAM in their National AIS-to-AIM Transition Plan. Metrics: Number of States that have included the digital NOTAM in their National AIS-to-AIM Transition Plan.	28% by 2017 56% by 2018 100% by 2019	XX% (Nr. of 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% (Nr. of States)

TEMPLATES TO BE ANALYSED IN THE ATM AREA

B0 - CCO and B0 - CDO: Improve efficiency and flexibility in climb and descent profiles applying continuous climb operations (CCO) and continuous descent operations (CDO) 2017-2019				
ELEMENTS	**SCOPE**	**INDICATORS/ METRICS**	**GOALS: % / Date**	**STATUS**
1- PBN SIDs and PBN STARs <u>SIDs/STARs in International Airports considered in 2014</u>: 1680	All States	Indicator: % of International Airports with SID or STAR PBN. Support metrics: Number of International Airports that have implemented SID or STAR PBN. (**Note**: This refers to International Airports listed in table AOP-1 of the CAR/SAM ANP).	80% by 2017 100% by 2018	64% of International Airports with PBN SIDs or STARs implemented (Nr. of airports)
	NOTE	For the 2017-2019 period metrics and indicators will be refined considering one specific metric for SID and another for STAR. The metric for STAR should consider only International Airports with regular international operations.		
2- Design of TMAs applying PBN. <u>2015 baseline</u>: 34 TMAs selected	All States	Indicator: % of TMAs selected for implementation of the PBN airspace concept that serve International Airports. Support metrics: Number of TMAs selected for implementation of the PBN airspace concept that serve International Airports. (**Note:** this refers to international airports listed in Table AOP-1 of the CAR/SAM ANP).	70% by 2016 80 % by 2017 100% by 2018	18% TMAs with PBN design (Nr. of TMAs)

B0 - CCO and B0 - CDO: Improve efficiency and flexibility in climb and descent profiles applying continuous climb operations (CCO) and continuous descent operations (CDO) 2017-2019				
ELEMENTS	**SCOPE**	**INDICATORS/ METRICS**	**GOALS: % / Date**	**STATUS**
3- Applications of CCO and CDO techniques to departures and arrivals <u>Considered in 2013</u>: 99 International Airports **Note:** The number of International Airports considered will be updated in 2016.	All States	Indicator: % of International Airports with arrivals and departures applying CCO and CDO. Support metrics: Number of International Airports with arrivals and departures applying CCO and CDO. (**Note:** this refers to International Airports listed in Table AOP-1 of the CAR/SAM ANP).	40 % CCO/CDO by 2018 50% CCO/CDO by 2019	4,52% of International Airports with CCO/CDO implemented. (Nr. of airports
	NOTE	Data associated to CDO and CCO implementation metric should be based on information supplied by SAM States. States should undertake a complete assessment of the application of such techniques, based on the guides of ICAO CDO and CCO Manuals to consider airports with CDO and CCO implemented.		
4- PBN routes **Note:** Analyse implementation of RNP-4 routes (Oceanic areas) and RNP-2 routes (Continental areas). <u>Routes considered in 2015</u>: 165 routes of upper airspace.	All States	Indicator: % of RNP 2 routes implemented in the upper airspace of the Region. Support metrics: Number of RNP 2 routes implemented in the upper airspace of the Region.	20 % by 2019*	% RNP 2 routes (Number of RNP 2 routes in the upper airspace)
	NOTE	*Subject to a feasibility study		

B0 - CCO and B0 - CDO: Improve efficiency and flexibility in climb and descent profiles applying continuous climb operations (CCO) and continuous descent operations (CDO) 2017-2019				
ELEMENTS	**SCOPE**	**INDICATORS/ METRICS**	**GOALS: % / Date**	**STATUS**
5- Application of the conventional longitudinal separation from 80 to 40 NM	All States	Indicator: % of States applying longitudinal separation of 40 NM at FIR boundaries. Support metrics: Number of States applying a longitudinal separation of 40 NM at FIR boundaries.	50% by 2017 100% by 2018	XX% (Nr. of States)
6- Application of the conventional longitudinal separation from 40 to 20 NM	All States	Indicator: % of States applying a longitudinal separation of 20 NM at FIR boundaries. Support metrics: Number of States that apply a longitudinal separation of 20 NM at FIR boundaries.	2nd Semester 2018	XX % (Nr. of States)
7. – Optimisation of the longitudinal separation from 20 to 10 NM using ATS surveillance systems	All States	Indicator: % of States applying a longitudinal separation of 10 NM. Support metrics: Number of States applying a longitudinal separation of 10 NM and number of SAM States with adequate ATS surveillance coverage in FIR boundaries with neighbors States.	100% by 2nd Semester 2019	XX % (Nr. of States)

APPENDIX D

TRANSITION PLAN

FOR THE

BELO HORIZONTE TMA

(Portuguese only)

PLANO	TMA envolvida: BH	Emitente: Gerente de Implantação
	Data:	Solicitante: Gerente do Projeto

Assunto: Plano de Implantação da nova circulação aérea na Área de Controle Terminal de Belo Horizonte (TMA-BH)

1. **FINALIDADE**

Este Plano de Implantação da nova circulação aérea na Área de Controle Terminal de Belo Horizonte (TMA-BH) estabelece o planejamento das ações necessárias para viabilizar as alterações operacionais/técnicas que ocorrerão em função das modificações planejadas.

2. **OBJETIVOS**

Este Plano tem por objetivos:

a) orientar os Chefes, quanto às medidas a serem adotadas em antecipação, durante e após a mudança da circulação na TMA-BH;

b) mapear os requisitos Operacionais/Técnicos, gerando ações correspondentes para todas as áreas e serviços envolvidos;

c) identificar os riscos Operacionais/Técnicos relacionados às ações que deverão ser realizadas; e

d) elaborar um cronograma detalhado definindo as ações Operacionais/Técnicas necessárias e as ações operacionais decorrentes.

3. **SUMÁRIO DA SITUAÇÃO**

Durante a Copa do mundo foi observado que a circulação aérea na TMA-BH necessitava melhorar sua estrutura com a revisão da circulação VFR e IFR, adotando procedimentos de saída e chegada, aplicando-se o conceito CCO/CDO. Diversos fatores contribuem para as dificuldades operacionais nas TMAs, os quais devem ser considerados no planejamento da organização desses espaços aéreos e correspondente infraestrutura de apoio, desde a transição do voo em rota até a aproximação final e pouso.

Algumas necessidades operacionais atuais foram expostas durante a apresentação da circulação aérea na TMA-BH, sendo elas:

a) Segregação da circulação VFR através de ajustes nas REA e criação de REH, objetivando o aumento da capacidade ATC.

b) Definição de setores de entrada e saída da TMA, conforme análise de circulação, utilizando-se o conceito PBN.

c) Padronização do perfil inicial das STARs, a fim de se evitar grandes mudanças na circulação, quando ocorrer a mudança da pista em uso.

d) Atualização e adequação dos procedimentos convencionais aos critérios da ICAO, utilizando-se o software FPDAM.

e) Elaboração de procedimento de pouso por instrumentos para RWY 31 de SBBH e criação de uma circulação aérea na terminal Belo Horizonte que atenda este novo procedimento.

f) Aumento do fluxo de decolagens de SBBH, considerando-se a diferença de desempenho entre as aeronaves que operam neste aeródromo.

g) Otimização do espaço aéreo excluindo as porções desnecessárias e incluindo o necessário para proteger os procedimentos instrumentos através da reestruturação da TMA e CTR.

4. PLANEJAMENTO

Em virtude da grande modificação que ocorrerá na TMA–BH, optou-se em dividir as ações a serem tomadas em Operacionais e Técnicas, acompanhadas pela análise das medidas mitigadoras previstas no DGRSO. Desta maneira, será possível analisar cada problema em seu menor grau de complexidade e, assim, minimizar ao máximo os problemas que poderão ocorrer no momento e após a mudança da circulação, com um acompanhamento direcionado pela gerencia do projeto e pelo CGNA.

Em virtude da análise realizada pelo CGNA, que fez o levantamento do movimento horário da terminal Belo Horizonte, o melhor horário para ocorrer à mudança da Base de Dados (BDS) do Controle de Aproximação de Belo Horizonte (APP-BH) é 05h00 UTC, do dia 12 NOV 2015 – período em que haverá menor movimento aéreo na TMA-BH.

4.1 Sistema Técnico da TMA Belo Horizonte

A equipe técnica do Destacamento do Controle do Espaço Aéreo de Confins (DTCEA-CF) deverá coordenar com as equipes do CINDACTA I, CINDACTA II e INFRAERO a fim de avaliar a estrutura dos equipamentos e/ou sistemas ligados à operação na TMA-BH que poderão impactar ou sofrerão impacto em virtude da nova circulação.

Até o final do mês de outubro de 2015, a Seção Técnica do DTCEA-CF deverá verificar se existe alguma manutenção preventiva em novembro 2015. Caso haja, deverá avaliar o impacto na implantação da nova circulação, em coordenação com a Seção Operacional.

As avaliações de funcionamento deverão ser realizadas no mínimo nos seguintes equipamentos e/ou sistema:

- ✓ Canalização de dados do APP-BH com os demais órgãos;
- ✓ Situação dos consoles do APP- BH, TWR - CF e TWR- BH;
- ✓ BDS dos órgãos envolvidos;
- ✓ Situação operacional/técnica do Radar;
- ✓ Repetidora do radar nas TWR BH e TWR CF;
- ✓ Frequências que darão suporte aos setores do APP-BH; TWR-BH e TWR-CF;
- ✓ TATIC da TWR CF e SGTC BH; e
- ✓ Telefonia usada na coordenação entre os órgãos envolvidos.

A Seção Técnica do DTCEA-CF deverá encaminhar ao CINDACTA I, até o dia 02 OUT 2015, uma solicitação de analise de frequência da nova configuração de terminal. Os dados de coordenadas deverão ser solicitados à Seção Operacional.

Antes da entrada em vigor da nova BDS do APP BH, deverá ser realizado um evento teste que deverá ocorrer até o final do mês de outubro de 2015. Deverão fazer parte deste cheque as repetidoras instaladas nas Torres de Controle de Confins e da Pampulha.

Os sistemas TATIC e SGTC que possuem os arquivos com os nomes das Saídas por Instrumentos (SID) dos respectivos aeródromos deverão ser atualizados em data anterior e inserir data/hora para entrar em operação, coincidente com as modificações da TMA-BH.

O Comandante do DTCEA-CF deverá encaminhar, ao DECEA, até o dia 05 NOV 2015 um documento garantido que todos os cheques foram realizados e aprovados. Caso algum dispositivo seja reprovado, deverá ser informada a previsão de restabelecimento e o impacto operacional.

4.2 Sistema Operacional da TMA Belo Horizonte

A Seção Operacional do DTCEA-CF deverá verificar se todas as cartas necessárias foram

publicadas e se informações aeronáuticas delas estão corretas. O resultado dessa pesquisa deverá ser comunicado ao oficial representante do projeto até 15 de outubro de 2015.

Uma pasta de acesso rápido às cartas publicadas deverá estar disponível nas posições operacionais do APP-BH e TWR-CF.

O representante do projeto no APP-BH deverá solicitar ao CGNA uma previsão meteorológica para o período de 04 horas antes e 04 horas depois do horário previsto de entrada em vigor da nova circulação, caso esteja previsto um fenômeno meteorológico severo, que trará transtorno a operação, deverá ocorrer uma estreita coordenação e com o Gerente do Projeto, para decisão de um novo horário de entrada em vigor da circulação. A partir da entrada da nova circulação até o final do mês de novembro, todas as equipes deverão ter, no mínimo, um instrutor da nova circulação e balancear as equipes conforme desempenho no treinamento, que ocorreu entre 10AGO 2015 a 10 SET 2015.

De 12 a 14 NOV 2015, a operação na sala do APP-BH deverá ser acompanhada por um oficial representante do projeto e/ou um oficial de tráfego aéreo do DTCEA-CF.

A partir de 12 NOV 2015 até o final do mês, a célula FMC deverá acompanhar a evolução da circulação área e comunicar à Chefia do APP-BH o período em que foi necessário à aplicação de medidas de fluxo, assim como, informar, caso possível, se elas ocorreram em função da circulação.

A Chefia do Órgão ATC, de posse da informação, deverá comunicar ao oficial representante do projeto no APP-BH

Durante o dia da modificação, se alguma aeronave não dispuser dos novos procedimentos, o ATCO deverá:

a) nas aproximações: vetorar a aeronave até interceptar a final de uma IAC antiga; e

b) nas decolagens: utilizar preferencialmente os procedimentos descritos na tabela abaixo, porém em virtude da configuração do tráfego na terminal, da meteorologia ou outro fator predominante outro procedimento poderá ser utilizado. E a partir de um ponto pré-determinado iniciará uma vetoração para aerovia.

AD	RWY	SID RNAV	SID CONV
SBCF	RWY 16	DEJAN 1A	GUXOM 1A
	RWY 34	GEDIP 1C	GAXADA 1
SBBH	RWY 13	DEJAN 1	DOGNU
	RWY 31	MOTMA 1	ESLUTZ

A partir da modificação até o final do mês de NOV 2015, a célula FMC deverá fazer um levantamento das aeronaves que não possuem os procedimentos em vigor e encaminhar à Chefia do APP-BH, que enviará ao oficial representante do projeto no APP-BH, por e-mail.

Ficam proibidos os voos de instrução nos aeródromos de Confins e Pampulha , no período de 09H00 às 23H59 UTC, até o quinto dia após a implantação da circulação.

Os acordos operacionais entre o APP-BH e TWR-BH deverão ser revisados até 3 meses após entrada da nova circulação.

O Gerente do projeto deverá consultar o CGNA e avaliar a possibilidade de problemas com os Planos de Voo repetitivos na mudança da circulação da TMA Belo Horizonte.

Caso ocorra alguma contingência na operação os ATCO deverão utilizar dos conceitos treinados na Simulação em Tempo Real.

4.3 Sistema de Gerenciamento da Segurança Operacional

A Assessoria de Investigação e Prevenção de Acidentes/Incidentes do Controle do Espaço Aéreo (ASSIPACEA) do DTCEA-CF deverá verificar se todas as medidas mitigadoras elencadas por ocasião da confecção do DGRSO foram tomadas. Caso alguma ação não tenha sido concluida, informar ao Comandante do DTCEA-CF e ao setor responsável para que a ação seja concluída antes do envio do documento garantindo que todas ações técnicas, operacionais foram realizadas.

4.4 Gerenciamento de Fluxo de Tráfego Aéreo

No CGNA, durante a implantação das mudanças nas TMA-BH serão adotadas ações específicas, através de suas Gerencias e de suas células FMC, para garantir uma circulação segura, ordenada e eficiente do tráfego aéreo. Para isso, o CGNA deverá:

- Definir a prioridade da sequência de pousos e decolagens para voos internacionais ou de longa duração para os aeródromos localizados na TMA-BH (SBCF e SBBH) sempre que necessário.

- Reforçar as equipes de serviço e designar supervisores e gerentes com conhecimento operacional das áreas que serão objeto das mudanças.

- Tomar conhecimento e, quando necessário, aplicar medidas ao encontro dos planos de degradação estabelecidos pelos órgãos operacionais impactados pela mudança.

- Alterar e suspender, em casos de extrema necessidade, rotas preferenciais específicas, de forma a minimizar impactos gerados por eventuais contingências, não só durante a mudança da BDS, como também nos períodos subsequentes à mudança de circulação. Essas alterações e as suspensões serão definidas por meio de CDM (Tomada de Decisão Colaborativa) com os representantes dos Regionais e as FMC envolvidas.

- Convocar, por meio de vídeo conferência, reuniões emergenciais com os órgãos impactados pela mudança, sempre que se tome conhecimento de fato relevante que possa comprometer a Segurança Operacional durante a entrada em vigor da nova circulação, bem como nos períodos subsequentes com o aumento da demanda. Essas vídeos conferências deverão ser coordenadas pelos gerentes do projeto, GNAC e GNAF.

E a FMC-BH deverá:

- Informar imediatamente ao CGNA sobre todas as alterações de elementos regulados que possam gerar impacto no sistema como: indisponibilidade e/ou restrição de auxílios, sistemas de telecomunicações, radares, sistemas de visualização e tratamento de dados, operações abaixo dos mínimos meteorológicos e indisponibilidades na infraestrutura aeroportuária.

- Analisar a previsão da demanda de tráfego, através dos gráficos de capacidade, 06 horas antes da implantação da nova circulação da TMA e coordenar com o CGNA a aplicação de medidas ATFM, caso haja necessidade.

- Manter um registro completo de todas as ações e procedimentos ATFM aplicados, incluindo descrição, hora de início e de término, órgãos envolvidos e as justificativas.

- Informar ao CGNA, observando a necessidade de aplicação de controle de fluxo, com pelo menos 20 minutos de antecedência do início da ação e monitorar os impactos até seu cancelamento.

Além das orientações específicas para as mudanças na TMA-BH, permanecem as orientações relativas ao serviço ATFM, no que tange as competências de cada um de seus participantes.

5. **CONCLUSÃO**

As ações aqui relatadas têm por objetivo mitigar possíveis problemas que poderão ocorrer na operação durante a implantação da nova circulação na TMA-BH. Contudo, devido à complexidade das operações e a amplitude das modificações a serem realizadas, acredita-se que novos problemas poderão surgir. Portanto, todos os envolvidos deverão estar atentos a qualquer anormalidade que ocorrer e informar imediatamente ao oficial o representante do projeto no APP-BH.

É importente ressaltar que outras mudanças (TMA BS e SP) estarão ocorrendo, sendo monitoradas pelo CGNA e a Gerência do Projeto, e em caso de concomitância de problemas apresentados em duas ou mais TMA, será dada a prioridade de acompanhamento para aquela com maior nível de complexidade e/ou número de aeronaves no momento. Sendo assim, os ATCO deverão estar preparados para todas possíveis contigências.

Esse Plano deverá ser divulgado, para conhecimento de todos envolvidos no período da implantação.

Elaborado por			**Visto**	**Aprovo**
Nome	**Posto**	**Rubrica**		
Luiz Antonio dos Santos Gerente de Implementação	Cap Esp CTA		Ricardo da Silva Miranda TCel AV Gerente do Projeto	Gustavo Adolfo Camargo de Oliveira Brig do Ar Chefe do SDOP

APPENDIX E

SOUTH AMERICAN AIRSPACE OPTIMISATION PLAN (B0-5, B0-10, B0-20, B0-65)

Activity	Start	End	Responsible party	Remarks
SOUTH AMERICAN AIRSPACE OPTIMISATION				
1. **TMA**				
1.1. First Workshop on PBN Implementation in TMAs	SAM/IG/16	April 2016	Project RLA/06/901	Objective: contribute to, verify, and follow-up on, PBN implementation in TMAs of Argentina (COR, MDZ, BRC, FTE, NQN, IGR, CRD, SLA, TUC, MVD, RGL and USH), Brazil (Brasilia, Belo Horizonte, and changes in Sao Paulo), Chile (Santiago - PAMPA SUR), Ecuador (Guayaquil), Peru (Arequipa, Cuzco, Juliaca and Puerto Maldonado), and Venezuela (Maiquetia).

Activity	Start	End	Responsible party	Remarks
1.2. Second Workshop on PBN Implementation in TMAs	SAM/IG/16	September 2016	Project RLA/06/901	Objective: contribute to, verify, and follow-up on, PBN implementation in TMAs of Argentina (Baires), Bolivia (Cochabamba, La Paz, Santa Cruz), Brazil (PBN South), Chile (Santiago - PAMPA SUR), Panama (Panama), Paraguay (Asuncion), and Uruguay (Carrasco and Laguna del Sauce).
1.3. PANS-OPS Workshop	SAM/IG/16	October 2016	Project RLA/06/901 SAM Regional Office States	Objective: Harmonise criteria for PANS-OPS application and SID/STAR/IAC publication, as well as the corresponding Codes Tables.
2. **SAM Route Network**				
2.1. **Version 04 – (TMA – arrival/departure/RNAV5 route segment interface)**				
2.1.1. Perform detailed study of the SAM ATS Route Network, with a view to developing Version 04 of the Route Network (TMA - Arrival/Departure/RNAV5 route segment interface), including: • Prepare work plan for the participation of contracted/ loaned experts and experts from States/International Organisations who would support the preparation of the preliminary draft.	SAM/IG/16	ATSRO/8 (2016)	SAM/PBN/IG (Project RLA/06/901) States IATA IFALPA ATM RO	• 2 experts will be hired/ ”loaned” for 3 weeks in order to prepare a Preliminary Draft. Tentative date: TBD • According to progress made in PBN implementation in SAM TMAs.

Activity	Start	End	Responsible party	Remarks
• Determine tools required to conduct the study (aeronautical charts, specific software). • Analyse traffic data to understand traffic flows. • Analyse fleet navigation capacity. • Prepare the **preliminary draft** of Version 04 of the SAM Route Network, including control sectors, TMA interface, etc., according to the ToRs contained in the Attachment to this Plan. • Assess the feasibility/need to assess the preliminary design using "*airspace modelling*" tools and fast-time ATC simulation. • Propose the initial draft of the Proposal of Amendment to the CAR/SAM ANP. • Prepare the Plan for the Optimisation of Restricted, Prohibited, Danger, and Reserved Use Zones of the SAM Region. • Calculate fuel/CO_2 savings using IFSET to validate the preliminary design of the SAM airspace structure, covering routes/SIDs/STARs. • Prepare the final document "SAM Route Network, Version 04". • Prepare working paper for the ATSRO/8 meeting.				
2.1.2. Hold the Eighth Workshop/Meeting for the Optimisation of the SAM ATS Route Network, with the purpose of reviewing Version 04 of the Route Network.	SAM/IG/16	ATSRO/8 (2016)	Project RLA/06/901 ATM RO	Objective: Review preliminary draft of the ATS Route Network, Version 04

Activity	Start	End	Responsible party	Remarks
2.1.3. Continue with the detailed study of the SAM ATS Route Network with a view to developing Version 04 of the Route Network (interface version), including: • Prepare work plan for the participation of hired/ loaned experts and experts from the States/ International Organisations who would support the preparation of the preliminary draft. • Determine the tools required to conduct the study (aeronautical charts, specific software). • Analyse traffic data to understand traffic flows. • Analyse fleet navigation capacity. • Prepare the **final draft** of Version 04 of the SAM Route Network, including ATS routes, control sectors, TMA interface, etc., according to the ToRs contained in the Attachment to this plan. • Assess the feasibility/need to evaluate the preliminary design using "*airspace modelling*" tools and fast-time ATC simulation. • Propose the initial draft of the Proposal of Amendment to the CAR/SAM ANP. • Prepare the Plan for the Optimisation of Restricted, Prohibited, Danger, and Reserved Use Zones of the SAM Region. • Calculate fuel/CO_2 savings using IFSET to validate the preliminary design of the SAM airspace structure, covering routes/SIDs/STARs. • Prepare the final document "SAM Route Network, Version 04". • Prepare working paper for the ATSRO/8 meeting.	SAM/IG/19	ATSRO/9 (2017)	SAM/PBN/IG (Project RLA/06/901) IATA IFALPA ATM RO	• 2 experts will be hired/ ”loaned” for 3 weeks in order to prepare the final draft. Tentative date: TBD • According to progress made in PBN implementation in SAM TMAs.

Activity	Start	End	Responsible party	Remarks
Safety Assessment				
2.1.4. Perform risk analysis on the SAM ATS Route Network, Version 04.	SAM/IG/19	ATSRO/9 (2017)	Project RLA/06/901	Need to hire two experts for 2 weeks to do this job.
2.1.5. Conduct the Ninth Workshop/Meeting for the Optimisation of the SAM ATS Route Network, in order to review Version 04 of the SAM ATS route network.	SAM/IG/19	ATSRO/9 (2017)	Project RLA/06/901 States ATM RO	Objective: Review and approve the final draft of the SAM Route Network, Version 04.
2.2. **Version 05 - (RNP2 – Continental and Oceanic airspace)**				
2.2.1. Perform detailed study of the SAM ATS Route Network, with a view to developing Version 05 of the Route Network (interface version), including: • Prepare work plan for the participation of hired/ loaned experts and experts from the States/ International Organisations who would support the preparation of the preliminary draft. • Define the tools required to conduct the study (aeronautical charts, specific software). • Analyse traffic data to understand traffic flows. • Analyse fleet navigation capacity. • Prepare the **preliminary draft** of Version 05 of the SAM Route Network, including ATS routes, control sectors, TMA interface, etc., according to the terms of reference contained in the attachment to this plan. • Assess the feasibility/need to evaluate the preliminary design using "*airspace modelling*" tools and fast-time ATC simulation. • Propose the initial draft of a Proposal of Amendment to the CAR/SAM ANP.	SAM/IG/20	ATSRO10 (2018)	SAM/PBN/IG (Project RLA/06/901) IATA IFALPA ATM RO	2 experts will be hired for 3 weeks. Tentative date: TBD

Activity	Start	End	Responsible party	Remarks
• Prepare the Plan for the Optimisation of Restricted, Prohibited, Danger, and Reserved Use Zones of the SAM Region. • Calculate fuel/CO_2 savings using IFSET to validate the preliminary design of the SAM airspace structure, covering routes/SIDs/STARs. • Prepare the document "SAM Route Network, Version 05". • Prepare working paper for the ATSRO/10 meeting.				
2.2.2. Hold the Tenth Workshop/Meeting for the Optimisation of the SAM ATS Route Network, to review Version 05 of the Route Network	SAM/IG/20	ATSRO/10 (2018)	Project RLA/06/901	Objective: Review the preliminary draft of the SAM Route Network, Version 05.
2.2.3. Continue with the detailed study of the SAM ATS Route Network with a view to developing Version 05 of the Route Network (interface version), including: • Determine the tools required to conduct the study (aeronautical charts, specific software). • Analyse traffic data to understand traffic flows. • Prepare the **final draft** of Version 05 of the SAM Route Network, including ATS routes, control sectors, TMA interface, etc., according to the terms of reference contained in the attachment to this Plan. • Assess the feasibility/need to evaluate the preliminary design using "*airspace modelling*" tools and fast-time ATC simulation. • Propose the initial draft of the Proposal of Amendment of the CAR/SAM ANP.	SAM/IG/21	ATSRO/11 (2019)	SAM/PBN/IG (Project RLA/06/901) ATM RO	2 experts will be hired for 3 weeks. Tentative date: TBD

Activity	Start	End	Responsible party	Remarks
• Prepare the Plan for the Optimisation of Restricted, Prohibited, Danger, and Reserved Use Zones in the SAM Region. • Develop a methodology for calculating fuel/CO_2 savings using IFSET to validate the preliminary design of the SAM airspace structure, covering routes/SIDs/STARs. • Prepare the final document "SAM Route Network, Version 05". • Prepare working paper for the ATSRO/11 meeting.				
Safety Assessment				
2.2.4. Perform risk analysis of the SAM ATS Route Network, Version 05.	SAM/IG/21	ATSRO/11 (2019)	Project RLA/06/901 States	Two experts need to be hired for 2 weeks to do this job.
2.2.5. Conduct the Eleventh Workshop/Meeting for the Optimisation of the SAM ATS Route Network, in order to review Version 05 of the SAM ATS route network.	SAM/IG/21	ATSRO/11 (2019)	Project RLA/06/901 States	Objective: Review and approve the final draft of the SAM Route Network, Version 5.

Activity	Start	End	Responsible party	Remarks
3. **Longitudinal Separation**				
3.1. **40 NM Separation** • Verify ATC communications available. • Provide Air Traffic Controllers with the following information (briefing): - new separation minima, - the corresponding phraseology, and - changes to the Letters of Agreement. • Amend existing Letters of Operational Agreement, replacing the current 80 NM separation by 40 NM separation.	SAM/IG/15	2017	States	20 NM conventional separation with the application of GNSS, as shown in par. 5.4.2.3.3.1 of Doc 4444
3.2. **20 NM separation** • Verify available ATC communications. • Provide Air Traffic Controllers with the following information (briefing): - new separation minima, - the corresponding phraseology, and - changes to the Letters of Agreement. • Amend the existing Letters of Operational Agreement, replacing the current 40 NM separation by 20 NM separation.	SAM/IG/17	2018	States	

Activity	Start	End	Responsible party	Remarks
3.3. **10 NM separation** • Verify the communications and surveillance available at the ATC • Provide Air Traffic Controllers with the following information (briefing): - new separation minima, - the corresponding phraseology, and - changes to the Letters of Agreement. • Modify the existing Letters of Operational Agreement, replacing the current 20 NM separation by 10 NM separation.	SAM/IG/20	2019	States	

ATTACHMENT TO THE AIRSPACE OPTIMISATION PLAN

Terms of Reference for the Preliminary Draft of the ATS Route Network, Version 04 (see 2.1.1)

- Analyse the routes discussed at the Route Interface Workshop, which depend on the validation of PBN designs for the main SAM TMAs;
- Points of entry and exit of the main SAM TMAs;
- ATS routes that should be eliminated, according to use;
- (Vertical) volume of exclusionary airspace for the application of RNAV-5;
- "Conventional" ATS routes that should be eliminated or replaced by RNAV routes, according to the volume of exclusionary RNAV-5 airspace;
- RNAV routes that should be realigned, according to the points of entry and exit of the main SAM TMAs;
- Interface between SAM Route Network and the CAR Route Network;
- Use of the Guidance Material for the Application of the Flexible Use of Airspace Concept.

Terms of Reference for the Preliminary Draft of the ATS Route Network, Version 04 (see 2.1.3)

- Assess the routes analysed at the Route Interface Workshop, which depend on the validation of PBN designs of the main SAM TMAs;
- Points of entry and exit of the main SAM TMAs;
- ATS routes that should be eliminated, according to use;
- Volume of exclusionary airspace for the application of RNAV-5;
- "Conventional" ATS routes that should be eliminated or replaced by RNAV routes, according to the volume of exclusionary RNAV-5 airspace;
- RNAV routes that should be realigned, according to the points of entry and exit of the main SAM TMAs;
- Interface between the SAM Route Network and the CAR Route Network;
- Use of Guidance Material for the Application of the Flexible Use of Airspace Concept.

Terms of Reference of the Preliminary Draft of the ATS Route Network, Version 05 (Application of RNP 2. See 2.2.1.)

- Points of entry and exit of the main TMAs of the SAM Region;
- ATS routes that should be eliminated, according to use;
- Volume of exclusionary volume for the application of RNP2;
- RNAV-5 ATS routes that should be eliminated or replaced by RNP2 routes, according to the volume of exclusionary RNP2 airspace;
- RNAV routes that should be realigned, according to the points of entry and exit of the main SAM TMAs;
- Interface between the SAM Route Network and the CAR Route Network;
- Use the Guidance Material for the Application of the Flexible Use of Airspace Concept.

Terms of Reference for the Preliminary Draft of the ATS Route Network, Version 05 (Application of RNP 2. See 2.2.3.)

- Points of entry and exit of the main TMAs of the SAM Region;
- ATS routes that should be eliminated, according to use;
- Volume of exclusionary airspace for the application of RNP2;
- RNAV5 ATS routes that should be eliminated or replaced by RNP2 routes, according to the volume of exclusionary RNP2 airspace;
- RNAV routes that should be realigned, according to the points of entry and exit of the main SAM TMAs;
- Interface between the SAM Route Network and the CAR Route Network;
- Use the Guidance Material for the Application of the Flexible Use of Airspace Concept.

Agenda Item 3: Implementation of the Air Traffic Flow Management (ATFM)

3.1 Under this Agenda Item, the Meeting analysed the following working papers:

a) WP/06 - *ATFM Project (ASBU: B0-SEQ, B0-FRTO, B0-NOPS and BO-ACDM)* (presented by the Secretariat);
b) WP/23 - *Implementation of night routes from 03h00 to 07h00* (presented by French Guiana);
c) IP/05 - *ATFM Implementation status in Ecuador - ATC Sectors and Runway Capacity Calculation for the Quito and Guayaquil airports* (presented by Peru) **(*Spanish only*)**;
d) IP/06 - *Measures adopted during the Rio 2016 Olympic Games in Brazil* (presented by Brazil) ***(Spanish only)***

ATFM project (ASBU: B0-SEQ, B0-FRTO, B0-NOPS and B0-ACDM)

3.2 The Meeting recognised that the achievements of the implementation had not been as expected yet, despite the efforts made by Project RLA/06/901 in drafting and preparing guidance material, and in providing ATFM training courses, as well as the efforts made by the States themselves in using this material for ATFM implementation and taking advantage of the training received.

3.3 The Meeting took note that some States that had not yet implemented a minimum ATFM service, issued a lot of messages and NOTAMs establishing air traffic flow restrictions both for incoming and outgoing traffic at the different points of FIR boundaries.

3.4 It has been noted that several NOTAMs issued were related to time restrictions at the FIR entry or exit points that were independent from the flight level, causing a severe impact on traffic in neighbouring FIRs. Moreover, such measures had a domino effect on the FIRs of other Regions.

3.5 Measures thus imposed, where there is no organic strategic planning, not only have a severe impact on capacity, but also pose a safety risk, especially for transcontinental traffic subject to such measures, and affect flight and fuel planning. In some cases, the measures imposed are disproportionate to the situation.

3.6 The most appropriate solution to avoid these situations is based on implementing at least one flow control position or flow control unit, depending on the level of complexity, at each Area Control Centre (ACC). These positions or units could initially provide services during a specific timeframe, taking into account peak hours. Also, a supervisor could take over a flow management position during non-peak hours.

3.7 To analyse the achievement of ATFM goals, the following indicators have been established:

- Percentage of States that have conducted runway and ATC sector capacity calculations.
- Percentage of States that have implemented ATFM in Flow Management Units (FMUs) or Flow Management Positions (FMPs).

3.8 To date, 85% of the States of the Region have performed their ATC runway and ATC sector capacity calculations as pre-implementation tasks, as shown in the following table:

Percentage of States that have conducted their runway and ATC sector capacity calculations

	ARG	BOL	BRA	CHI	COL	ECU	FGY	GUY	PAN	PAR	PER	SUR	URU	VEN
September 2015 85%	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**NO**	**YES**	**YES**	**YES**	**NO**	**YES**	**YES**

3.9 To date, only 42% of the States of the region have implemented ATFM, as shown in the following table:

Percentage of States that have implemented ATFM Flow Management Units (FMU) or Flow Management Positions (FMP)

	ARG	BOL	BRA	CHI	COL	FGY	ECU	GUY	PAN	PAR	PER	SUR	URU	VEN
September 2015 42%	**NO**	**NO**	**YES**	**YES**	**YES**	**NO**	**NO**	**NO**	**NO**	**YES**	**NO**	**NO**	**YES**	**YES**

3.10 The Meeting took note that during its third meeting, the GREPECAS Programmes and Projects Review Committee approved Conclusion CRPP/3-5: "*Actions for ATFM implementation in the SAM Region*" encouraging SAM States to:

a) locally replicate ATFM training obtained by their experts in courses sponsored by Project RLA/06/901 in order to increase ATFM training among their specialised personnel;

b) avoid implementing ATFM measures that affect users and impact safety, especially those Administrations that have not established units to strategically manage flow control measures;

c) include in their bilateral Letters of Agreement appropriate procedures to regulate the strategic application of these measures, avoiding any impact on efficiency and safety;

d) implement, as soon as possible, the Flow Management Positions (FMPs) or Flow Management Units (FMUs), in order to avoid an imbalance between capacity and demand, whether caused by scheduled or unforeseen events; and

e) submit to the PPRC/4 meeting the action taken in accordance with the preceding paragraphs.

3.11 Pursuant to Conclusion PPRC/3-5, a Strategic Planning Table had been prepared, which was updated by the States at the Meeting, as shown in **Appendix A** to this part of the report.

3.12 The Meeting also updated **Appendix B** to this part of the report, which shows the current list of ATFM focal points.

3.13 The Meeting reviewed and updated the ATFM Action Plan and Work Programme shown in **Appendix C** to this part of the report.

3.14 The Meeting also updated the ATFM survey data as indicated in **Appendix D** attached to this part of the report.

Implementation of night routes from 03h00 UTC to 07h00 UTC (French Antilles and French Guiana)

3.15 The Meeting took note of the planning and implementation of night routes between 0300 UTC and 0700 UTC to be applied in the Cayenne FIR for French Antilles and French Guiana.

3.16 This implementation refers to air traffic whose route is foreseen to cross the Oceanic airspace of the Cayenne FIR (SOOO), at night, east of 48W. This mainly concerns European traffic to/from South America, and is aimed at improving capacity and safety in this airspace. The procedures to be applied are contained in **Appendix E** to this part of the report.

3.17 With regard to the above, the IATA representative agreed with the representative of French Guiana to set 6 November as the deadline for consultation with the operators on this implementation in order to examine and submit an alternate proposal, if necessary.

Status of implementation of ATFM in Ecuador - ATC and runway capacity calculations for Quito and Guayaquil airports

3.18 The Meeting took note of the work involving data collection and analysis for ATC sector and runway capacity calculation at the two main airports of the country, Quito and Guayaquil, as presented in **Appendix F** to this part of the report.

Measures taken during the Rio 2016 Olympic Games in Brazil

3.19 In reference to this important issue, the Meeting took note of the measures taken by Brazil for the Rio 2016 Olympic Games, scheduled for July next year.

3.20 The Meeting recognised that the projected increase in demand during the Rio 2016 Olympic Games required prompt attention, not only in terms of efficiency in the provision of air traffic services (ATS), but also for optimising air traffic flow management (ATFM). Since the completion of the Rio +20 Conference, in 2012, to the FIFA World Cup in 2014, the Brazilian government has been successful in achieving the strategic objectives defined by DECEA for major events scheduled in Brazil.

3.21 The Meeting recognised the continuous improvement of services by DECEA, which showed the commitment of the Brazilian State in efficiently promoting ATFM, while meeting the safety standards recommended for this type of events. Corrections and implementations that will be used during the Rio 2016 Olympic Games are the direct result of *"lessons learned"* and strategic planning for major events defined by DECEA.

3.22 The Meeting welcomed the advance information on the measures taken by DECEA shown in the following table:

STATUS OF MEASURES TAKEN BY DECEA FOR THE RIO 2016 OLYMPIC GAMES

MEASURES TAKEN		
1- PUBLICATIONS		
ACTION	**STATUS**	**DEADLINE**
1.1 Develop AIC on Coordinated Airports, destinations, and the SLOT assignment rules.	Draft	DEC 2015
1.2 Prepare the Practical Guide for SISCEAB users.	Draft	DEC 2015
1.3 Prepare AIC on airspace changes during the Rio 2016 Games.	Draft	DEC 2015
1.4 Prepare AIC on contingency flow rerouting during the Rio 2016 Games.	CGNA is defining the flow between venues	DEC 2015
1.5 Prepare alternate IFR procedures for ATC during the Rio 2016 Games.	28 specific IFR procedures are being prepared for ATC to be used during the activation of exclusion areas	DEC 2015
2- CAPACITY CALCULATION		
ACTION	**STATUS**	**DEADLINE**
2.1 Assess runway capacity values of airports to be used during the Rio 2016 Games	Runway capacity was calculated for all airports of interest defined by the Department of Civil Aviation (SAC)	DEC 2015
2.2 Assess ATC sector capacity values of terminals to be used during the Rio 2016 Games	The capacity of all main terminal sectors was calculated, as well as of other sectors of interest to ATFM.	DEC 2015
2. 3 Assess ATC sector capacity values of the FIRs involved in the Rio 2016 Games	ATC capacity was calculated for AO, BS, CW, and RE FIRs, with the exception of the AZ FIR.	DEC 2015
3- CHANGES IN THE MAIN TERMINALS THAT WILL ACT AS VENUES FOR THE RIO 2016 OLYMPIC GAMES IN ORDER TO INCREASE ATC CAPACITY		
ACTION	**STATUS**	**DEADLINE**
3.1 Displaced STARs were prepared for the final sectors of SBGR and SBSP in order to increase flow to the SP TMA.	The SP APP ATCOs will receive simulated training in October and November 2015.	12 NOV 2015
3.2 New PBN procedures were designed in order to provide “simultaneous approach” to the Brasilia International Airport (SBBR).	All BR APP/BR TWR ATCOs have received training in the simulated environment in August and September 2015.	12 NOV 2015
3.3 The air traffic flow of the BH TMA was fully redesigned using PBN concepts.	All BR APP ATCOs have received training in the simulated environment in August and September 2015.	12 NOV 2015

ACTION	STATUS	DEADLINE
3.4 Visual flow at the Rio de Janeiro terminal was fully modified in order to separate VFR from IFR traffic.	All RJ APP ATCOs have received training in the simulated environment in August and September 2015.	12 NOV 2015
4- TRAINING		
ACTION	**STATUS**	**DEADLINE**
4.1 Integrated ACC, APP, TWR, CGNA, and COpM training.	1,235 ATCOs participated in the first SISCEAB integrated training that began in April 2015. New training activities are scheduled for the first half of 2016, with the participation of 1,878 ATCOs.	JUNE 2016

3.23 In connection with the above, the Meeting felt that it was necessary to support these measures presented by DECEA, through the adoption of measures at national level by the other SAM States in support of this event.

3.24 IATA considered that it was absolutely necessary to issue, as soon as possible, the corresponding aeronautical publication for the dissemination of all relevant information, so as to facilitate planning and operation by the operators and other users of the Brazilian airspace, as well as by the other SAM States, during the event.

3.25 Another important issue that the Meeting discussed was the need to know in advance the Alternate Aerodrome Plan during the event, taking into account potential impacts on efficiency and safety.

STRATEGIC PLANNING TABLE FOR THE DEVELOPMENT OF ATFM														
CONC. PPRC/3-5 action of compliance	**ARG**	**BOL**	**BRA**	**CHI**	**COL**	**ECU**	**FGY**	**GUY**	**PAN**	**PAR**	**PER**	**SUR**	**URU**	**VEN**
	Month/ Year	**Month/ Year**	**Month/ Year**	**Month/ Year**	**Month/ Year**	**Month/ Year**	**Month/ Year**	**Month/ Year**	**Month/ Year**	**Month/ Year**	**Month/ Year**	**Month/ Year**	**Month/ Year**	**Month/ Year**
1- Replica of ATFM courses to speccialized personnel	09/2015 to 11/2015	10/2015	Imp.	09/2015 07/2016	Imp.	1st Quarter 2015	2015		04/2015 02/2016	11/2016	02/2016		02/2015	07/2016
2- Bilateral Letters of Agreement with appropriate ATFM procedures without impacting on safety	04/2016	02/2014	Imp.	05/2016	Imp.	2nd Quarter 2016	2015		1st Trim/2016	10/2015	05/2016			
3- Implementation of Flow Control Positions or Units (FMPs/FMUs)	2nd Sem/2016 SABE	1st Sem/2016	Imp.	Imp. FMP ACC/ 2016	Imp. unified ACC	2016	2016		06/2016	Imp.	07/2016		Imp.	Imp.

APPENDIX B/ APÉNDICE B

LIST OF CONTACTS FOR OPERATIONAL ATFM FOCAL POINTS AND ESTABLISHED ATFM UNITS

LISTA DE CONTACTOS PARA PUNTOS FOCALES ATFM OPERACIONALES Y UNIDADES ATFM ESTABLECIDAS

State/ Estado	STATE ATFM FOCAL POINTS PUNTOS FOCALES ATFM DEL ESTADO	OPERATIONAL ATFM FOCAL POINTS AND ESTABLISHED ATFM UNITS PUNTOS FOCALES ATFM OPERACIONALES Y UNIDADES ATFM ESTABLECIDAS
ARGENTINA*	Héctor Luis Sánchez Jefe de Departamento Registro y Estadísticas Dirección Proyectos de Navegación Aérea Administración Nacional de Aviación Civil (ANAC) Tel: +54 11 5941-3000, Ext. 69773 E-mail: hsanchez@anac.gob.ar	Víctor Marcelo de Virgilio Jefe del Departamento Servicios de Tránsito Aéreo Tel.: +5411 5789 8400, Ext 68454 E-mail: dsna@faa.mil.ar
BOLIVIA (Plurinational State of) / **BOLIVIA (Estado Plurinacional de)***	ATCO Jesús I. Villca Jiménez Inspector ATM/SAR Dirección General de Aeronáutica Civil (DGAC) Teléfono: +591 2 211-4465 Cel.: +591 72023263 E-mail: jvillca@dgac.gob.bo	ATCO. Marco Sergio Barrios Barzola Supervisor ACC La Paz Jefe Navegación Aérea Reg. La Paz Tel/Fax: +591 2 281-0203 (ACC/La Paz) Tel/Fax: +591 2 282-1717 (Nav. Aérea) Tel: +591 2 223-8339 (Home/domicilio) Cel.: +591 7 052-3884 E-mail: mbarrios@aasana.bo masebarbar@hotmail.com

State/ Estado	STATE ATFM FOCAL POINTS PUNTOS FOCALES ATFM DEL ESTADO	OPERATIONAL ATFM FOCAL POINTS AND ESTABLISHED ATFM UNITS PUNTOS FOCALES ATFM OPERACIONALES Y UNIDADES ATFM ESTABLECIDAS
BRAZIL / BRASIL*	James Souza Short Jefe de Operaciones del CGNACentro de Gerenciamento e Navegação Aérea – CGNA Chefe Geral Tel.: +55 21 2101-6531 Cel.: +55 21 99499-1658 E-mail: short@cgna.gov.br Cap José Airton Patricio Centro de Gerenciamento e Navegação Aérea – CGNA Oficial ATM Tel.: +55 21 2101-6448 Cel.: +55 21 98554-4425 E-mail: patriciojap@cgna.gov.br	Gerente Nacional – GNAC Tel.: +55 21 2101-6409 E-mail: gnac@cgna.gov.br Gerente Nacional de Fluxo – GNAF Tel.: +55 21 2101-6546 E-mail: grt@cgna.gov.br Gerencias Regionais – GER Tel.: +55 21 9949-6492 / +55 21 2101 98554 3598 E-mail: gr1@cgna.gov.br / gr2@cgna.gov.br
CHILE*	Jorge Caro Gálvez Dirección General de Aeronáutica Civil Dirección de Aeródromos y Servicios Aeronáuticos (DASA) Sub Departamento de Servicios de Tránsito Oficina ATFM (FMU) Tel.: +56 2 2836-4022 E-mail: jcarog@dgac.gob.cl	Patricio Zelada Ulloa FMP ACC Santiago Tel.: +56 2 22836-4017 ACC Santiago Cel.: +56 9158-1865 Supervisor ATC de turno E-mail: pzelada@dgac.gob.cl

State/ Estado	STATE ATFM FOCAL POINTS PUNTOS FOCALES ATFM DEL ESTADO	OPERATIONAL ATFM FOCAL POINTS AND ESTABLISHED ATFM UNITS PUNTOS FOCALES ATFM OPERACIONALES Y UNIDADES ATFM ESTABLECIDAS
COLOMBIA*	Mauricio José Corredor Monroy Unidad Administrativa Especial de Aeronáutica Civil (UAEAC) Jefe Grupo ATFCM Tel.: + 57 1 296-2628 E-mail: mauricio.corredor@aerocivil.gov.co Skype: mauricio.jose.corredor.monroy	Unidad de Gestión de Afluencia de Tránsito Aéreo y Capacidad – FCMU COL (DE 1100 A 0500 UTC) E-mail: cfmu.dsna@aerocivil.gov.co Please copy to / Favor copiar a: E-mail: cns.fmu@aerocivil.gov.co aga.fmu@aerocivil.gov.co Telefonos: MANAGER: +57 1 296-2656 CNS: +57 1 296-2100 AGA: +57 1 296-2200 DEPARTURE FLOW MANAGEMENT: +571 296-24 06 Celular: MANAGER: +57 317 517-10 46 AGA: +57 317 363- 88 11 CNS: +57 318 330-73 74

State/ Estado	STATE ATFM FOCAL POINTS PUNTOS FOCALES ATFM DEL ESTADO	OPERATIONAL ATFM FOCAL POINTS AND ESTABLISHED ATFM UNITS PUNTOS FOCALES ATFM OPERACIONALES Y UNIDADES ATFM ESTABLECIDAS
ECUADOR	Marcelo Valencia Taco Responsable ATM Nacional Tel.Ofc: +593 2 2947400 ext 4520 Móvil: +593 979097292 E-mail: marcelo_valencia@aviacioncivil.gob.ec marcelovalencia_qa@gmail.com	Supervisores Centro de Control DDI: +593 4 2924219 REDDING: 5060 / 5051 / 5052 / 5053 Clemente Pinargote Móvil : +593 994035543 E-mail: clemente.pinargote@aviacioncivil.gob.ec clementepinargote@yahoo.com Elías Ulloa Móvil : +593 997852130 elias.ulloa@aviacioncivil.gob.ec ulloaelias@hotmail.com
FR. GUIANA / GUYANA FRANCESA	Jean Michel Pubillier French West Indies and French Guiana Air Navigation Services Office: +596 596 42 24 88 GSM: +596 696 93 60 72 Email: jean-michel.pubillier@aviation-civile.gouv.fr	Hervé Thomas Head of ATC Services Cayenne Office: +596 594 35 93 04 GSM: +594 694 91 63 63 Email: hervé.thomas@aviation-civile.gouv.fr
GUYANA		

State/ Estado	STATE ATFM FOCAL POINTS PUNTOS FOCALES ATFM DEL ESTADO	OPERATIONAL ATFM FOCAL POINTS AND ESTABLISHED ATFM UNITS PUNTOS FOCALES ATFM OPERACIONALES Y UNIDADES ATFM ESTABLECIDAS
PANAMA*	Flor Silvera Directora de Navegación Aérea Tel.: +50 7 6982-1215/ 315-9846 E-mail: fsilvera@aeronautica.gob.pa	Gabriel Bernard Administración de Aeronáutica Civil Tel.: +50 7 6511-0730 +50 7 315-9871 E-mail: gabibernard24@hotmail.com
PARAGUAY*	ATCO. Sindulfo Ibarrola Dirección Nacional de Aeronáutica Civl (DINAC) Gerencia Unidad Central de Tráfico Aéreo – CFMU (Unidad Normativa) Edificio Ministerio de Defensa Nacional, 6to. piso Tel./Fax: +595 21 210-628 Cel.: +595 983 35-0815 E-mail: cfmu@dinac.gov.py	1-Unidad de Flujo (SGAS) – FMU SGAS (Unidad Operativa). Current responsible / Responsable actual de dicha Unidad: ATCO. Alejandro Amarilla Tel./Fax: +595 21 758-5110 Tel.: +595 21 68 8109 E-mail: fmu.asu@gmail.com Mariano Roque Alonso-Paraguay Edificio del Nuevo Centro de Control Unificado. 2-Unidad de Flujo (SGES) – FMU SGES (Unidad Operativa). Current responsable / Responsable actual de dicha Unidad: Lic. ATCO. David Gavilán Tel./Fax: +595 64 420-842 Cel.: +595 983 830-404 E-mail: daga_978@hotmail.com Minga Guazú-Paraguay Aeropuerto Internacional Guaraní. E-mail: abethancourt@aeronautica.gob.pa

State/ Estado	STATE ATFM FOCAL POINTS PUNTOS FOCALES ATFM DEL ESTADO	OPERATIONAL ATFM FOCAL POINTS AND ESTABLISHED ATFM UNITS PUNTOS FOCALES ATFM OPERACIONALES Y UNIDADES ATFM ESTABLECIDAS
PERU*	Martha Soto Ansaldi Dirección General de Aeronáutica Civil (DGAC) Inspector de Navegación Aérea Tel.: +51 1 615-7881 Cel.: +51 997367352 E-mail: msoto@mtc.gob.pe	Renzo Gallegos Begazo Coordinador del Centro de Control LIMA - ACC Corporación Peruana de Aeropuertos y Aviación Comercial (CORPAC S.A) Tel.: +51 1 230 1153 E-mail: rgallegos@corpac.gob.pe
SURINAME	Mr. Soeknandan Andre Chief Air Traffic Services Tel.: +59 7 530-433 Cel.: +59 7 7 216-108 Fax: +59 7 491-743 E-mail : atmcnslvd@yahoo.com	Mr. Gaddum R Coordinator ATS Supervisor ATS unit Zanderij Phone Operations : +597 032-5208 Cel: +597 853-1681 E-mail: g.rperez@hotmail.com
URUGUAY*	Dirección Nacional de Aeronáutica Civil (DINACIA) Tte Cnel. (Nav.) Gabriel Falco Sub- Director de Circulación Aérea Tel: +598 2 604 0408 Ext 5101 Cel: +598 9 804 6848 FAX +598 2 604 0408 E-mail: gfalco@dinacia.gub.uy	Dirección Nacional de Aeronáutica Civil (DINACIA) C.T.A. Luis A. Otheguy Director de Tránsito Aéreo (ATM) Tel.: +598 2 604-0408, Int. 5105 Cel: +598 99592113 E-mail: atfmuruguay@dinacia.gub.uy Email: dta@dinacia.gub.uy ACC Montevideo Tel.: +598 260-00619 REDDIG

State/ Estado	STATE ATFM FOCAL POINTS PUNTOS FOCALES ATFM DEL ESTADO	OPERATIONAL ATFM FOCAL POINTS AND ESTABLISHED ATFM UNITS PUNTOS FOCALES ATFM OPERACIONALES Y UNIDADES ATFM ESTABLECIDAS
VENEZUELA (Bolivarian Republic of) / **VENEZUELA (República Bolivariana de)***	Maribel Mayora Vallenilla Responsable ATFM Tel: +58 212 303-4532 (13:00 – 21:00 UTC) Cel: +58 416 611-0607 (H24) E-mail: atfm@inac.gob.ve m.mayora@inac.gob.ve Alfredo Dávila Coordinador Area de Trabajo ATS Tel.: + 582 12 355 2898 Cel.: + 584 166 247 667 E-mail: a.davila@inac.gob.ve	Harrynson Salazar Jefe ACC-Maiquetía Tel: +58 212 355-2912 (13:00 – 21:00 UTC) Cel: +58 416 632-6204 (H24) E-mail: Ha.Salazar@inac.gob.ve ACC-Maiquetía Tel: +58 212 355-2216 (H24) Cel: +58 416 623-6427 (H24)
OTHERS / OTROS	**International Organizations / Organizaciones Internacionales**	**ICAO / OACI**
	Julio de Souza Pereira Assistant Director, Safety Flight Operations IATA Avda. Ibirapuera, 2332, cj22 Torre I Sao Paulo, Brasil Tel: +55 11 21874236 Mob: +55 11 993800953 E-mail: pereiraj@iata.org	Roberto Arca Jaurena RO / ANS & SFTY Tel. +511 611 86 86 Ext 106 E-mail: rarca@icao.int

*Updated SAM/IG/16 / Actualizados en la SAM/IG/16

APPENDIX C

ACTION PLAN FOR THE IMPLEMENTATION OF ATFM AT SAM AIRPORTS

A: AIRPORT				
Task description	**Start**	**End**	**Responsible party (designate individual or organisation in charge)**	**Remarks**
1. Airport demand/capacity (runway capacity) analysis				The ATFM survey provides information on this subject
1.1 Carry out Calculation of Airport and Airspace Capacity of main airports by States. 1. Identify personnel available in each State to carry out calculation of runway capacity. 2. Identify which airports already have calculation of runway capacity. 3. Identify, prioritize and report what airports require calculation of runway capacity. 4. Carry out calculation of runway capacity. 5. Update calculation of runway capacity as necessary. 6. Identify airports exceeding runway capacity.	Sep 2009	SAM/IG/16	States	States that have yet to submit information: Suriname and Guyana
2. Coordination with the ATM community				
2.1 Promote seminars to the ATFM community considering the CDM concept for the implementation of ATFM and initiate corresponding coordination. 1. Consider the implementation of a CDM process in main airports. 2. States will notify airports with this process.	SAM/IG/11	2016*	States	**VALID** ATFM operational concept, ATFM manual and ATFM roadmap will be taken into account. Chile signed a MoU with the Airport Community.
3. Infrastructure and database				
3.2 Establish a data base format to be used for automation.	SAM/IG/11	SAM/IG/17	States	**VALID**

A: AIRPORT				
Task description	**Start**	**End**	**Responsible party (designate individual or organisation in charge)**	**Remarks**
4. Policy, standards, and procedures				
4.7 Provide AIP/AIC published information on ATFM to SAM/IG meetings.	SAM/IG/11	2016*	States	**PERMANENT** Information will be presented in each SAM/IG The format of the publication is in Doc 8196
5. Training				
5.1 Establish courses on: a) FMP/FMU training b) Airport CDM training	SAM/IG/13	2016*	States	A-CMD course carried out at ICAO Lima, under the support of RLA/06/901 Project. States must replicate the course.
5.2 Draft ATFM training plans.	SAM/IG/11	2016*	States	**VALID**
5.3 Train FMP/FMU/ATC personnel for the application of ATFM measures in airports.	SAM/IG/11	2016*	States	**VALID**
5.4 Monitor the training of the ATM community.	SAM/IG/11	2016*	States	**VALID**
6. Final implementation decision				
6.1 Review factors that may affect the implementation decision.			States	**VALID**
6.2 Declare the pre-operational implementation in the defined area.			States	**VALID**
6.3 Declare the final operational implementation in the defined area.			States	**VALID**
7. Monitor system performance				

A: AIRPORT				
Task description	**Start**	**End**	**Responsible party (designate individual or organisation in charge)**	**Remarks**
7.1 Develop performance indicators according to CDM manual.	SAM/IG/11	Oct/2017	States	**VALID** States which have implemented ATFM will present an information paper concerning the performance indicators.
7.2 Develop a performance indicators follow-up programme	SAM/IG/11	Oct/2017	States	**VALID**
7.3 Develop and implement an ATFM post-implementation follow-up programme at airports.	SAM/IG/13	Oct/2017	States	**VALID**

ACTION PLAN FOR ATFM IMPLEMENTATION IN THE SAM REGION				
B- AIRSPACE (ATC Sector)				
Task description	**Start**	**End**	**Responsible party (designate individual or office in charge)**	**Remarks**
1. Airspace demand and capacity analysis				ATFM survey has information on this subject
1.1 Carry out ATC sectors calculation. 1. Identify and train personnel available in each State to carry out calculation of air space capacity. 2. Identify which sectors already count with calculation of capacity. 3. Identify, prioritize and report what sectors require calculation of capacity. 4. Identify sectors exceeding capacity.	SAM/IG/11	SAM/IG/15	States	**VALID** Suriname and Guyana have not yet submitted information.
1.2 Carry out the States estimate airspace ATC sector capacity calculation and their terminal areas at the major airports.	Sep 2009	SAM/IG/16	States	**VALID** Suriname and Guyana have not yet submitted information.

ACTION PLAN FOR ATFM IMPLEMENTATION IN THE SAM REGION				
B- AIRSPACE (ATC Sector)				
Task description	**Start**	**End**	**Responsible party (designate individual or office in charge)**	**Remarks**
2. Evaluate improvement of traffic flow by sequencing (B0-RSEQ) in order to allow an optimal application of new airspace concepts based on PBN, mainly using CDO and CCO	SAM/IG/14	SAM/IG/17	SAM/ATFM/IG States	**VALID**
3. Coordination with the ATM community				
3.1. Promote seminars to the ATFM community considering the airspace capacity concept for the implementation of ATFM and initiate corresponding coordination.	SAM/IG/11	2016*	States	**VALID**
4. Infrastructure and database				
4.2 Coordinate implementation activities with the Automation Group.	SAM/IG/13	SAM/IG/17	ATFM/IG	**VALID** Depends on States' requirements.
5. Policy, standards, and procedures				
5.2 Develop template/contents for operational agreements between centralized ATFM units for interregional demand/capacity balancing.	2008	2017	Project RLA/06/901	**VALID**
6. Training				
6.2 Prepare plans and ATFM training material	Dec 2014	2016*	States	**VALID** Argentina presented ATFM training Manual
7. Final implementation decision				
7.1 Analyse factors affecting the implementation decision.	N/A	2016	States	**VALID**
7.2 Declare pre-operational implementation in the area defined.	N/A	2016*	States	**VALID**

ACTION PLAN FOR ATFM IMPLEMENTATION IN THE SAM REGION				
B- AIRSPACE (ATC Sector)				
Task description	**Start**	**End**	**Responsible party (designate individual or office in charge)**	**Remarks**
7.3 Declare definitive operational implementation in the area defined.	N/A	2016*	States	**VALID**
8. Monitor system performance				
8.1 Draft performance indicators	2010	Oct/2017	Project RLA/06/901	**VALID**
8.2 Develop an indicators follow-up programme.	TBD	Oct/2017	States	**VALID**

NOTE: *Indicates that the date is related to the Bogota Declaration

ATFM SURVEY

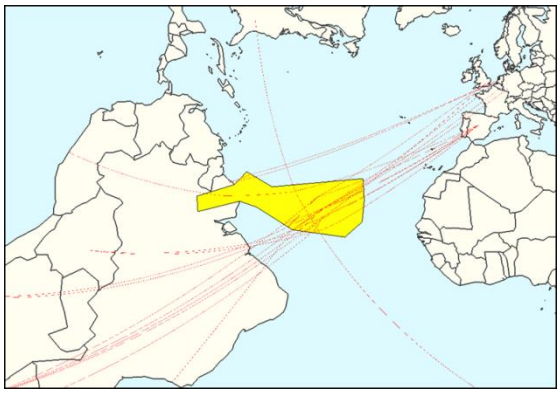
ATFM SURVEY	ARG	BOL	BRA	CHI	COL	ECU	FGY	GUY	PAN	PAR	PER	SUR	URU	VEN	REMARKS
1 . Regarding the SAM ATFM implementation plan, confirm if FMUs/FMPs have been established. If YES, indicate which is the responsible unit. If the answer is NO, indicate what are your plans for ATFM implementation based on regional requirements.	**NO**	**NO**	**YES**	**YES**	**YES**	**NO**			**NO**	**YES**	**NO**		**NO**	**YES**	
2. Confirm if you have personnel trained in the ATFM implementation plan and if this staff is currently performing the corresponding functions according to the implementation plan.	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**NO**	**YES**	**YES**	**YES**	**NO**	**YES**	**YES**	Pending Guyana and Suriname.

ATFM SURVEY	ARG	BOL	BRA	CHI	COL	ECU	FGY	GUY	PAN	PAR	PER	SUR	URU	VEN	REMARKS
5. How many airports in your State/country have apron capacity calculations? List the main ones. If the answer is NONE, indicate which airports you think require such calculations.	**0**	**0**	**1**	**0**	**0**	**0**	**1**		**0**	**1**	**2**		**0**	**0**	**Brazil:** Apron capacity calculations have been performed for one airport (Guarulhos international airport in São Paulo-SP). This information was provided by GRU- (Guarulhos Airport Administration). **Chile:** We believe that SCEL, SCIE, and Loa de Calama require this calculation. **Colombia**: None. It is required for several airports since airport capacity is not being managed to address growing demand. **Ecuador**: None of the airports in the country has apron capacity calculations. However, it is estimated that the airports of Quito, Guayaquil, Nueva Loja, Coca, Shell Mera, Cuenca, and Manta require these calculations. **Panama**: Will request data from Tocumen S.A. **Paraguay**: These calculations have not been performed due to lack of experts (specialists) duly trained for this purpose. Calculations are required for the two international airports mentioned above: "Silvio Pettirossi" in Asuncion and "Guaraní" in Minga Guazú. **Peru**: Cusco 7 C/D and 4 A/B positions. **Uruguay**: SUMU and SULS. **Venezuela**: None. We still do not have personnel duly trained to conduct these calculations, which would be required for the international airport of Maiquetía.
6. Number of operations per hour at the airport considered to be the most important one:															**Chile**: SCEL **Peru:** SPIM.
Runway capacity			**SBGR 52**	**SCEL 40**	**70 SKBO**	**29**	**6**		**MPTO 44**	**SGAS 23**	**SPJC 32**		**SUMU 25 SULS 18**	**SVMI 34**	
Apron capacity	**NO**	**NO**	**SBGR 90**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**SPJC**	**NO**	**NO**	**NO**	

ATFM SURVEY	ARG	BOL	BRA	CHI	COL	ECU	FGY	GUY	PAN	PAR	PER	SUR	URU	VEN	REMARKS
7. For the airport considered to be the most important one, number of trained personnel capable of providing, in terms of operations per hour, calculations for:															
Runway capacidty	**20**	**12**	**18**	**15**	**4**	**1**	**3**		**2**	**1**	**8**		**5**	**2**	
Apron capacity	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**3**	**NO**	**NO**	**NO**	
ATS sector capacity	**5**	**10**	**18**	**4**	**4**	**1**	**3**		**2**	**1**	**8**		**5**	**2**	

APPENDIX E

IMPLEMENTATION OF NIGHT ROUTES FROM 03H00 TO 07H00 IN FRENCH WEST INDIES AND FRENCH GUIANA



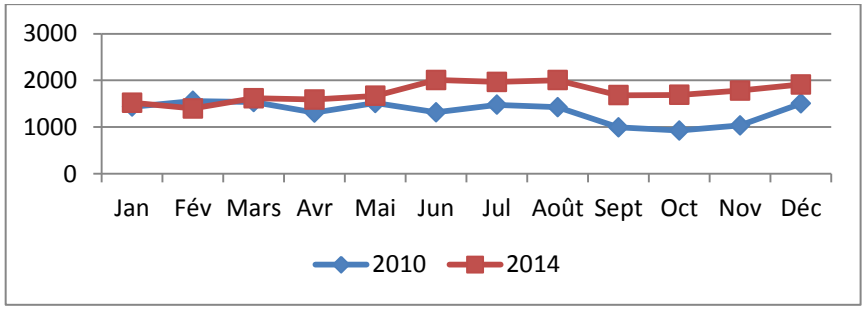
1. **Introduction**

1.1 This paper concerns the air traffic whose routing is expected to cross the Oceanic airspace of the FIR Cayenne (SOOO), at night, east of 48W. It is mainly the traffic Europe to/from South America.

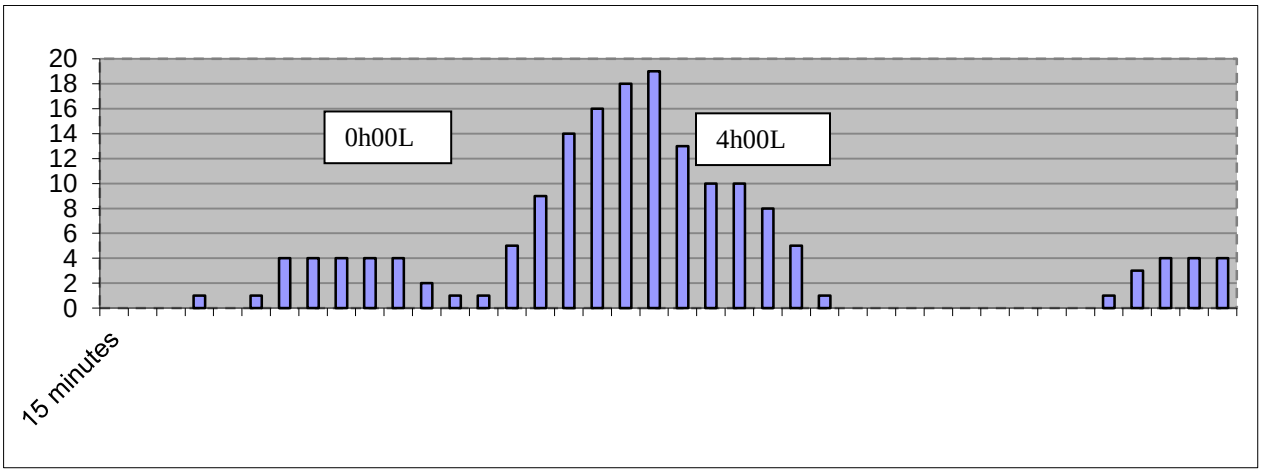
2. **The Control Center of Cayenne**

IFR traffic

17 122 movements in 2013, **20 541** movements in 2014



One Oceanic peak Traffic load at night
Number of flight per 15 NM



Cayenne Centre has one ACC position armed by 2 controllers.

3. **Modernization of the Control Center of Cayenne**

3.1 A modernization plan was launched to improve the long-term situation of the Control Center of Cayenne with, in particular, the installation of a new, more powerful system ATM ADS C CPDLC (electronic strip, AIDC).

3.2 The training of the controllers will initiate at the beginning of the year 2016. It will be held during the year 2016. Besides this, in a context of slight rise of the traffic and in particular the peaks of traffic at night between 03:00 and 07:00 UTC, the DSNA has investigated ATFMC measurements in order to allow the controllers to better control the traffic and to reinforce safety.

4. **ATFM measurements**

4.1 Due to the installation of measurements of regulation of traffic not being possible concerning Atlantic flights, the DSNA decided to work on the organization of the trajectories of aircraft cruising through Cayenne FIR

4.2 Implementation of a route structure has been examined to have aircrafts routes along designated tracks.

4.3 It is thus decided to implement - on an experimental basis - an obligatory network of night flights to cross the space of Cayenne East of 48W, between 03:00 and 07:00 UTC.

4.4 This implementation will aim to:

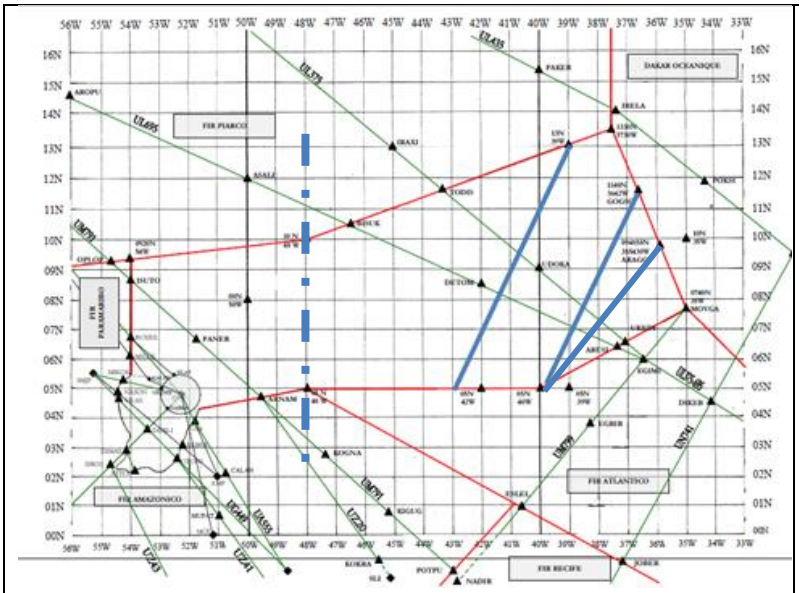
- Decrease the points of conflicts;
- Facilitate the climb of traffic cruising through the FIR;
- **Minimize the workload due to intercentre co-ordinations.**

4.5 In complement, Cayenne is working on flights prevision (a tool based on flights plans) in order to be able to anticipate every evening on peak traffic period (traffic can be very different from one night to another).

5. **International co-ordinations**

5.1 This implementation was coordinated with the Air Navigation Services Providers concerned and received a favorable opinion during the SAT/20 meeting of June 2015.

Description of the network



ICAO five-letter name codes

13N-39W: to be determined
05N-43W : KOTVO not published
05N-40W : MAVKO France and Brazil AIP

From 03h00 to 07h00 UTC EAST of 48W meridien
Cayenne Control will clear flights:

From PIARCO FIR:
-Via airways UL695 and UL375
-Via 13N-39W to 05N-43W
- Via all entry point (must be inserted in the field of FPL) routing to CYR VOR (or destination SOCA)

From DAKAR FIR:
-Via GOGSO or ARAGO to 05N-40W
-Via all entry point (must be inserted in the field of FPL) routing to CYR VOR (or destination SOCA)

From ATLANTICO FIR:
-Via airways UL695 and UL375
-Via 05N-43W to 13N-39W
-Via 05N 40W to GOGSO
-Via 05N 40W to ARAGO

Most of the traffic is already closed to these tracks.
This network will be optimized in the future

6. **Procedure for the airlines**

6.1 AIC, SUP AIP and NOTAM will be diffused and will specify the methods of filing of FPLs.
Objective date: **4th February 2016**

7. **Assessment**

7.1 A first experience feedback will be carried out 6 months after the implementation of this experimentation.

APPENDIX F

IMPLEMENTATION OF AIR TRAFFIC FLOW MANAGEMENT (ATFM) IN ECUADOR

1 **Background**

1.1 The Action Plan for Air Traffic Flow Management (ATFM) implementation in the SAM Region is monitored as a result of SAM/IG meetings. This plan contains milestones ending in the forthcoming SAM/IG/16 meeting.

1.2 During SAM/IG/14 meeting held on November 2014, Ecuador resumed with impetus ATFM activities and began executing the milestones of the action plan for ATFM implementation, with the training of its personnel and the determination of airports in which runway capacity calculation will be carried out.

1.3 After collection of corresponding data and subsequent analysis, ATM management in Ecuador presents the ATC sector and runway capacity calculation data for the two main airports in the country: Quito and Guayaquil.

2 **Analysis of the Action Plan for ATFM Implementation in Ecuador - Airports**

2.1 Analysis of demand and airport capacity (runway capacity).

a) Ecuador designated the personnel which will be in charge of performing runway capacity calculations; initially only personnel in Quito and Guayaquil has been designated.

b) Quito and Guayaquil already have runway capacity calculation.

c) International airports of Manta and Latacunga require runway capacity calculation (in the near future).

d) According to data obtained and capacity calculation developed, it has been determined that the current number of operations in both, Quito and Guayaquil, exceed the runway capacity declared.

2.2 In Ecuador there are no international airports with periods of peak operations, where demand is higher than existing capacity.

2.3 To date, there is no information regarding airport capacity in international airports.

2.4 To date, no coordination actions with ATM community have been taken, with the promotion of CDM seminars at main airports.

2.5 To date, no information on ATFM has been published in AIP.

2.6 Regarding training, personnel in Quito and Guayaquil airports has been prepared on ATFM.

2.7 Pre-operational ATFM implementation in Ecuador is foreseen for May 2016.

2.8 Definitive ATFM implementation in Ecuador is foreseen for June 2016.

2.9 To date, no performance indicators have been developed according to CDM Manual. Neither performance indicators monitoring programme nor an ATFM post-implementation monitoring programme in airports have been developed.

2.10 To perform runway capacity calculations in Mariscal Sucre (Quito) and Jose Joaquin de Olmedo (Guayaquil) international airports, guidelines of the "*GUIDE FOR THE APPLICATION OF A COMMON METHODOLOGY FOR THE AIRPORT CAPACITY AND ATC SECTORS CALCULATION FOR THE SAM REGION*" have been followed.

2.11 For the runway capacity calculations of Mariscal Sucre, airport (Quito), samples were taken on 02, 03, 04, 05 and 06 March 2015. The analysis of such data, under the corresponding methodology, determined following runway capacity calculation:

2.12 The theoretical runway capacity of Mariscal Sucre (Quito) international airport is of 14 landings and 13 takeoffs in one hour, i.e.: **27 operations per hour**.

2.13 For the runway capacity calculations of Jose Joaquin de Olmedo airport (Guayaquil), samples were taken on 09, 10, 11, 12 and 13 March 2015. The analysis of such data, under the corresponding methodology, determined following runway capacity calculation:

2.14 The theoretical runway capacity of Jose Joaquin de Olmedo (Guayaquil) airport is of 13 landings and 12 takeoffs in one hour, i.e.: **25 operations per hour**.

3 Analysis of the Action Plan for ATFM Implementation in Ecuador – Airspace (ATC sector)

3.1 Analysis of demand and airspace capacity (ATC sector)

a) Ecuador designated the personnel which will be in charge of performing airspace capacity calculations; initially only personnel in Quito and Guayaquil has been designated.

b) The Approach Control Offices of Area Control Terminals in Quito and Guayaquil, already have airspace capacity calculation.

c) The Area Control Center of Guayaquil also already has ATC sector capacity calculation in its two sectors, integrated by Sector 1 and Sector 2.

d) It has been identified that Approach Control Offices of Area Control Terminals in Cuenca, Shell and Galapagos require of airspace capacity calculation (in the near future).

e) According to data obtained and capacity calculations developed, it has been determined that the number of operations currently operating the Terminal Control Areas of Quito and Guayaquil, do NOT exceed the declared airspace capacity.

3.2 In Ecuador there exist no airspace sectors with periods where the demand is higher than the existent capacity..

3.3 In Ecuador, operational factors affecting airspace demand and capacity to optimise utilization of existing capacity, have not been determined. This, with the exeption of a possible evacuation of Latacunga and/or Quito airports due to a possible volcanic eruption event. In such sense, concerning analysis will be developed including corresponding simulations, if required.

3.4 The strategy and framework for the implementation of an ATFM centralized unit is included in the "*Plan for the implementation of ATFM - Ecuador*" and the "*Air Traffic Flow Management Manual for Ecuador*", respectively, which are in preparation and will be presented to SAM community on December 2015.

3.5 Two draft Letters of Operational Agreement (LoA) with centralized ATFM units of States adjacent to Ecuador, for the inter-regional balance between demand and capacity, will also be presented in December 2015.

3.6 Common elements of situational awareness are defined in the Plan for the implementation of ATFM - Ecuador and the ATFM Manual for Ecuador:

a) common visualization of traffic (centralized ATC presentation system);
b) common visualization of meteorological conditions (provided by Meteorological Surveillance Office);
c) communications (formal establishment of teleconferences or via web).

3.7 During SAM/IG/16, experiences that States of the Region have acquired with the use of ITOP tool of IATA and will formalize its subscription by latest November 2015, were required

3.8 The implementation of the flexible use of airspace (FUA) based on guidance material for the implementation of the concept on the flexible use of airspace (FUA) in the South American Region, has not progressed as much as expected, for various complications in the understanding of this issue by Senior Officers of the Ecuadorian Air Force in concepts of sovereignty. However, effective approaches have been given, specifying the temporal use of certain restricted spaces, as a result of commercial aviation operational requirements in the country, reflected in Letters of Agreement for the use of the SER4 and the creation of a new temporal airway crossing the SER2.

3.9 Concerning training, ATFM personnel has been prepared, mainly in the Area Control Center of Guayaquil, in foresight of the implementation of the ATFM unit in this ATC unit.

3.10 To perform airspace capacity calculations (ATC sector) in the approach units of Quito and Guayaquil and the Area Control Center ACC of Guayaquil, guidelines of the "*GUIDE FOR THE APPLICATION OF A COMMON METHODOLOGY FOR THE AIRPORT CAPACITY AND ATC SECTORS CALCULATION FOR THE SAM REGION*" have been followed.

3.11 **Guayaquil APP Sector capacity calculation**

For the Guayaquil APP Sector calculation, samples were taken on 02, 03, 04, 05 and 06 February 2015, between 12:00 and 14:00 UTC, between 17:00 and 19:00 UTC and between 22:00 and 00:00 UTC, as this time period was considered the one of major traffic density.

Following the appropriate analysis of collected data, it was determined that the APPROACH CONTROL OF GUAYAQUIL, with one executive controller and one planning/ coordinating controller, has the following capacity declaration:

ATC capacity: **10 aircraft simultaneously**
Airspace capacity : **70 aircraft per hour**

3.12 **Quito APP Sector capacity calculation**

For the Quito APP Sector calculation, samples were taken on 06, 07, 08, 09 and 10 April 2015, between 12:00 and 15:00 UTC, between 18:00 and 23:00 UTC, as this time period was considered the one of major traffic density

Following the appropriate analysis of collected data, it was determined that the APPROACH CONTROL OF QUITO, with one executive controller and one planning/coordinating controller, has the following capacity declaration:

ATC capacity: **6 aircraft simultaneously**
Airspace capacity : **68 aircraft per hour**

3.13 **Guayaquil ACC Sector capacity calculation – Sector 1**

For the Guayaquil ACC Sector calculation, samples were taken on 15, 16, 17 and 18 December 2014, between 05:00 and 09:00 UTC, between 11:00 and 13:00 UTC and between 22:00 and 00:00 UTC, as this time period was considered the one of major traffic density

Following the appropriate analysis of collected data, it was determined that **Sector 1 of Guayaquil Control Area – ACC1**, with one executive controller and one planning/coordinating controller, has the following capacity declaration:

ATC capacity: **10 aircraft simultaneously**
Airspace capacity: **69 aircraft per hour**

3.14 **Guayaquil ACC Sector capacity calculation - Sector 2**

For the Guayaquil ACC Sector calculation, samples were taken on 04, 05, 06, 07 and 08 August 2014, between 12:00 and 15:00 UTC, between 16:00 and 18:00 UTC and between 22:00 and 00:00 UTC, as this time period was considered the one of major traffic density

Following the appropriate analysis of collected data, it was determined that **Sector 2 of Guayaquil Control Area – ACC2**, with one executive controller and one planning/coordinating controller, has the following capacity declaration:

ATC capacity: **6 aircraft simultaneously**
Airspace capacity: **69 aircraft per hour**

Agenda Item 4: **Assessment of operational requirements to determine the implementation of improvements in communications, navigation and surveillance (CNS) capabilities for operations in route and terminal area**

4.1 Under this Agenda Item, the Meeting analysed the following working papers:

a) WP/07 - *REDDIG II Performance* (presented by the Secretariat)
b) WP/08 - *Follow-up to the implementation of activities under the Ground-Ground and Ground-Air Applications for SAM Region project* (presented by the Secretariat);
c) WP/09 - *Follow-up to ICAO position to WRC-15 and new ICAO frequencies management tool* (presented by the Secretariat);
d) NE/14 - *SITA AMHS Interconnection in ICAO SAM Region* (presented by SITA);
e) NI/07 - *Implementation of new CNS systems in FIR Asuncion* (presented by Paraguay); and
a) IP/09 - *Actions aimed at the protection of the radio spectrum for aeronautical application* (presented by Argentina).

4.2 The aforementioned working papers covered the following issues:

- Activities carried out under project D1, *SAM ATN architecture*
- Activities carried out under project D2, *ATN ground-ground and air-ground applications*
- Other business

ACTIVITIES CARRIED OUT UNDER PROJECT D1 – ATN ARCHITECTURE

Progress made in the implementation of REDDIG II

4.3 Effective implementation of REDDIG II started on 15 January 2015 and was completed on 31 January this year. The following milestones allowed for effective follow-up of activities:

a) Provisional acceptance tests (PSAT): The PSAT – NAT – NT 2022-2141167C document, rev H, was used for this purpose. For the acceptance of this phase, focal points signed the respective documents. Some activities were left pending resolution (failure of some AFTN, AMHS, ATS speech circuits, etc.).

b) Post PSAT REDDIG operation: According to the contract signed between ICAO and INEO, the latter had forty (40) days to solve the issues observed during the PSAT. The deadline has expired, the network is stable and highly reliable, but there are still unresolved issues (implementation of some management functions, IP telephony for ATFM, and intermittent freezing of some satellite modems). Accordingly, the last contractual milestone (FNAT) will not be signed by the focal points until all of the aforementioned pending aspects are corrected.

c) Implementation of a new node in Brasilia: Installation work will start in December 2015, and operation will start in January 2016. Services to be enabled are: one (1) AFTN circuit with Guyana and eleven (11) AMHS circuits with all adjacent countries and with Atlanta via MEVA III, three (3) administrative speech channels; and four (4) ATS switched circuits.

d) Training course: As approved at the RCC/8 meeting, a basic course on Cisco routers and switches (“Interconnecting Cisco Network Devices part 1”) will be conducted on 9-13 November,

the purpose of which is to provide basic training to the personnel that normally manages each node of the network and that lack a sound training in IP networks and related equipment. This first part has an approximate cost of eight thousand dollars (USD 8,000) for a maximum of 16 participants, with one fellowship assigned per State. It is foreseen that the second part of the course ("Interconnecting Cisco Network Devices part 2") will be conducted in April 2016.

e) MEVA-REDDIG interconnection: In order to coordinate the activities required for the implementation of pending aspects for the interconnection of the new MEVA III-REDDIG II networks, the implementation of new services through the revision of the Memorandum of Understanding that establishes technical, operational, and administrative coordination between the MEVA III and REDDIG II networks, the first MEVA III/REDDIG II coordination meeting was held in Oranjestad, Aruba, on 25-26 May 2015.

4.4 The Coordination Meeting was attended by 29 delegates of 9 CAR and SAM States/Territories, one international organisation (COCESNA), the MEVA III service provider, and the REDDIG II Administrator. The following aspects of the meeting must be highlighted:

- Formulation of actions to complete the implementation of switched voice and data circuits (AFTN) foreseen in the MEVA III/REDDIG II interconnection
- Actions to complete the implementation of hot lines in Bogota and Caracas, and AFTN circuits with Atlanta from Bogota and Caracas
- An analysis for the implementation of new circuits in the short term, during the period 2015-2017 *(radar data exchange between Curacao and Venezuela and between Colombia and Panama, AMHS circuits between Atlanta and Caracas – Brasilia – Lima – Piarco and between Bogota and Panama, and one AFTN circuit between Piarco – Curacao)*

4.5 In this regard, the Meeting formulated conclusion MIII/RII 1/2 *Confirmation of new circuits required in the interconnection,* requesting the States involved to confirm the implementation of the new circuits in order to start coordinating their implementation.

4.6 Regarding radar exchange between Curacao and Venezuela, the latter informed that it would resume coordination to analyse the effective implementation thereof.

4.7 Finally, the Meeting reviewed and approved the Memorandum of Understanding between MEVAIII and REDDIG II member States/Territories/International Organisation through conclusion MIII/RII 1/3. **Appendix A** to this part of the report contains the amended MoU.

FOLLOW UP TO ACTIVITIES UNDER PROJECT D2, ATN GROUND-GROUND AND AIR-GROUND APPLICATIONS

Ground-ground applications

Follow-up to the operational interconnection of AMHS systems

4.8 The Meeting took note that the Second Meeting of Air Navigation and Safety Directors, as a result of the delay in the implementation of the AMHS interconnection, proceeded to update the implementation dates.

- ✓ Brazil-Peru interconnection: AMHS tests between the Brasilia MTA and the Lima MTA continued in early September 2015, with positive results for the operational exchange of

messages. In this sense, for the operational interconnection, only the approval is needed for start-up.

- ✓ Argentina-Brazil interconnection: AMHS interconnection tests between Brazil and Argentina were resumed in early October 2015. The connection used is shown in **Appendix B**. Different options were analysed to expedite the interconnection, for which a decision will be made on the first week of November 2015.

- ✓ Brazil-Uruguay interconnection: Tests were conducted with positive results between the Brasilia MTA and the Montevideo MTA.

- ✓ Other connections: Colombia expressed interest in starting AMHS tests with Brazil, Ecuador, Panama, and Venezuela. In this regard, the Meeting will start initial coordination for its implementation.

- ✓ **Appendix C** to this agenda item contains the list of focal points of SAM States in charge of coordinating the implementation of AMHS interconnections, and **Appendix D** contains the updated list of expected interconnection dates.

- ✓ Interconnection activities 2017 – 2019: the Second Meeting of Air Navigation and Safety Directors analysed the implementation of ASBU B0-FICE module, *Improved interoperability, efficiency and capacity through ground-ground integration* for the period 2017-2019.

4.9 This ASBU module included the implementation of the new AMHS interconnections that were not considered during the period 2014-2016, which correspond to the implementation of AMHS interconnections with French Guiana (2) and inter-regional AMHS interconnections (11).

4.10 Inter-regional interconnections would be Argentina (1), Brazil (3), Chile (1), Guyana (1), Peru (1), and Venezuela (4). The distribution for the period 2017-2019 is shown in **Appendix E** to this agenda item.

SITA AMHS Connection

4.11 During the Fifteenth Workshop/Meeting of the SAM Implementation Group (SAM/IG/15) SITA presented the proposal of AMHS interconnection in the ICAO SAM Region with Brazil and Peru. The Meeting recommended that a plan be prepared in accordance with the proposal of interconnection with Brazil and Peru.

4.12 The SITA AMHS website is under production since November 2014 and will accept AMHS interconnections with ANSPs as needed. Currently, SITA has completed AMHS interoperability tests with Switzerland and has commitments with Germany, Russia, Thailand, Singapore, and United States to conduct similar tests, under the coordination of the corresponding ICAO regional offices.

4.13 During initial preparation, ICAO address lists of SITA users, as well as traffic with the SAM Region will be shared for review and validation. Likewise, the documents recently prepared as a result of current commitments with other ICAO Regions for AMHS tests and migration will be shared as a contribution to being better prepared.

4.14 Pursuant to conclusion SAMIG/15/6, the meeting took note of the timetable presented by SITA in this regard, which appears in **Appendix F** to this part of the report.

Operational integration of international AIDC connections in the SAM Region

4.15 Regarding this activity, the Meeting took note of the progress made in the interconnections. These activities are addressed in detail in agenda item 5.

Ground-air data link applications

REDDIG access by ANSP to SITA data link

4.16 SITA proposed that the REDDIG be used by ANSPs (air navigation service providers) to access the SITA ACARS service to replace the current access to the ground network provided by SITA, with the benefit of using an extremely secure and reliable network designed for ATC purposes, with the purpose of accessing the data link service, which is increasing important for ATC operations.

4.17 The REDDIG would also give an added value to ANSPs, since they would no longer pay SITA charges for the current access link from the SITA ground network to the SITA ACARS service.

4.18 SITA would support any ANSP willing to test the use of REDDIG to access the ACARS service, and will work with the REDDIG service provider to establish access, without losing sight of all the requirements related to both networks. Accordingly, on 15 April this year, the Administration of Chile agreed to test the access to the SITA data service through the REDDIG node in Santiago (with real data link traffic, keeping the conventional connection as backup). These tests started on 8 October and are proceeding successfully. At present, the data link service is going through REDDIG II and will continue on trial for a period of three months. **Appendix G** to this agenda item contains the connection diagram of the data link service in Chile through REDDIG II and the SITA network.

OTHER MATTERS

Follow up to the position of ICAO at the WRC 2015, and new ICAO frequency management tool

4.19 For timely and continuous availability of an adequate radio spectrum worldwide, aviation requirements for the radio frequency spectrum must be firmly supported by all ICAO Contracting States at all international forums where the issue of spectrum allotment is addressed, so as to ensure that all the requirements for vital aviation safety services are duly presented and understood.

4.20 The updated position of ICAO will be presented at the ITU WRC-15 by way of information. *Only the active support of the States will guarantee that WRC-15 results reflect the spectrum needs of civil aviation.* Therefore, it is important to recall Assembly Resolution A38-6 (Support to ICAO policy on radio frequency spectrum matters) and urge States to make sure, inasmuch as possible, that their national delegation to the conference includes experts of the civil aviation authority and other sectors involved in civil aviation, who are fully willing to defend the interests of aviation. Likewise, when preparing for the conference at national and regional level, civil aviation experts from their administration and other civil aviation stakeholders should participate.

4.21 A delegation from ICAO Headquarters will participate at the WRC-15 to present the position of ICAO. The delegation will be available to assist the States, taking care of coordination with the delegates of the aviation sector during the conference, as required.

Relevant aspects concerning the ICAO position to the World Radiocommunication Conference 2015

4.22 The ICAO position covers all radio communication regulatory aspects related to the aeronautical matters contained in the WRC-2015 agenda. Issues of major interest for aviation include:

- ✓ *Identification of additional frequency bands for international mobile telecommunications (IMT)*

4.23 Within the framework of this agenda item, the telecommunications industry is trying to achieve 1200 MHz of additional spectrum in the 300 MHz to 6 GHz range for mobile and broadband applications. It is expected that there will be pressure to reuse a given number of aeronautical frequency bands, especially some of the primary surveillance radar (PSR) bands.
Likewise, pressure is expected regarding the allocation of existing bands, which are vital for the operation of very-small-aperture-terminal (VSAT) ground-ground communication networks, especially in tropical regions, such as REDDIG II.

- ✓ *Possible means to regulate radio communications to facilitate the use of non-secure frequency bands of the satellite service for a safety-critical application, i.e. command and control of remotely-piloted aircraft systems (RPAS) in non-segregated airspace*

4.24 The fixed satellite service bands involved are currently used in support of RPAS in segregated airspace. However, these frequency bands are not free from interference as compared to aeronautical security allocations. At present, the radio communications regulations do not contain any special measures to protect these frequency bands.

- ✓ *Possible aeronautical allocations in support of wireless avionics intra-communications (WAIC) systems*

4.25 The use of wireless technologies on board the aircraft may reduce the mean weight of systems, reducing the amount of fuel required to fly, with the resulting environmental benefit. WAIC will only transmit content related to aviation safety between two or more points within the same aircraft.

- ✓ *Potential deletion of names of countries from footnotes related to the allocation of spectrum to non-aeronautical services in aeronautical bands*

4.26 In general, for security reasons, ICAO advises against the allocation of spectrum to non-aeronautical uses in aeronautical bands through country notes, since such allocations may cause interference that jeopardises safety services.

- ✓ *Global tracking of civil aviation flights*

4.27 Following the tragic disappearance of flight MH370, the ITU Plenipotentiary Conference agreed in October 2014 to instruct the WRC-15 to address, as a matter of urgency, the issue of global tracking of civil aviation flights (PP-14, Resolution 185).

4.28 In February 2015, the ICAO Second High-Level Safety Conference (2nd HLSC) identified satellite-based reception of automatic dependent surveillance - broadcast (ADS-B) as the future technology that might support flight tracking in oceanic and remote airspaces, and recommended that: *ICAO encourage States and ITU to analyse the spectrum allocation requirements at the WRC -15 so as to obtain the frequency spectrum allocations needed for global air traffic service (ATS) surveillance using this technology*.

4.29 The full ICAO position to the WRC-15 is shown in **Appendix H**. In this regard, States are urged to consider the possibility of incorporating the attached information into their position before the WRC-15, and for their delegation to be willing to support the ICAO position on matters related to international civil aviation.

- ✓ *Frequency assignment planning criteria for aeronautical radio communications and navigation systems*

4.30 ICAO Doc 9718 (Handbook) contains information on civil aviation radio frequency requirements, and, in Volume II, contains the frequency assignment planning criteria.

4.31 The CAR/SAM Regional Air Navigation Plan (Doc 8733), Volume I, describes coordination and management required to keep frequency assignment lists COM 1, COM 2 and COM 3, updated by ICAO and the States.

4.32 In order to support the States in the designation of frequencies for new equipment to be installed, ICAO has developed an on-line application to calculate the appropriate geographical separation for co-channel and adjacent frequencies. The tool is called Frequency Management and runs on a platform called File Maker Version minima 13.

Special events for 2016

4.33 The Meeting took note of the information presented by the Secretariat regarding the conduction of two specific events in 2016:

a) Workshop for the implementation of ATN – data link applications and ground-ground integration, to be held on 18-21 April 2015 in Saint Maarten (NAM CAR SAM event).

b) Workshop / seminar for GNSS implementation in support of PBN (Lima, Peru, 15 to 17 August 2015) (NAM CAR SAM).

Implementation of new CNS systems in FIR Asuncion

4.34 The Meeting took note on the improvement made in CNS systems at the TMA Paraguay, contributing to the improvement of air traffic services, concerning the Control of air traffic and flight information service, as well as alerting service. Within the improvements made, is the implementation of integrating modules in the system AMHS (to present plans of flights, different forms, registration of aeronautical professionals and access to the AIS and MET databases via the internet), installation of new radio AIDS (DVOR brand SELEX MOD 1150 to at the international airport of Asuncion, replacement VOR/DME and ILS CAT 1 at Guarani international airport in December 2015, six stations ADS B (Asuncion, Minga Guazú, San Juan Bautista Misiones, Concepción, Mariscal Estigarribia, Conception) and the beginning of the process of modernization of the automated system of the ACC Asuncion.

Appendix A

MEMORANDUM OF UNDERSTANDING BETWEEN STATES/TERRITORIES/INTERNATIONAL ORGANISATIONS MEMBERS OF MEVA III AND REDDIG II PROJECT ORGANISATION

1. SECTION 1. INTRODUCTION AND PURPOSE OF THIS DOCUMENT

1.1 INTRODUCTION

1.1.1 With the aim of effectively and efficiently fulfilling aeronautical telecommunications requirements in these regions, the members of the MEVA II and REDDIG VSAT networks decided to interconnect the two networks. For this purpose, the Members agreed to establish this Memorandum of Understanding (MoU). This Agreement is being established jointly under coordination of the ICAO North American, Central American, and Caribbean (NACC) Office in Mexico City, Mexico and the ICAO South American (SAM) Office, in Lima, Peru.

1.1.2 The Third MEVA II / REDDIG Coordination Meeting (MR/3) concluded that the interconnection implementation will operate for a five-year period, as an initial basis, after finalising the implementation.

1.1.3 The First MEVA III / REDDIG II Coordination Meeting concluded that the interconnection implementation will be renewed for five initial year period, after finalizing the implementation.

1.1.4 The main body of this document consists of four (4) sections and 2 Appendices. The content of the sections and appendices is summarised below: In accordance with the interconnection development, when considered necessary, and if the interested Parties of both networks agree to do so, other Appendices could be added as necessary.

Section 1.0: Presents a brief overview and statement of purpose.

Section 2.0: Provides an explanation of the Technical Cooperative Agreement process.

Section 3.0: Describes the technical terms of reference.

Section 4.0: Describes the financial responsibilities of the parties to this agreement.

Appendix A: A list of reference documents used in support of this Agreement.

Appendix B: Technical-operational coordination agreement for the establishment of VSAT MEVA III and REDDIG II networks interconnection

1.1.5 This document is based on the former MEVA II - REDDIG Memorandum of Understanding (MoU).

1.2 **SECTION 1 – PURPOSE**

1.2.1 The goal of this MoU is to foster a coordinated plan for in the development of MEVA III and REDDIG II networks and its interconnection implementation.

1.2.2 This MoU is a living document through which members of the MEVA III and REDDIG II networks shall convene, as necessary and at locations agreed upon, to review or amend the details of the Agreement. Revised versions of this Agreement, or paragraph changes, shall be coordinated and distributed by the ICAO NACC and SAM Regional Offices to the signatory parties of the Agreement as appropriate.

1.2.3 This MoU document establishes the following coordination and cooperation process:

a) The holding of coordination meetings, if required, to analyse and identify the new service requirements for the MEVA III and REDDIG II VSAT networks interconnection.

b) The exchange of technical reports and documentation, program plans and schedules, as may become necessary, to assure the successful and timely completion of these efforts.

c) Operational-technical coordination between the Parties involved in MEVA III and REDDIG II networks, as necessary.

d) Planning, technical coordination, and development participating member States/Territories/International Organisations of the MEVA III and REDDIG II Networks.

2. **SECTION 2 – THE TECHNICAL COOPERATIVE AGREEMENT PROCESS**

2.1 To reach the goal of this MoU, the MEVA III and REDDIG II members have developed an interconnection solution to operate during a five-year phase after the implementation of the interconnection of the MEVA III and REDDIG II Networks.

2.2 **RELATIONSHIPS AND RESPONSIBILITIES OF THE PARTIES**

2.2.1 In order to achieve the interconnection of the networks in a timely and mutually beneficial way, the parties to this Agreement recognize the need to coordinate their actions and exchange updated operational-technical information.

2.2.2 The Parties also recognize the need to develop common technical solutions for interconnecting and/or integrating these networks, in a manner that shall not negatively impact the planned operation, performance, or management of the either network.

2.2.3 ICAO NACC and SAM Regional Offices shall convene coordination meetings, as needed.

2.2.4 The Parties of this MoU agree to exchange reports, technical documents, plans and programming that may be necessary in order to guarantee the interconnection and the implementation of the new services.

2.2.5 The Parties of this MoU agree to implement during a 5 year phase the MEVA III / REDDIG II interconnection solution as presented in Appendix B.

3. SECTION 3 – TECHNICAL TERMS OF REFERENCE

3.1 The interconnection solution's objectives and their technical operational principles are described under the Appendix B of this document.

4. SECTION 4 – FINANCIAL RESPONSIBILITIES OF THE NETWORK PARTIES

4.1 MEVA III / REDDIG II Members shall, as individual administrations, be responsible for their own financial obligations, in accordance with the Agreement contained in Appendix B.

4.2 The Parties to this Agreement understand that they shall not commit to any action that may result in a financial obligation to other Parties, without first obtaining an Agreement, in writing, from all other parties to this Agreement.

NOTES:

MEVA III - The term "MEVA III", as used in this document, refers to the VSAT network currently providing voice and data aeronautical telecommunications services to States/Territories/International Organisations in the Caribbean Region. The network is managed by Caribbean States/Territories/International Organisations members, through the Technical MEVA Group (TMG), and is coordinated by the ICAO NACC Regional Office.
REDDIG II - The term "REDDIG II", as used in this document, refers to the VSAT network presently implemented in the South American region under the technical cooperation project RLA/03/901 coordinated by the ICAO Lima Office.

APPENDIX A

A LIST OF REFERENCE DOCUMENTS USED IN SUPPORT OF THIS AGREEMENT

- Contract N| 2250128 between the International Civil Aviation Organization and COMSOFT GmbH for the provision of the Interconnection of the MEVA III and REDDIG II Satellite Telecommunications Network for MEVAIII and REDDIG II Member States/Territory/International Organization
- Acuerdo de gestión de servicios entre la Cooperación Centroamericana de Servicios de Navegación Aérea (COCESNA) y la OACI Proyecto RLA/09/901 Interconexión del Nodo MEVAII de COCESNA a la REDDIG
- Contract No. 22501200 between the International Civil Aviation Organization and the consortium consisting of INEO Engineering and Systems and LEVEL 3 PERÚ S.A. for the Provision of a New Regional Aeronautical Telecommunication Network (REDDIG II)and associated equipment and services
- Manual de operación de la REDDIG II
- MEVA III Document of Agreement
- MEVA III Service Level Agreement

APPENDIX B

TECHNICAL-OPERATIONAL COORDINATION AGREEMENT FOR THE ESTABLISHMENT OF VSAT MEVA III AND REDDIG II NETWORKS INTERCONNECTION

1. SECTION 1 – PURPOSE OF THIS AGREEMENT

1.1 PURPOSE

1.1.1 To establish technical, operational and administrative aspects necessary for the digital VSAT MEVA III and REDDIG II networks interconnection, to meet aeronautical telecommunications requirements between the CAR/SAM Regions.

2. SECTION 2 – CO-OPERATIONAL TECHNICAL PROCESS OF THE AGREEMENT

2.1 RELATIONSHIP AND RESPONSIBILITIES OF THE PARTIES

2.1.1 During this stage, the management of MEVA III and REDDIG II shall continue with their respective service providers, i.e, REDDIG II shall continue with its REDDIG Administration, and MEVA III, with the MEVA III Service Provider.

2.1.2 States/Territories/International Organisations members of MEVA III and REDDIG II networks shall be responsible for the normal operation of each of their nodes, having to establish mechanisms necessary to ensure the degree of availability required for each of the services under consideration.

3. SECTION 3 – TECHNICAL TERMS OF REFERENCE

3.1 TECHNICAL TERMS OF REFERENCE

3.1.1 Members of MEVA III and REDDIG II networks have mutual interest in establishing the interconnection of their respective communications networks in a manner that they provide the capacity for current and future voice and data aeronautical telecommunications services between the designated nodes within these networks, so as to support aeronautical telecommunications in the CAR/SAM Regions.

3.1.2 The interconnection technical solution shall be carried out under premise that the REDDIG II and MEVA III VSAT network is developed under a full mesh network topology, using TDMA satellite access, as well as a IS-14 satellite transponder with a beam directed over United states / Latin America, C-band operation frequencies and co-linear vertical polarisation.

3.1.3 For the interconnection of the additional equipment to be initially installed at each node involved, MODEM, as well as any other necessary equipment required.

3.1.4 The interconnection implies the following implementations:

a) Additional equipment at Bogota (Colombia) and Caracas (Venezuela), REDDIG II nodes; and

b) Additional equipment at Tegucigalpa, Honduras, COCESNA MEVA III node.

3.2 **MANAGEMENT TERMS OF REFERENCE**

3.2.1 Implementation of the interconnection option shall not involve modifications to the technical, operational and control management of MEVA III and REDDIG II networks, with exception of the necessary maintenance coordination procedures detailed in paragraph 3.2.5 of this Attachment.

3.2.2 The configuration, synchronisation, supervision and control of additional MODEMs participating in the interconnection and installed at REDDIG II nodes, shall be carried out by the MEVA III Network Control Centre (NCC). Also, the configuration, synchronisation, supervision and control of additional MODEMs participating in the interconnection and installed at MEVA III nodes, shall be carried out by the REDDIG NCC.

3.2.3 The bandwidth, number and type of circuits installed in the MEVA III node for communications with REDDIG II, shall be managed by REDDIG II.

3.2.4 The bandwidth, number and type of circuits installed in the REDDIG II node for communications with MEVA III, shall be managed by MEVA III.

3.2.5 **Maintenance coordination procedures between the NCCs**

3.2.5.1 When there is any problem in a REDDIG II node, with the MODEM or other equipment involved in the interconnection with MEVA III, the following shall be applied:

a) MEVA III Service Provider shall call the REDDIG II Administration informing of the happening;

b) The REDDIG II Administration shall phone the respective node and shall establish an audio teleconference between MEVA III Service Provider and Caracas or Bogota local technicians, as necessary;

c) REDDIG II NCC, under control of the REDDIG II Administration, shall supervise communications between MEVA III Service Provider and REDDIG II nodes technicians.

d) The MEVA III Service Provider is the only one that may call the REDDIG II Administration to start or close the respective trouble ticket.

3.2.5.2 When there is any problem in a MEVA III node, with the MODEM or other equipment affect the interconnection with REDDIG, the following shall be applied:

a) The REDDIG II Administration shall call the MEVA III Service Provider informing of the happening;

b) The MEVA III Service Provider shall call the respective node and shall establish an audio conference between REDDIG II Administration and local technicians, as necessary;

c) MEVA III NCC, under control of the Service Provider, shall supervise communications between REDDIG II Administration and MEVA III nodes technicians.

d) The REDDIG II Administration is the only one that may call the MEVA III Service Provider to start or close the respective trouble ticket.

3.2.6 **Security requirements**

3.2.6.1 The minimum security arrangements required by REDDIG II, and that should be followed by the MEVA III, are:

a) MEVA III network have no direct communications with public networks.

b) The equipment is not shared with services different to MEVA III.

c) Access restriction to equipment belonging to the network, through the use of a password.

d) The network must exclusively support services to which it was originally constituted for.

3.2.6.2 The minimum security arrangements required by MEVA III, and that shall be followed by REDDIG II, are:

a) REDDIG II network have no direct communications with public networks.

b) The equipment is not shared with services different to REDDIG II.

c) Access restriction to equipment belonging to the network, through the use of a password.

d) The network must exclusively support services to which it was originally constituted for.

4. SECTION 4 – FINANCIAL RESPONSIBILITIES OF THE PARTIES

4.1 EQUIPMENT PURCHASING

4.1.1 Additional equipment to be installed at REDDIG II nodes, with MEVA III MODEMs requirements, can be included in the leased contract established between ICAO, in behalf of the REDDIG II members, and the MEVA III Service Provider in accordance with the requirements established for the interconnection.

4.1.2 Additional equipment to be installed at MEVA III nodes, with REDDIG II MODEMs requirements, can be purchased by MEVA III members (States, Territories, Organisations) in accordance with the requirements established for the interconnection.

4.2 SPARE PARTS LOT PURCHASING

4.2.1 The spare parts for the additional equipment to be installed at the REDDIG II nodes, with MEVA III MODEM and other device requirements, can be included in the leasing contract established between ICAO, on behalf of the REDDIG II States, and the MEVA III Service Provider.

4.2.2 The spare parts for the additional equipment to be installed at the MEVA III nodes, with REDDIG II MODEM and other device requirements, shall be purchased by MEVA III Members.

4.3 MAINTENANCE

4.3.1 The additional equipment that would be installed in the REDDIG II nodes and that would route communications requirements with MEVA III nodes, shall be maintained by the MEVA III Service Provider, under the coordination of the REDDIG II Administration.

4.3.2 The additional equipment that would be installed in the MEVA III node, with communications requirements with REDDIG II nodes, shall be maintained by MEVA III Member, in coordination with the REDDIG II and the MEVA III Service Provider.

4.4 SPACE SEGMENT

4.4.1 The carriers, as well as the band width requirement for communications between REDDIG II nodes shall be the same as those currently rented with INTELSAT. The payment of the space segment to INTELSAT shall continue being carried out through the REDDIG II Administration, who shall be in charge of collecting contributions from each SAM State member of REDDIG II.

4.4.2 The carriers, as well as the band width requirement for communications between MEVA III nodes shall be done through the MEVA III Service Provider. MEVA III members shall pay the bandwidth consumption to the MEVA III Service Provider.

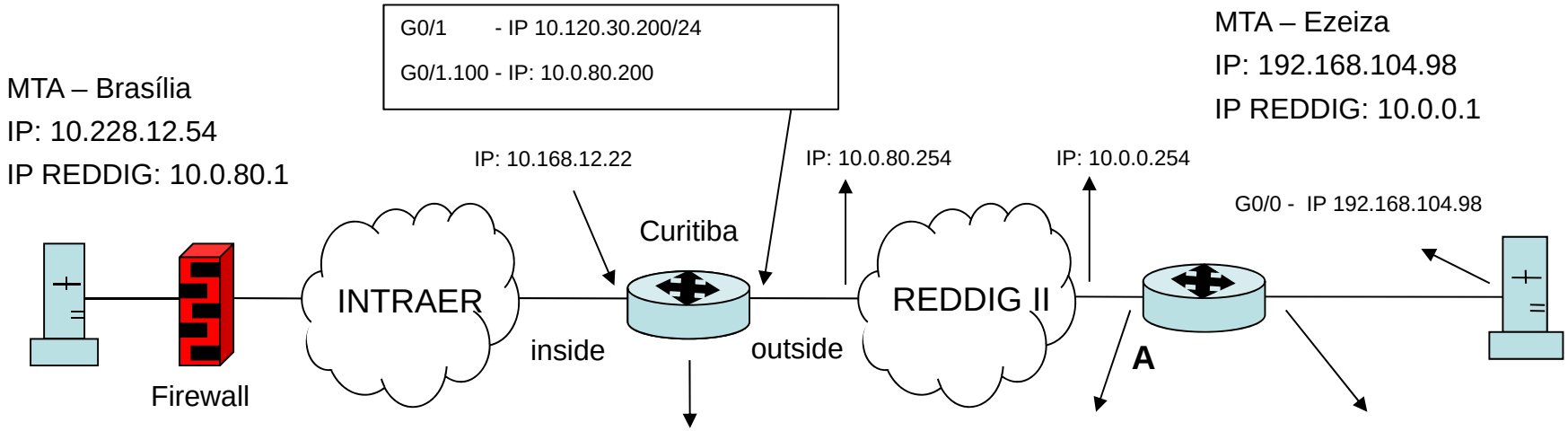
4.4.3 The circuits necessary for communications between a REDDIG II node having MODEMs participating in the interconnection with MEVA III shall be administrated by the MEVA III Service Provider. The amount charged for circuits used by the REDDIG II Member of the aforementioned node mentioned shall be provided by the MEVA III Service Provider, and the respective consumption payment to the provider shall be made through REDDIG II Administration.

4.4.4 The circuits necessary for communications between a MEVA III node having MODEMs participating in the interconnection with REDDIG II shall be administrated by REDDIG II. The amount charged for circuits used by the mentioned node shall be provided by the REDDIG Administration, and the respective consumption payment shall be made by the MEVA II member of the aforementioned node to the REDDIG II Administration.

- END -

Esquema para Interconección
AMHS/interconnection AMHS diagrams

Brasília/Ezeiza



APÉNDICE C/APPENDIX C

NATIONAL FOCAL POINTS/PUNTOS FOCALES NACIONALES
IMPLEMENTATION OF INTERCONNECTION OF AMHS SYSTEM /IMPLANTACIÓN INTERCONEXIÓN DE SISTEMAS AMHS

STATE/ ESTADO	ADMINISTRATION/ ADMINISTRACIÓN	NAME/ NOMBRE	POST/ CARGO	TELEPHONE/ TELEFONO	E-MAIL
ARGENTINA	DGCTA/ANAC	Javier Vittor	Especialista CNS	(54 11) 4480-2362 (54 911) 6894-0692	javiervittor@gmail.com
		Moira Callegari	Jefe departamento CNS (ANAC)	(54 11) 594-13097	mcallegare@anac.gob.ar
BOLIVIA	AASANA	Remigio Blanco	Responsable de Telecomunicaciones AASANA	(591 2) 237-0340	rblanco@aasana.bo
BRAZIL/ BRASIL	DECEA	Francisco Almeida	Jefe de División de Coordinación técnica SDTE/DECEA	(55 21) 2101-6230 (55 21) 99499-6762	franciscoalmeida@hotmail.com
		Tomy Marques de Souza	Asesor de comunicaciones	(21) 21016392 (5521)982547971	tomytms@decea.gov.br
COLOMBIA	UAEAC	Gabriel Guzmán	Especialista de Comunicaciones	(571) 296-2940 (57) 317-656 7202	gabriel.guzman@aerocivil.gov.co
CHILE	DGAC	Christian Vergara	Especialista comunicaciones	(56 2) 836-4005 (56 2) 644-8345	cvergara@dgac.gob.cl
ECUADOR	DAC	Raul Avellan	Especialista CNS coordinador sistema AMHS	(593 4) 269-2829 (593 9) 9530-2735	raul.avellan@aviacioncivil.gob.ec
GUYANA	Guyana Civil Aviation	Mortimer Salisbury	Supervisor - AN & T	(592) 261-2569	mbsalisbury2000@yahoo.com
GUYANA FR.					
PANAMA	Autoridad Aeronáutica Civil (AAC)	Daniel de Avila	Supervisor Dep. de COM	507 315 9877 a	ddavilah@hotmail.com
		Abdiel Vásquez	Jefe Depart. CNS	507) 315-9877/78/44	abvasquez@aeronautica.gob.pa

STATE/ ESTADO	ADMINISTRATION/ ADMINISTRACIÓN	NAME/ NOMBRE	POST/ CARGO	TELEPHONE/ TELEFONO	E-MAIL
PARAGUAY	DINAC	Víctor Morán Maldonado	Jefe Departamento de Comunicaciones	(595 21) 758 5208	moranchu@gmail.com
		Alejandro Ibarrola	Jefe sección AMHS		aleiba40@gmail.com
PERÚ	CORPAC	Jorge Garcia	Jefe de Comunicaciones	(511) 2303131	jgarcia@corpac.gob.pe
		Raul Anastasio Granda	Supervisor Comunicaciones AMHS-AFTN Área de Comunicaciones Fijas Aeronáuticas	(511) 230-1018	ranastacio@corpac.gob.pe
SURINAM/ SURINAME	Ministry of Transport, Communication and Tourism, Civil Aviation Department	Mitchell Themen	CNS Technical Division	(597) 325-123 (597) 325-172 (597) 497-143	mickiano@live.com
URUGUAY	DINACIA	Wilson Pelayo	Jefe de Comunicaciones	(598) 26826224	wiledda@hotmail.com
VENEZUELA	INAC	Samuel Sánchez	Jefe coordinación AMHS		s.sanchez@inac.gob.ve
		Norelys Blanco	Servicios Integrados COM Maiquetía (SIM-COM)	58 212 3552010	norelys.blanco@inac.gob.ve

APPENDIX D

AMHS INTERCONNECTION REQUIREMENT AND DATE OF IMPLEMENTATION

STATE	AMHS INTERCONNECTION REQUIREMENT/	DATE OF IMPLEMENTATION/	REMARKS
Argentina	Bolivia	Mar 2016	
	Brazil	Dec 2015	Operational implementation pending.
	Chile	Dec 2016	
	Paraguay	Mar 2012	Implemented
	Peru	Nov 2015	
	Uruguay	Jun 2016	
Bolivia	Argentina	Mar 2016	
	Brazil	Apr 2016	
	Peru	May 2016	
Brazil	Argentina	Dec 2015	Operational implementation pending
	Bolivia	Apr 2016	
	Colombia	Mar 2016	
	Guyana	Mar 2016	
	French Guiana	TBD	AMHS implementation pending
	Paraguay	Dec 2015	
	Peru	Nov 2015	
	Suriname	Dec 2016	
	Uruguay	Dec 2015	
	Venezuela	Dec 2016	
Chile	Argentina	Dec 2016	
	Peru	Dec 2015	
Colombia	Brazil	Mar 2016	
	Ecuador	Dec 2015	
	Panama	Dec 2016	
	Peru	Sep 2010	Implemented
	Venezuela	Jun 2016	
Ecuador	Colombia	Dec 2015	
	Peru	Jul 2012	Implemented
	Venezuela	Dec 2016	
French Guiana (France)	Brazil	TBD	AMHS implementation pending
	Venezuela	TBD	AMHS implementation pending
Guyana	Brazil	Mar 2016	

STATE	AMHS INTERCONNECTION REQUIREMENT/	DATE OF IMPLEMENTATION/	REMARKS
	Suriname	Jun 2011	Implemented
	Venezuela	Dec 2016	
Panama	Colombia	Dec 2016	
Paraguay	Argentina	Mar 2012	Implemented
	Brazil	Dec 2015	
Peru	Argentina	Nov 2015	
	Bolivia	May 2016	
	Brazil	Nov 2015	Operational implementation pending.
	Chile	Dec 2015	
	Colombia	Sep 2010	Implemented
	Ecuador	Jul 2012	Implemented
	Venezuela	Jun 2016	
Suriname	Brazil	Dec 2016	
	Guyana	Jun 2011	Implemented
	Venezuela	Jun 2016	
Uruguay	Argentina	Jun 2016	
	Brazil	Dec 2015	
Venezuela	Brazil	Dec 2016	
	Colombia	Jun 2016	
	Ecuador	Dec 2016	
	Guyana	Dec 2016	
	French Guiana	TBD	AMHS implementation pending.
	Peru	Jun 2016	
	Suriname	Jun 2016	

APPENDIX E

IMPLEMENTATION OF BLOQUE B0-FICE ELEMENTS FOR THE PERIOD 2017-2019

AMHS INTERCONNECTION IMPLEMENTATION

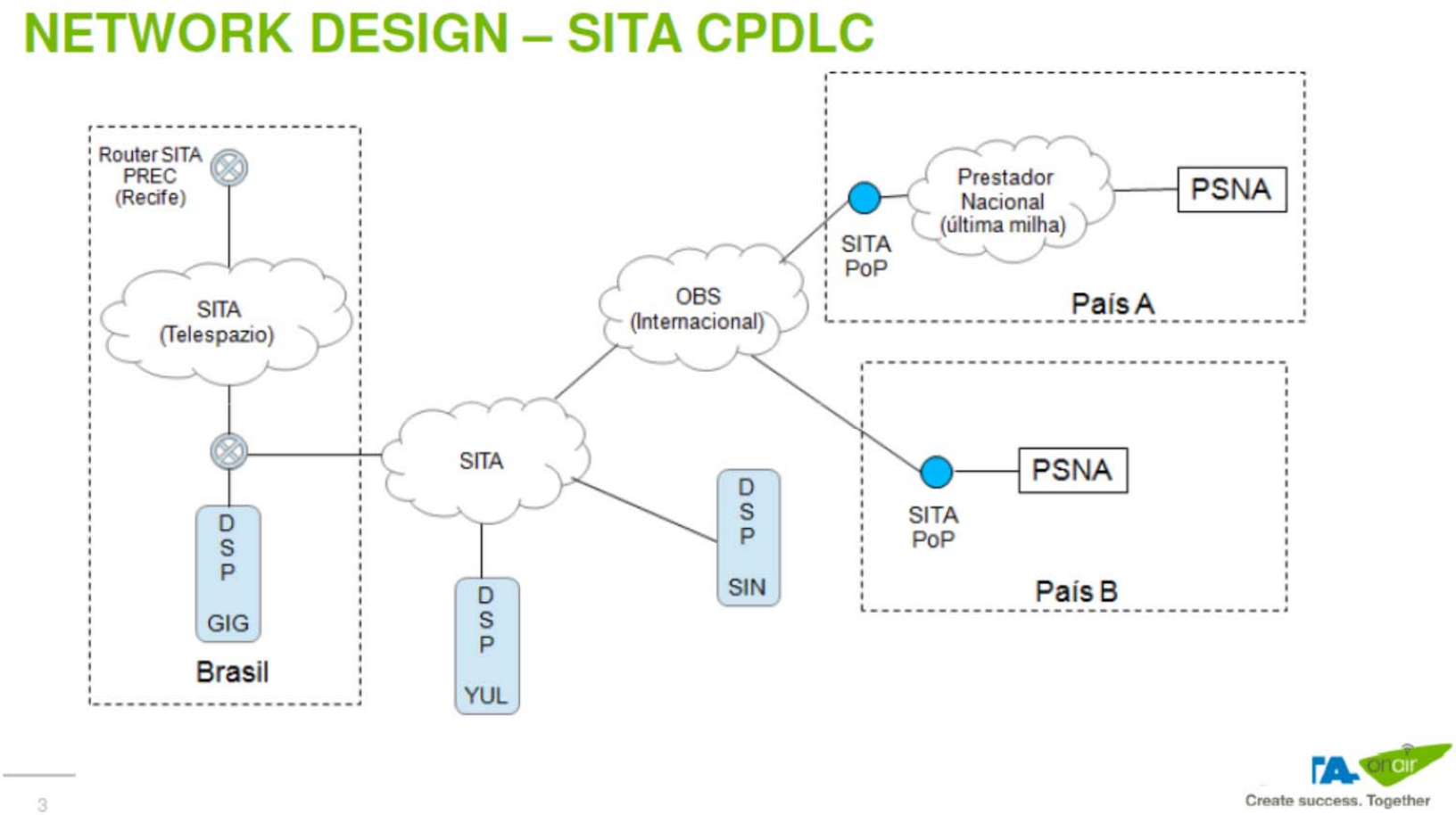
B0 – FICE: Increased interoperability, efficiency and capacity through ground-ground integration						
ELEMENTS	**SCOPE**	**INDICATORS / METRICS**	**GOALS: %/ Date**			**STATUS**
			2017	***2018***	***2019***	
AMHS implementation/ interconnection	All States	Indicator: % of AMHS systems interconnected Support metrics: Number of AMHS systems interconnected **13 AMHS systems interconnected by the end of 2019**	5	5	3	By the end of 2016, 26 AMHS interconnections would be implemented
Implementation of AIDC interconnections between adjacent ACCs	All States	Indicator: % of interconnections implemented between adjacent ACCs Support metrics: Number of AIDC interconnections implemented between adjacent ACCs **Implementation of 26 AIDCs by the end of 2019**	13	6	7	
Implementation of domestic IP networks	All States	Indicator: % of States that have implemented domestic IP networks Support metrics: Number of domestic IP networks implemented **7 States implemented by the end of 2019**	3	2	2	

APPENDIX F

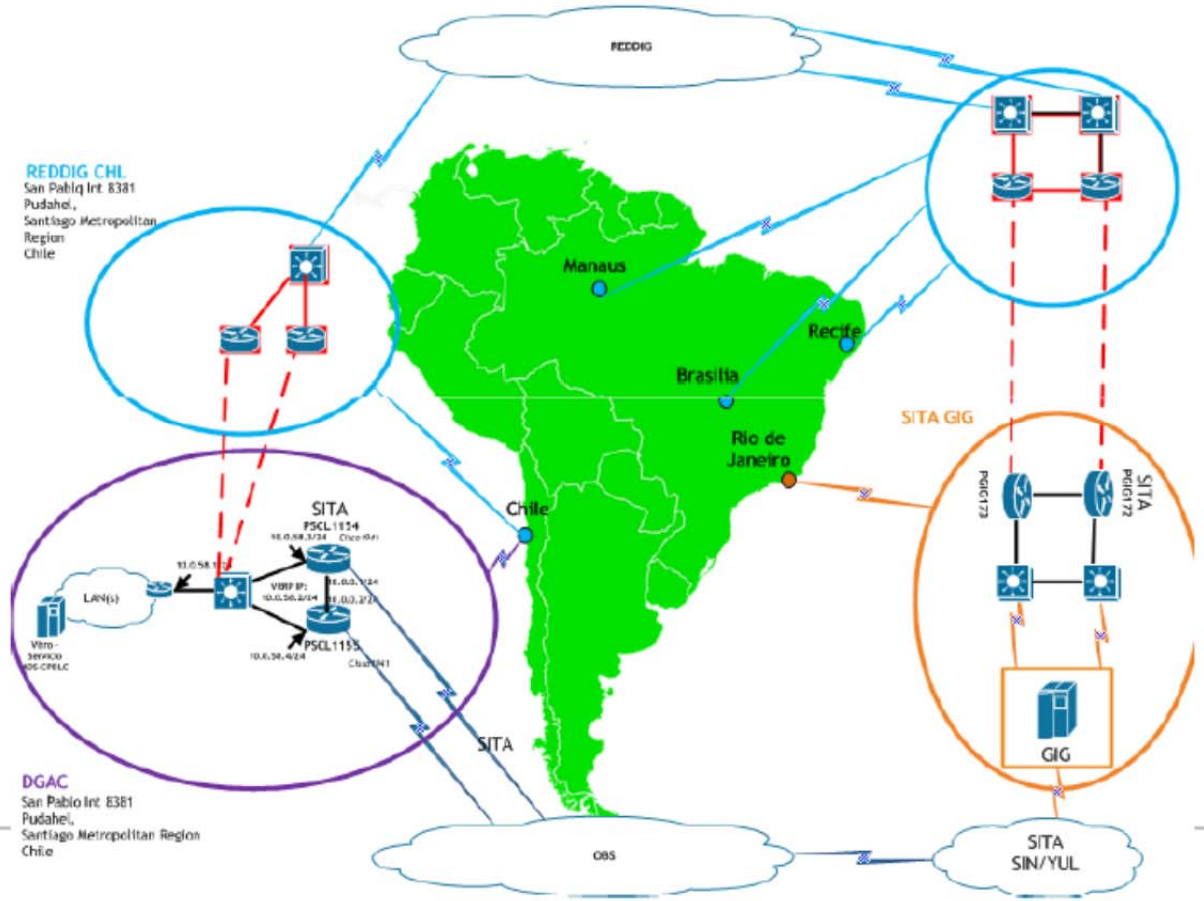
Proposed Plan of interconnection and testing for the SITA AMHS interconnection with Brazil

	Step 1 Solution Agreement	Step 2 Establish IOT document	Step 3 Establish Infrastructure	Step 4 IP and AMHS connection testing	Step 5 AMHS Tests	Step 6 Operational Production	Target Risk Assessment	
Target Baseline For Projection Completion By End of July 2016	30-Nov	15-Jan	15-Mar	15-Apr	15-May	15-Jul	Missing Baseline Date For The Completion of The Active Step	Missing Baseline Project Completion Date
Brazil (ANAC)								

APPENDIX G


NETWORK DESIGN – SITA CPDLC
Router SITA PREC (Recife)
SITA (Telespazio)
SITA
OBS (Internacional)
SITA PoP
Prestador Nacional (última milha)
PSNA
País A
PSNA
SITA PoP
País B
D S P GIG
Brasil
D S P YUL
D S P SIN
3
Create success. Together

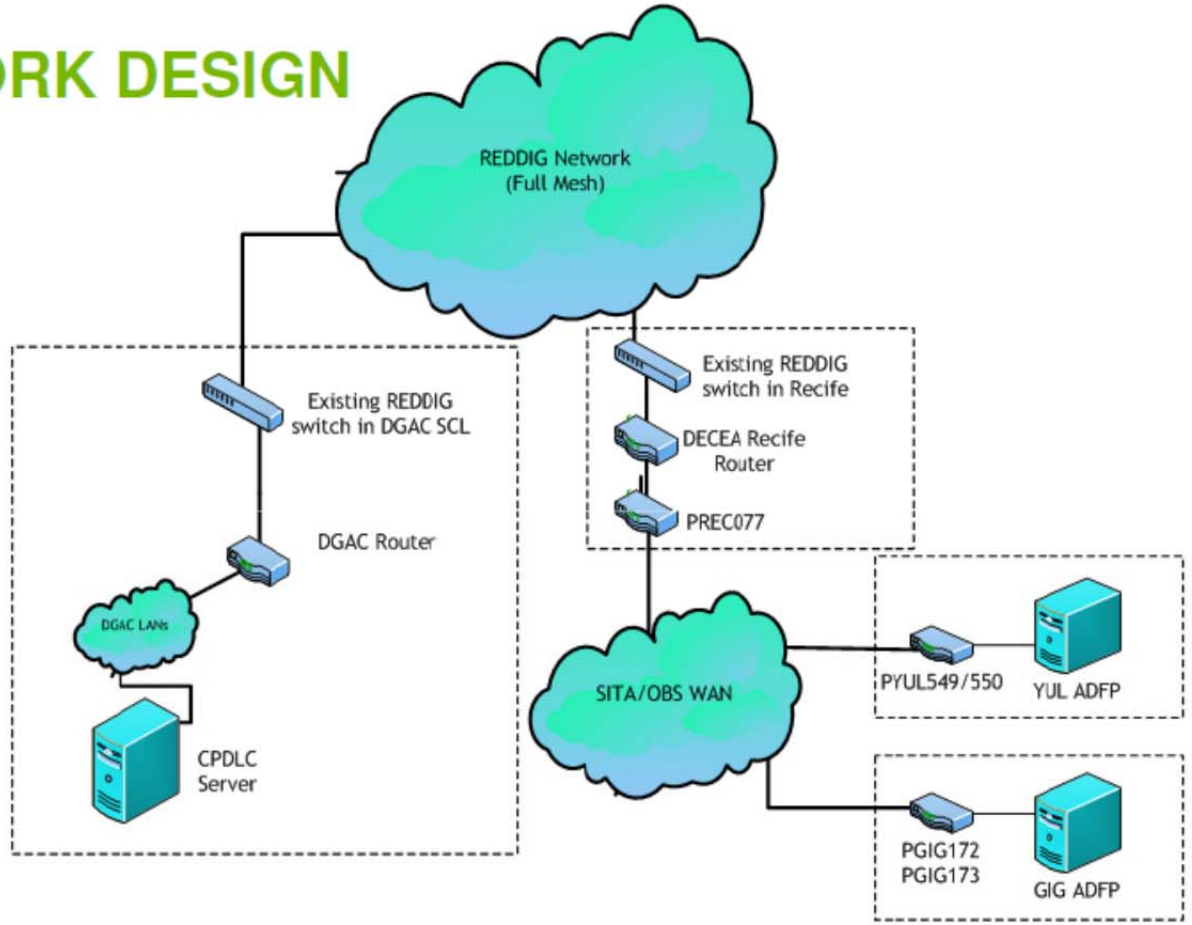
NETWORK DESIGN - PROPOSAL



4

SITA on air
Create success. Together

NETWORK DESIGN



APPENDIX H

ICAO POSITION FOR THE INTERNATIONAL TELECOMMUNICATION UNION (ITU) WORLD RADIOCOMMUNICATION CONFERENCE 2015 (WRC-15)

Attachment C to State letter E 3/5.15-15/52

ICAO POSITION FOR THE INTERNATIONAL TELECOMMUNICATION UNION (ITU) WORLD RADIOCOMMUNICATION CONFERENCE 2015 (WRC-15)

SUMMARY

This paper reviews the agenda for the ITU WRC-15, discusses points of aeronautical interest and provides the ICAO Position for these agenda items.

The ICAO Position aims at protecting aeronautical spectrum for radiocommunication and radionavigation systems required for current and future safety-of-flight applications. In particular, it stresses that safety considerations dictate that exclusive frequency bands must be allocated to safety critical aeronautical systems and that adequate protection against harmful interference must be ensured. It also includes proposals for new aeronautical allocations to support new aeronautical applications.

Support of the ICAO Position by Contracting States is required to ensure that the position is supported at the WRC-15 and that aviation requirements are met.

CONTENTS

1. INTRODUCTION

1.1 The ICAO Position on issues of interest to international civil aviation to be decided at the 2015 ITU World Radiocommunication Conference (WRC-15) is presented below. The agenda of this Conference is contained in the attachment. The ICAO Position is to be considered in conjunction with sections 7-II and 8 of the *Handbook on Radio Frequency Spectrum Requirements for Civil Aviation, Volume I – ICAO spectrum strategy, policy statements and related information* (Doc 9718, Volume 1, First Edition - 2014). Doc 9718 is available on http://www.icao.int/safety/acp (see webpage: Repository). Also available at the above-mentioned website are the WRC-15 relevant ITU Resolutions referenced in the ICAO Position.

1.2 ICAO supports the working principle which was utilized in studies for WRC-07 and WRC-12. This working principle recognizes that the compatibility of ICAO standard systems with existing or planned aeronautical systems operating in accordance with international aeronautical standards will be ensured by ICAO. Compatibility of ICAO standard systems with non-ICAO standard aeronautical systems (or non-aeronautical systems) will be addressed in ITU.

2. ICAO AND THE INTERNATIONAL REGULATORY FRAMEWORK

2.1 ICAO is the specialized agency of the United Nations providing for the International regulatory framework for Civil Aviation. The Convention on International Civil Aviation is an international treaty providing required provisions for the safety of flights over the territories of the 191 ICAO Member States and over the high seas. It includes measures to facilitate air navigation, including international Standards and Recommended Practices, commonly referred to as SARPs.

2.2 The ICAO standards constitute rule of law through the ICAO Convention and form a regulatory framework for aviation, covering personnel licensing, technical requirements for aircraft operations, airworthiness requirements, aerodromes and systems used for the provision of communications, navigation and surveillance, as well as other technical and operational requirements.

3. SPECTRUM REQUIREMENTS FOR INTERNATIONAL CIVIL AVIATION

3.1 Air transport plays a major role in driving sustainable economic and social development in hundreds of nations. Since the mid-1970s, air traffic growth has consistently defied economic recessionary cycles, expanding two-fold once every 15 years. In 2014, air transport directly and indirectly supported the employment of 58 million people, contributing over $2.4 trillion to global Gross Domestic Product (GDP), and carried over 3.2 billion passengers and 52 million tonnes of cargo.

3.2 The safety of air operation is dependent on the availability of reliable communication and navigation services. Current and future communication, navigation and surveillance/air traffic management (CNS/ATM) provisions are highly dependent upon sufficient availability of radio frequency spectrum that can support the high integrity and availability requirements associated with aeronautical safety systems, and demand special conditions to avoid harmful interference to these systems. Spectrum requirements for current and future aeronautical CNS systems are specified in the ICAO Spectrum Strategy[1], as addressed by the Twelfth Air Navigation Conference, and as approved by the ICAO Council.

3.3 In support to the safety aspects related to the use of radio frequency spectrum by aviation, **Article 4.10** of the Radio Regulations states that "*ITU Member States recognize that the safety aspects of radionavigation and other safety services require special measures to ensure their freedom from harmful interference; it is necessary therefore to take this factor into account in the assignment and use of frequencies"*. In particular, compatibility of aeronautical safety services with co-band or adjacent band aeronautical non-safety services or non-aeronautical services must be considered with extreme care in order to preserve the integrity of the aeronautical safety services.

3.4 The continuous increase in air traffic movements as well as the additional requirement for accommodating new and emerging applications such as Unmanned Aircraft Systems (UAS[2]) is placing

---

[1] The ICAO spectrum strategy is included in the ICAO *Handbook on Radio Frequency Spectrum Requirements for Civil Aviation*, Volume I – *ICAO spectrum strategy, policy statements and related information* (Doc. 9718, Vol. 1 – First Edition, 2014).

[2] UAS is referred to in ICAO as Remotely Piloted Aircraft Systems (RPAS).

increased demand on both the aviation regulatory and air traffic management mechanisms. As a result the airspace is becoming more complex and the demand for frequency assignments (and consequential spectrum allocations) is increasing. While some of this demand can be met through improved spectral efficiency of existing radio systems in frequency bands currently allocated to aeronautical services, it is inevitable that these frequency bands may need to be increased or additional aviation spectrum allocations may need to be agreed to meet this demand.

3.5 The ICAO Position for the ITU WRC-15 was developed in 2012 and 2013 with the assistance of the Aeronautical Communications Panel (ACP) Working Group F (frequency) and was reviewed by the Air Navigation Commission (ANC) at the seventh meeting of its 191st Session on 30 October 2012. Following the review by the ANC, it was submitted to ICAO Contracting States and relevant international organizations for comment. After final review of the ICAO Position and the comments by the ANC on 30 April 2013, the ICAO position was reviewed and approved by the ICAO Council on 27 May 2013. When the ICAO Position was established, studies on a number of agenda items for WRC-15 were still on-going in the ITU, regional telecommunication organizations as well as the ICAO Navigation Systems Panel (NSP) and the ICAO Aeronautical Communications Panel (ACP) Working Group F (WG-F)[3]. These studies were completed by March 2015 and an update to the ICAO Position was reviewed by the ANC on 5 May 2015 (199-3) and approved by Council on 17 June 2015 (205/5).

3.6 States and international organizations are requested to make use of the ICAO Position, to the maximum extent possible, in their preparatory activities for the WRC-15 at national level, in the activities of the regional telecommunication organizations[4] and in the relevant meetings of the ITU.

4. AERONAUTICAL ASPECTS ON THE AGENDA FOR WRC-15

Note 1.— The statement of the ICAO Position on an agenda item is given in a text box at the end of the section addressing the agenda item, after the introductory background material.

*Note 2.— No impact on aeronautical services has been identified from WRC-15 Agenda Items **1.2**, **1.3**, **1.8**, **1.9**, **1.13**, **1.14, 1.15**, **3**, **5**, **6**, **7, 9.2** and **9.3** which are therefore not addressed in this position.*

[3] During the ANC panel work programme review in 2013 and 2014, it was noted that ACP WG-F, responsible for drafting the ICAO Position and other material necessary to support the update of the ITU Radio Regulations, has operated as a de facto panel for a number of years. Due to the specialized nature and time criticality of the major deliverables of the tasks assigned to WG-F, those have been progressed directly to the ANC without being addressed by the ACP. Hence, in 2014 the ANC agreed that the work of WG-F should be progressed within a new Frequency Spectrum Management Panel.

[4] African Telecommunication Union (ATU), Asia-Pacific Telecommunity (APT), European Conference of Postal and Telecommunications Administrations (CEPT), Inter-American Telecommunication Commission (CITEL), Arab Spectrum Management Group (ASMG) and the Regional Commonwealth in the Field of Communications (RCC).

WRC-15 Agenda Item 1.1

Agenda Item Title:
To consider additional spectrum allocations to the mobile service on a primary basis and identification of additional frequency bands for International Mobile Telecommunications (IMT) and related regulatory provisions, to facilitate the development of terrestrial mobile broadband applications, in accordance with Resolution 233 (WRC-12).

Discussion:

ITU-R Working Parties 5A and 5D indicated a number of frequency ranges as suitable for possible future deployment of mobile broadband applications including IMT. Based on that input, the following frequency bands/ranges were identified as potential candidate bands 470-694/698 MHz; 1 350-1 400 MHz; 1 427-1 452 MHz; 1 452-1 492 MHz; 1 492-1 518 MHz; 1 518-1 525 MHz; 1 695-1 710 MHz; 2 700-2 900 MHz; 3 300-3 400 MHz; 3 400-3 600 MHz; 3 600-3 700 MHz; 3 700-3 800 MHz; 3 800-4 200 MHz; 4 400-4 5 00 MHz; 4 500-4 800 MHz; 4 800-4 990 MHz; 5 350-5 470 MHz; 5 725-5 850 MHz and 5 925-6 425 MHz. It should be noted that identification was solely based on three criteria: the frequency band/range had to: a) be indicated as suitable by WP5D; b) be proposed by at least one administration; and c) have been studied by the ITU-R.

The following aeronautical systems operate in or near the potential candidate frequency bands/ranges:

1 215 – 1 350 MHz

Primary radar: This band, especially frequencies above 1 260 MHz, is extensively used for long-range primary surveillance radar to support air traffic control in the en-route and terminal environments.

All studies carried out were based on the parameters provided by ITU-R and show that within the same geographical area co-frequency operation of mobile broadband systems and radar is not feasible. Furthermore, there is widespread usage of this frequency range in some countries for radar. In addition, harmonized usage of all or a portion of this frequency range by mobile services for the implementation of IMT may not be feasible, in particular on a global basis. Hence none of the frequency bands in the frequency range were included in the list of potential candidate frequency bands. However, these studies could not agree on the size of the guard band required to protect radars operating in the frequency band 1 300 – 1 350 MHz. Therefore, the proposal to use the adjacent frequency band 1 350 – 1 400 MHz should be treated with caution.

In some countries the band is not fully used by radiodetermination systems, and there were studies undertaken in ITU-R which showed that sharing may be feasible in those countries subject to various mitigation measures, and to co-ordination with potentially affected neighbouring countries. However, no conclusions as to the applicability, complexity, practicability or achievability of these mitigations could be reached.

1.5 / 1.6 GHz

Aeronautical mobile satellite communication systems: Portions of the frequency bands 1 525 – 1 559 and 1 626.5 –1 660 MHz as well as the frequency band 1 610 – 1 626.5 MHz are used for the provision of ICAO standardised satellite communication services. A number of recent studies have been undertaken within ITU-R with respect to the compatibility between terrestrial mobile systems and aeronautical satellite systems and indicated that sharing was not possible. While those bands are not identified as potential candidate bands, adjacent bands have been. Studies related to adjacent band compatibility have identified the need for IMT constraints in order to protect aeronautical satellite systems.

2 700 – 3 100 MHz

Approach primary radar: This band is extensively used to support air traffic control services at airports, especially approach services. There have been a number of studies undertaken within the ITU-R, Europe and the United States on sharing with respect to compatibility with terrestrial mobile systems. All studies carried out were based on the parameters provided by ITU-R and show that within the same geographical area co-frequency operation of mobile broadband systems and radar is not feasible. Furthermore, there is widespread usage of this frequency range in some countries for radar. In addition, harmonized usage of all or a portion of this frequency range by mobile services for the implementation of IMT may not be feasible, in particular on a global basis.

In some countries the band is not fully used by radiodetermination systems, and there were studies undertaken in ITU-R which showed that sharing may be feasible in those countries subject to various mitigation measures, and to co-ordination with potentially affected neighbouring countries. However, no conclusions as to the applicability, complexity, practicability or achievability of these mitigations could be reached.

3 400 – 4 200 MHz and 4 500 – 4 800 MHz

Fixed Satellite Service (FSS) systems used for aeronautical purposes: FSS systems are used in the frequency range 3 400 – 4 200 MHz and the frequency band 4 500 – 4 800 MHz as part of the ground infrastructure for transmission of critical aeronautical and meteorological information (see Resolution **154** (WRC-12) and agenda item 9.1.5). FSS systems in the 3.4 – 4.2 GHz frequency range are also used for feeder links to support AMS(R)S systems. ITU-R Report **M.2109** contains sharing studies between IMT and FSS in the frequency range 3 400 – 4 200 MHz and frequency band 4 500 – 4 800 MHz and ITU-R Report **S.2199** contains studies on compatibility of broadband wireless access systems and FSS networks in the frequency range 3 400 – 4 200 MHz. Both studies show a potential for interference from IMT and broadband wireless access stations into FSS Earth stations at distances of up to several hundred km. Such large separation distances would impose substantial constraints on both mobile and satellite deployments. The studies also show that interference can occur when IMT systems are operated in the adjacent frequency band.

4 200 – 4 400 MHz

Radio altimeters: This frequency band is used by radio altimeters. Radio altimeters provide an essential safety-of-life function during all phases of flight, including the final stages of landing where the aircraft has to be maneuvered into the final landing position or attitude. It should be noted that although adjacent frequency bands/ranges were identified as potential candidate bands, no studies were provided within ITU regarding protection of radio altimeters from unwanted emissions from IMT operating in those adjacent bands/ranges. Studies were carried out within the auspices of ICAO however, and have indicated that deployment of IMT in an adjacent band would cause interference to radio altimeters especially on approach to an airport where their operation is most critical.

5 350 – 5 470 MHz

Airborne weather radar: The frequency range 5 350 – 5 470 MHz is globally used for airborne weather radar. The airborne weather radar is a safety critical instrument assisting pilots in deviating from potential hazardous weather conditions and detecting wind shear and microbursts. This use is expected to continue for the long-term.

5 850 – 6 425 MHz

Fixed Satellite Service (FSS) systems used for aeronautical purposes: The frequency range 5 850 – 6 425 MHz is used by aeronautical VSAT networks for transmission (E-s) of critical aeronautical and meteorological information.

As this agenda item could impact a variety of frequency bands used by aeronautical safety services below 6 GHz it will be important to ensure that agreed studies validate compatibility prior to considering additional allocations.

Other bands important to protect which are not identified as potential candidate frequency bands

It should be noted that the following frequency bands are also used by aeronautical systems and whilst these frequency bands have not been identified, this does not preclude proposals being made which may need to be addressed:

- 406 - 406.1 MHz - Emergency Locator Transmitter
- 960 - 1 215 MHz
  - Distance measuring equipment;
  - 1 030 and 1 090 MHz Secondary surveillance radar;
  - Universal access transceiver;
  - Global navigation satellite systems; and
  - Aeronautical Communications Future Communication System.
- 1 559 - 1 610 MHz - Global navigation satellite systems
- 5 000 - 5 250 MHz
  - Microwave Landing System (MLS);
  - UAS Terrestrial and UAS Satellite communications;
  - AeroMACS; and
  - Aeronautical Telemetry.

ICAO Position:

To oppose any new allocation to the mobile service for IMT in or adjacent to:

- frequency bands allocated to aeronautical safety services (ARNS, AM(R)S, AMS(R)S);

- frequency bands allocated to RNSS and used for aeronautical safety applications; or

- frequency bands used by fixed satellite service (FSS) systems for aeronautical purposes as part of the ground infrastructure for transmission of aeronautical and meteorological information or for AMS(R)S feeder links, unless it has been demonstrated through agreed studies that there will be no impact on aeronautical services.

Due to the potential for serious impact to aeronautical radar systems, global and/or regional allocations to the mobile service for IMT, and/or identification for IMT, should be opposed in any portion of the potential candidate frequency bands/ranges 1 350 - 1 400 MHz and 2 700 - 2 900 MHz. Allocations/identifications on a country/multi-country basis should be contingent on successful completion of coordination with countries within several hundred kilometres of the IMT proponent country's border.

Any new allocations to the mobile service for IMT, and/or identification for IMT, in frequency bands/ranges near that used by radio altimeters (4 200 - 4 400 MHz) should be contingent on successful completion of studies to demonstrate that IMT operations will not cause harmful interference to the operation of radio altimeters.

WRC-15 Agenda Item 1.4

Agenda Item Title:
To consider possible new allocation to the amateur service on a secondary basis within the band 5 250 - 5 450 kHz in accordance with Resolution 649 (WRC-12).

Discussion:

The frequency band 5 450 – 5 480 kHz is allocated on a primary basis to the aeronautical mobile (R) service (AM(R)S) in Region 2. The use of this band for long distance communications (HF) by aviation is subject to the provisions of Appendix **27**. Any allocation made to the amateur service in the frequency band 5 250 – 5 450 kHz under this agenda item must ensure the protection of aeronautical systems operating in the adjacent frequency band 5 450 – 5 480 kHz from harmful interference.

ICAO Position:

To ensure that any allocation made to the amateur service shall not cause harmful interference to aeronautical systems operating under the allocation to the aeronautical mobile (R) service in the adjacent frequency band 5 450 – 5 480 kHz in Region 2.

WRC-15 Agenda Item 1.5

Agenda Item Title:
To consider the use of frequency bands allocated to the fixed-satellite service not subject to Appendices 30, 30A and 30B for the control and non-payload communications of unmanned aircraft systems (UAS) in non-segregated airspaces, in accordance with Resolution 153 (WRC-12).

Discussion:

International Civil Aviation Organization (ICAO) Standard systems to support safe and efficient operation of aircraft on a global basis are developed in accordance with the provisions of the International Telecommunication Union (ITU) Radio Regulations as well as ICAO Standards and Recommended Practices (SARPs). Of significant importance to aviation is that the frequency bands that support radio communication and navigation for aircraft are allocated to appropriate aeronautical safety services (such as the AM(R)S, the AMS(R)S or the ARNS).

At WRC-12 no new satellite allocations were made to support beyond-line-of-sight (BLOS) unmanned aircraft system (UAS[5]) control and non-payload communications (CNPC[6]). However, the previous allocation of the range 5 000 – 5 150 MHz to the aeronautical mobile satellite (R) service (AMS(R)S) footnote **5.367** was replaced by a table allocation, and the co-ordination requirements in the frequency band 5 030 – 5 091 MHz were changed from **9.21** to **9.11A**.

The requirement for BLOS (satellite) communications of between 56 and 169 MHz, as documented in Report ITU-R M.2171, likely cannot be fulfilled entirely in the AMS(R)S allocated frequency bands 1.5 / 1.6 / 5 GHz, especially as no satellite system is operational at 5 GHz in the current or near-term to support UAS CNPC.

Existing networks operating in the FSS in the unplanned frequency bands at 14/12 GHz and 30/20 GHz have potential spectrum capacity available that can meet the requirements for BLOS communications and could be used for UAS CNPC provided that the principles (conditions) detailed below are fulfilled. However, the FSS is not recognized in the ITU as a safety service and it should be noted that any consideration of operation of UAS CNPC under an allocation to the FSS must address the inconsistency with Article 1 definitions of the fixed satellite service (No. **1.21**) and aircraft earth station (No. **1.84**).

Studies within the ITU have provided information on the CNPC radio link performance under various UAS operating conditions. Other studies within the ITU also address the compatibility between this application of the FSS and other services that may be authorized by administrations.

In order to satisfy the requirements for BLOS communications for UAS, the use of satellite CNPC links will have to comply with the following seven conditions, the first three of which will have to be addressed in the ITU Radio Regulations, and the remainder in the ICAO UAS CNPC SARPs:

1. That the technical and regulatory actions be limited to the case of UAS using satellites, as studied, and not set a precedent that puts other aeronautical safety services at risk.

---

[5] UAS is referred to in ICAO as Remotely Piloted Aircraft Systems (RPAS).

[6] CNPC is referred to in ICAO as Command and Control (C2) or Command, Control and ATC Communications (C3).

2. That all frequency bands which carry aeronautical safety communications be clearly identified in the ITU Radio Regulations.

3. That the assignments and use of the relevant frequency bands be consistent with article **4.10** of the ITU Radio Regulations which recognizes that safety services require special measures to ensure their freedom from harmful interference.

4. That any UAS CNPC assignment operating in those frequency bands:

   - be in conformity with technical criteria of the ITU Radio Regulations,
   - be successfully co-ordinated, including cases where co-ordination was not completed but the ITU-R examination of probability of harmful interference resulted in favourable finding, or any caveats placed on that assignment have been addressed and resolved such that the assignment is able to satisfy the requirements to provide BLOS communications for UAS; and
   - be recorded in the ITU International Master Frequency Register.

5. That any harmful interference to FSS networks supporting CNPC links be reported in a transparent manner and addressed in the appropriate timescale.

6. That realistic worst case conditions, including an appropriate safety margin, be applied during compatibility studies.

7. That any operational considerations for UAS be handled in ICAO and not in the ITU-R.

ICAO SARPs for UAS CNPC are in the early stages of development, so the technical and operational requirements of satellite systems supporting those communications are not yet defined. As a result, the ITU-R actions under WRC-15 Agenda Item 1.5 should be focused on providing a regulatory framework for the safe operation of UAS CNPC links in FSS bands under the ITU Radio Regulations and thus obtaining international recognition along with the basis for avoiding harmful interference.

ICAO Position:

Recognizing that unmanned aircraft systems (UAS) have great potential for innovative civil applications, provided that their operation does not introduce risks to the safety of life, and taking into account the Twelfth Air Navigation Conference (November 2012) Recommendation 1/12[7]; and Recommendation 1/13 as amended by the 38th Assembly[8], to ensure that in order to support the use of FSS systems for UAS CNPC links in non-segregated airspace, the technical and regulatory actions identified by studies under **Resolution 153** (WRC-12) be consistent with the above Recommendations, and satisfy the following conditions:

1. That the technical and regulatory actions be limited to the case of UAS using satellites, as studied, and not set a precedent that puts other aeronautical safety services at risk.
2. That all frequency bands which carry aeronautical safety communications be clearly identified in the ITU Radio Regulations.
3. That the assignments and use of the relevant frequency bands be consistent with article **4.10** of the ITU Radio Regulations which recognizes that safety services require special measures to ensure their freedom from harmful interference.

Additional conditions will need to be addressed in ICAO SARPs for UAS CNPC, and not in ITU.

The provisions for UAS CNPC communications links to meet the necessary technical and operational requirements for any specific airspace in any particular frequency band will be addressed within ICAO.

[7] "*That ICAO … develop and implement a comprehensive aviation frequency spectrum strategy … which includes the following objectives: … clearly state in the strategy the need for aeronautical systems to operate in spectrum allocated to an appropriate aeronautical safety service.*"

[8] "*That ICAO should support studies in the International Telecommunication Union Radio Communication Sector (ITU-R) to ensure that the safety of life concerns could be sufficiently addressed. The outcome of these studies would have to provide the necessary assurance that there were no undue implications for other aeronautical systems. Provided this was the case, then it could be determined what ITU regulatory actions would be required to enable use of frequency bands allocated to the fixed-satellite service (FSS) for RPAS command and control links to ensure consistency with ICAO technical and regulatory requirements for a safety service.*"

WRC-15 Agenda Item 1.6

Agenda Item Title:
To consider possible additional primary allocations:

- **to the fixed-satellite service (Earth-to-space and space-to-Earth) of 250 MHz in the range between 10 GHz and 17 GHz in Region 1;**
- **to the fixed-satellite service (Earth-to-space) of 250 MHz in Region 2 and 300 MHz in Region 3 within the range 13 – 17 GHz;**

and review the regulatory provisions on the current allocations to the fixed-satellite service within each range, taking into account the results of ITU-R studies, in accordance with Resolutions 151 (WRC-12) and 152 (WRC-12), respectively.

Discussion:

This agenda item seeks to address the spectrum needs of the fixed satellite service to support projected future needs. Whilst the scope of this agenda item is limited in terms of frequency bands within which studies can take place there are a number of aeronautical systems such as Doppler navigation aids (13.25 – 13.4 GHz) and airport surface detection equipment/airborne weather radar (15.4 – 15.7 GHz) which need to be appropriately protected. Any allocation to the fixed satellite service should not adversely impact on the operation of aeronautical services in this frequency range.

ICAO Position:

To oppose any new fixed satellite service allocation unless it has been demonstrated through agreed studies that there will be no impact on aviation use of the relevant frequency band.

WRC-15 Agenda Item 1.7

Agenda Item Title:
To review the use of the band 5 091 – 5 150 MHz by the fixed-satellite service (Earth-to-space) (limited to feeder links of the non-geostationary mobile-satellite systems in the mobile-satellite service) in accordance with Resolution 114 (Rev.WRC-12).

Discussion:

In 1995 the allocation in the frequency band 5 091 – 5 150 MHz to the fixed satellite service (FSS) (Earth-to-space), limited to feeder links of the non-geostationary mobile satellite systems in the mobile satellite service, was added in order to address what at the time was perceived to be a temporary shortage of spectrum for such feeder links. To recognize the temporary nature of the allocation two clauses were added to the allocation at that time limiting the introduction of new assignments to the period up to 1 January 2008 and making the FSS secondary after the 1 January 2010. Subsequent conferences have modified these dates with the current dates being 1 January 2016 (no new frequency assignments) and 1 January 2018 (revert FSS to a secondary status) respectively.

Resolution **114** (WRC-12) calls for a review of allocations to both the aeronautical radionavigation service (ARNS) and the FSS in this band. ICAO is specifically invited to further review the detailed spectrum requirements and planning for international standard aeronautical radionavigation systems in the band. Initially this band was reserved to meet requirements for microwave landing system (MLS) assignments which could not be satisfied in the frequency band 5 030 – 5 091 MHz.

Aviation is implementing a new airport communication system under the recently allocated aeronautical mobile (R) service (AM(R)S) in the frequency band 5 091 – 5 150 MHz. Deployment and the capacity of this airport communication system is limited by the restrictions on the aggregate signal level permissible under the co-ordination arrangements established as part of agreeing to the AM(R)S allocation. Those arrangements allowed an increase in FSS satellite noise temperature (ΔTs /Ts) for the AM(R)S of 2% under the assumption that ARNS and aeronautical telemetry in the band would be contributing an additional 3% and 1% respectively. While the ARNS allocation should be maintained for the future, ARNS systems are not expected to operate in that band in the near-term, so as part of the review of the FSS allocation ICAO would wish to see a more flexible allocation of the ΔTs /Ts between the various aeronautical services. Instead of limiting AM(R)S to 2% and ARNS to 3%, the regulations should be revised to restrict the combination of AM(R)S plus ARNS to a total of 5% ΔTs /Ts. This would allow increased flexibility for the AM(R)S while retaining the overall noise temperature increase caused by aeronautical systems operating in the band to 6%. Hence, the removal of the date limitation of the FSS can be supported, provided that stable sharing conditions with the ARNS and AM(R)S in the band are maintained and flexibility is improved in regards to ΔTs /Ts.

ICAO Position:

To support the removal of date limitations on the fixed satellite service (FSS) allocation in the frequency band 5 091 - 5 150 MHz subject to:

- the retention of the aeronautical protections contained in Resolution **114** (WRC-12).
- improving the flexibility for managing the allowed FSS satellite noise temperature increase by the aeronautical mobile (R) and aeronautical radionavigation services operating in the band 5 091 - 5 150 MHz.

WRC-15 Agenda Item 1.10

Agenda Item Title:
To consider spectrum requirements and possible additional spectrum allocations for the mobile-satellite service in the Earth-to-space and space-to-Earth directions, including the satellite component for broadband applications, including International Mobile Telecommunications (IMT), within the frequency range from 22 GHz to 26 GHz, in accordance with Resolution 234 (WRC-12).

Discussion:

A shortfall is predicted in the amount of mobile satellite spectrum available to support the satellite component of IMT, partly due to the failure to identify any spectrum that could be allocated to the mobile satellite service (MSS) below 16 GHz at WRC-12. This agenda item seeks to address these spectrum needs by identifying suitable spectrum for assignment to the MSS in the frequency range 22 – 26 GHz. Whilst the scope of this agenda item is limited in terms of frequency bands within which studies can take place, aviation does operate a number of airport surface detection systems in the frequency range 24.25 – 24.65 GHz in Regions 2 and 3 that need to be appropriately protected. Any allocation to the MSS should not adversely impact on the operation of aeronautical services in this frequency range.

ICAO Position:

To oppose any new mobile satellite service allocation unless it has been demonstrated through agreed studies that there will be no impact on aviation use in the 24.25 – 24.65 GHz frequency band in Regions 2 and 3.

WRC-15 Agenda Item 1.11

Agenda Item Title:
To consider a primary allocation for the Earth exploration-satellite service (Earth-to-space) in the 7 - 8 GHz range, in accordance with Resolution 650 (WRC-12).

Discussion:

Limited spectrum is available for tracking, telemetry and control systems operating in the Earth exploration-satellite service (EESS) and the available spectrum is currently in use by hundreds of satellites. This agenda item seeks to identify suitable additional spectrum for allocation to the Earth exploration-satellite service in the frequency range 7 – 8 GHz to complement the existing allocation at 8 025 – 8 400 MHz. Whilst the scope of this agenda item is limited in terms of frequency bands within which studies can take place, aviation does operate a number of airborne Doppler navigation systems in the frequency band 8 750 – 8 850 MHz that need to be appropriately protected. Any allocation to the EESS should not adversely impact on the operation of aeronautical services in the frequency band 8 750 – 8 850 MHz.

ICAO Position:

To oppose any new allocation to the Earth exploration-satellite service, unless it has been demonstrated through agreed studies that there will be no impact on aviation use in the frequency band 8 750 – 8 850 MHz.

WRC-15 Agenda Item 1.12

Agenda Item Title:
To consider an extension of the current worldwide allocation to the Earth exploration-satellite (active) service in the frequency band 9 300 – 9 900 MHz by up to 600 MHz within the frequency bands 8 700 – 9 300 MHz and/or 9 900 – 10 500 MHz, in accordance with Resolution 651 (WRC-12).

Discussion:
The frequency band 9 000 – 9 200 MHz is used by aeronautical radar systems (ground and airborne), including Airport Surface Detection Equipment (ASDE), Airport Surface Movement Radar (ASMR) and Precision Approach Radar (PAR) sometimes combined with Airport Surface Radar (ASR). They cater for short-range surveillance and precision functions up to a 50 km (approx. 25 NM) range. In aviation, these systems are used for precision monitoring, approach and surface detection functions and in airborne weather radar systems where their shorter wavelength is suitable for the detection of storm clouds. These radars are due to remain in service for the foreseeable future. The ongoing protection of the aeronautical uses of this frequency band needs to be assured.

Within ITU-R it has been argued that the impact on the aeronautical services has already been proven since the technical data is mainly identical to the outcome of studies performed prior to the allocation for the Earth exploration-satellite service (EESS) above 9 300 MHz by WRC-07. However the equipment types considered in the past were only un-modulated pulse Radars, rather than newer solid-state-based Radars that utilize pulse-compression modulation. The compatibility of these new Radar technologies with the EESS was addressed in new ITU studies contained in Report ITU-R RS.2313. Those studies demonstrated that EESS operation in 9 000 - 9 200 MHz would not be compatible with aeronautical radar systems.

ICAO Position:

To oppose any allocation to the Earth exploration-satellite service in the frequency band 9 000 – 9 200 MHz as it has been demonstrated through agreed studies that EESS would impact aviation use and place constraints on the use of the frequency band by aeronautical systems

No change to Nos. **5.337**, **5.427**, **5.474** and **5.475**.

WRC-15 Agenda Item 1.16

Agenda Item Title:
To consider regulatory provisions and spectrum allocations to enable possible new Automatic Identification System (AIS) technology applications and possible new applications to improve maritime radiocommunication in accordance with Resolution 360 (WRC-12).

Discussion:

The maritime automatic identification system is fitted in search and rescue aircraft to allow co-ordination of search and rescue activities in which both vessels and aircraft are involved. It is essential to ensure that any change to the regulatory provisions and spectrum allocations resulting from this agenda item do not adversely impact on the capability of search and rescue aircraft to effectively communicate with vessels during disaster relief operations.

ICAO Position:

To ensure that any change to the regulatory provisions and spectrum allocations resulting from this agenda item do not adversely impact on the capability of search and rescue aircraft to effectively communicate with vessels during disaster relief operations.

WRC-15 Agenda Item 1.17

Agenda Item Title:
To consider possible spectrum requirements and regulatory actions, including appropriate aeronautical allocations, to support wireless avionics intra-communications (WAIC), in accordance with Resolution 423 (WRC-12).

Discussion:

The civil aviation industry is constantly developing the future generation of aircraft. Each subsequent generation is being designed to enhance efficiency and reliability while maintaining or improving current required levels of safety. The use of wireless technologies in the aircraft may reduce the overall weight of systems, reducing the amount of fuel required to fly and thus benefiting the environment.

Wireless Avionics Intra-Communications (WAIC) systems will offer aircraft designers and operators opportunities to improve flight safety and operational efficiency with the goal of reducing costs to airlines and passengers. WAIC systems could improve an aircraft's performance over its lifetime through more cost-effective flight operations, reduction in maintenance costs, enhancement of aircraft systems that maintain or increase the level of safety, and environmental benefits. WAIC systems are also envisioned to provide new functionalities to aircraft manufacturers and operators.

Manufacturers are provided additional installation options for previously wired systems, while operators are afforded more opportunities to monitor aircraft systems. A major WAIC system application is wireless sensing. It is expected that existing and future aircraft will be equipped with such wireless sensors. These sensors could be located throughout the aircraft and will be used to monitor the health of the aircraft structure and its critical systems, and to communicate this information. WAIC systems are also intended to support data, voice and safety related video surveillance applications such as taxiing cameras and may also include communications systems used by the crew for safe operation of the aircraft. WAIC systems can provide additional opportunities to monitor more components and systems without significantly increasing the aircraft's weight.

WAIC systems provide for radiocommunication between two or more points on a single aircraft and constitute exclusive closed on board networks required for the aircraft's operation. WAIC systems do not provide air-to-ground, air-to-satellite or air-to-air communications.

WAIC is a communication system which only carries aeronautical safety related content and should therefore be seen as an application of the aeronautical mobile (route) service (AM(R)S). When initially evaluating the spectrum requirements for WAIC systems it was identified that those requirements could not be met in existing AM(R)S frequency bands, hence additional AM(R)S allocations would be required.

In accordance with Resolution **423 (WRC-12**), an initial assessment was conducted, analysing potential compatibility between proposed WAIC systems and systems operating under an allocation to an incumbent service. It considered all aeronautical bands in the frequency range 960 MHz-15.7 GHz containing either an AM(R)S, AMS or ARNS allocation.

Studies were conducted analysing potential compatibility between proposed WAIC systems and systems operating under an allocation to an incumbent service in the frequency bands 2 700 - 2 900 MHz, 4 200 - 4 400 MHz, 5 350 - 5 460 MHz, 22.5 - 22.55 GHz, and 23.55 - 23.6 GHz. Of the frequency bands studied, only the frequency band 4 200 - 4 400 MHz shows that sharing is feasible. Use of the band 4 200 - 4 400 MHz by the radio navigation service is reserved for radio altimeters. Consistent with the studies contained in Report ITU-R M. 2319, the compatibility between WAIC systems and radio altimeters has been confirmed within ICAO and ITU-R Working Party 5B.

ICAO Position:

To support global aeronautical mobile (route) service allocation in the frequency band 4 200 – 4 400 MHz exclusively reserved for Wireless Avionics Intra-Communications (WAIC) systems operating in accordance with recognized international aeronautical standards.

WRC-15 Agenda Item 1.18

Agenda Item Title:
Allocation of the band 77.5 – 78 GHz to the radiolocation service to support automotive short-range high-resolution radar operations.

Discussion:

As aircraft have become larger, the ability of the captain and co-pilot to accurately taxi the aircraft around a busy airport has become more difficult and incidents of aircraft colliding with other objects on the airport have become more common. A solution has been proposed that would use off-the-shelf automotive radar located in the wing tips of aircraft to detect other ground object that might be in the path of the taxiing aircraft.

WRC-15 Agenda Item 1.18 is seeking an allocation to the radiolocation service at 77.5 - 78 GHz in order to create a contiguous piece of spectrum from 76 to 81 GHz that could support high resolution applications in the automotive industry. In order to ensure a cost effective solution for aviation to the ground taxiing issue it is essential to maintain commonality between automotive radars and those that can be fitted to aircraft. This application would operate in the radiolocation service on an advisory basis and only when the aircraft was on the airport surface.

As a result aviation would support an allocation to the radiolocation service at 77.5 - 78 GHz that is not limited in a way that would preclude the use of such radar on taxiing aircraft, noting that such an application is not regarded as a safety of life service.

ICAO Position:

To support the allocation of the frequency band 77.5 - 78 GHz to the radiolocation service in such a way as not to preclude its use on an advisory basis by taxiing aircraft.

WRC-15 Agenda Item 4

Agenda Item Title:
In accordance with Resolution 95 (Rev.WRC-07), to review the resolutions and recommendations of previous conferences with a view to their possible revision, replacement or abrogation.

ICAO Position:

Resolutions:

Resolution No.	***Title***	***Action recommended***
18 *(Rev WRC-12)*	Relating to the procedure for identifying and announcing the position of ships and aircraft of States not parties to an armed conflict	No change
20 *(Rev. WRC-03)*	Technical cooperation with developing countries in the field of aeronautical telecommunications	No change
26 *(Rev. WRC-07)*	Footnotes to the Table of Frequency Allocations in Article 5 of the Radio Regulations	No change
27 *(Rev. WRC-12)*	Use of incorporation by reference in the Radio Regulations	No change
28 *(Rev. WRC-03)*	Revision of references to the text of ITU-R recommendations incorporated by reference in the Radio Regulations	No change
63 *(Rev. WRC-12)*	Protection of radiocommunication services against interference caused by radiation from industrial, scientific and medical (ISM) equipment	No change
67	Updating and rearrangement of the Radio Regulations	Modify as necessary based on the results of studies carried out under WRC-15. Agenda Item 9.1
95 *(Rev. WRC-07)*	General review of the resolutions and recommendations of world administrative radio conferences and world radiocommunication conferences	No change
114 *(Rev. WRC-12)*	Studies on compatibility between new systems of the aeronautical radionavigation service and the fixed-satellite service (Earth-to-space) (limited to feeder links of the non-geostationary mobile-satellite systems in the mobile-satellite service) in the frequency band 5 091 – 5 150 MHz	Modify as necessary based on the results of studies carried out under WRC-15. Agenda Item 1.7

Resolution No.	***Title***	***Action recommended***
151	Additional primary allocations to the fixed-satellite service in frequency bands between 10 and 17 GHz in Region 1	Delete after WRC-15
152	Additional primary allocations to the fixed-satellite service in the Earth-to-space direction in frequency bands between 13 – 17 GHz in Region 2 and Region 3	Delete after WRC-15
153	To consider the use of frequency bands allocated to the fixed-satellite service not subject to Appendices 30, 30A and 30B for the control and non-payload communications of unmanned aircraft systems in non-segregated airspaces	Modify as necessary based on the results of studies carried out under WRC-15. Agenda Item 1.5
154	Consideration of technical and regulatory actions in order to support existing and future operation of fixed-satellite service earth stations within the band 3 400 – 4 200 MHz, as an aid to the safe operation of aircraft and reliable distribution of meteorological information in some countries in Region 1	Modify as necessary based on the results of studies carried out under WRC-15 Agenda Item 9.1.5. Based on the outcome of the Agenda Item, potentially extend the scope to other concerned regions (Caribbean, South America, Asia Pacific)
205 *(Rev. WRC-12)*	Protection of the systems operating in the mobile satellite service in the band 406 – 406.1 MHz	Modify as necessary based on the result of studies carried out under WRC-15. Agenda Item 9.1.1
207 *(Rev. WRC-03)*	Measures to address unauthorized use of and interference to frequencies in the bands allocated to the maritime mobile service and to the aeronautical mobile (R) service	No change
217 *(WRC-97)*	Implementation of wind profiler radars	No change
222 *(Rev. WRC-12)*	Use of the frequency bands 1 525 – 1 559 MHz and 1 626.5 – 1 660.5 MHz by the mobile-satellite service, and procedures to ensure long-term spectrum access for the aeronautical mobile-satellite (R) service	No change
225 *(Rev .WRC-12)*	Use of additional frequency bands for the satellite component of IMT	No change
233	Studies on frequency-related matters on International Mobile Telecommunications and other terrestrial mobile broadband applications	Delete after WRC-15

Resolution No.	***Title***	***Action recommended***
339 *(Rev. WRC-07)*	Coordination of NAVTEX services	No change
354 (WRC-07)	Distress and safety radiotelephony procedures for 2 182 kHz	No change
356 (WRC-07)	ITU maritime service information registration	No change
360	Consideration of regulatory provisions and spectrum allocations for enhanced Automatic Identification System technology applications and for enhanced maritime radiocommunication	Modify as necessary based on the results of studies carried out under WRC-15. Agenda Item 1.16
405	Relating to the use of frequencies of the aeronautical mobile (R) service	No change
413 *(WRC-12)*	Use of the band 108 – 117.975 MHz by aeronautical service	No change
417 (WRC-12)	Use of the frequency band 960 – 1 164 MHz by the aeronautical mobile (R) service	No change
418 (*Rev. WRC-12*)	Use of the band 5 091 – 5 250 MHz by the aeronautical mobile service for telemetry applications	Modify as necessary based on the results of studies carried out under WRC-15. Agenda Item 1.7
422	Development of methodology to calculate aeronautical mobile-satellite (R) service spectrum requirements within the frequency bands 1 545 – 1 555 MHz (space-to-Earth) and 1 646.5 – 1 656.5 MHz (Earth-to-space)	Modify or suppress as necessary, subject to the completion of the work.
423	Consideration of regulatory actions, including allocations, to support Wireless Avionics Intra-Communications	Modify as necessary based on the results of studies carried out under WRC-15. Agenda Item 1.17
608 *(WRC-03)*	Use of the frequency band 1 215 – 1 300 MHz by systems of the radionavigation satellite service	Delete after studies completed
609 *(WRC-07)*	Protection of aeronautical radionavigation systems from the equivalent power flux-density produced by radionavigation satellite service networks and systems in the 1 164 – 1 215 MHz band	No change
610 *(WRC-03)*	Coordination and bilateral resolution of technical compatibility issues for radionavigation satellite networks and systems in the band 1 164 – 1 300 MHz, 1 559 – 1 610 MHz and 5 010 – 5 030 MHz	No change

Resolution No.	***Title***	***Action recommended***
612 (*Rev. WRC-12*)	Use of the radiolocation service between 3 and 50 MHz to support oceanographic radar operations	No change
644 *(Rev. WRC-12)*	Radiocommunication resources for early warning, disaster mitigation and relief operations	No change
705 *(MOB-87)*	Mutual protection of radio services operating in the band 70 – 130 kHz	No change
729 *(WRC-07)*	Use of frequency adaptive systems in the MF and HF bands	Delete after WRC-15
748 (*Rev. WRC-12*)	Compatibility between the aeronautical mobile (R) service and the fixed satellite service (Earth-to-space) in the band 5 091 – 5 150 MHz	Modify as necessary based on the results of studies carried out under WRC-15 Agenda Item 1.7
957	Studies towards review of the definitions of *fixed service*, *fixed station* and *mobile station*	Delete after WRC-15

Recommendations:

Recommendation No.		***Action recommended***
7 *(Rev. WRC-97)*	Adoption of standard forms for ship station and ship earth station licences and aircraft station and aircraft earth station licences	No change
9	Relating to the measures to be taken to prevent the operation of broadcasting stations on board ships or aircraft outside national territories	No change
71	Relating to the standardization of the technical and operational characteristics of radio equipment	No change
75 *(WRC-03)*	Study on the boundary between the out-of-band and spurious domains of primary radars using magnetrons	No change
401	Relating to the efficient use of aeronautical mobile (R) worldwide frequencies	No change
608 *(Rev. WRC-07)*	Guidelines for consultation meetings established in Resolution **609 (WRC-03)**	No change

WRC-15 Agenda Item 8

Agenda Item Title:
To consider and take appropriate action on requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, taking into account Resolution 26 (Rev. WRC-07).

Discussion:

Allocations to the aeronautical services are generally made for all ITU Regions and normally on an exclusive basis. These principles reflect the global process of standardization within ICAO for the promotion of safety and to support the global interoperability of radiocommunication and radionavigation equipment used in civil aircraft. In some instances, however, footnotes to the ITU Table of Frequency Allocations allocate spectrum in one or more countries to other radio services in addition or alternatively to the aeronautical service to which the same spectrum is allocated in the body of the table.

The use of country footnote allocations to non-aeronautical services in aeronautical bands is generally not recommended by ICAO, on safety grounds, as such use may result in harmful interference to safety services. Furthermore, this practice generally leads to an inefficient use of available spectrum to aeronautical services, particularly when the radio systems sharing the band have differing technical characteristics. It also may result in undesirable (sub-) regional variations with respect to the technical conditions under which the aeronautical allocations can be used. This can have a serious impact on the safety of aviation.

The following footnotes in aeronautical bands should be deleted for safety and efficiency reasons as discussed below:

a) In the frequency bands used for the ICAO instrument landing system (ILS), (marker beacons 74.8 – 75.2 MHz; localizer 108 – 112 MHz and glide path 328.6 – 335.4 MHz) and the VHF omni-directional radio range system (VOR); 108 – 117.975 MHz, Nos. **5.181**, **5.197** and **5.259** allow for the introduction of the mobile service on a secondary basis and subject to agreement obtained under No. **9.21** of the Radio Regulations when these bands are no longer required for the aeronautical radionavigation service. The use of both ILS and VOR is expected to continue. In addition, WRC-03, as amended by WRC-07, has introduced No. **5.197A** stipulating that the band 108 – 117.975 MHz is also allocated on a primary basis to the aeronautical mobile (R) service (AM(R)S), limited to systems operating in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution **413 (Rev. WRC-12)**. The use of the band 108 – 112 MHz by the AM(R)S shall be limited to systems composed of ground-based transmitters and associated receivers that provide navigational information in support of air navigation functions in accordance with recognized international aeronautical standards. As a result, access to these bands by the mobile service is not feasible, in particular since no acceptable sharing criteria that secure the protection of aeronautical systems have been established to date. Nos. **5.181**, **5.197** and **5.259** should now be deleted since they do not represent a realistic expectation for an introduction of the mobile service in these bands.

b) Nos. **5.201** and **5.202** allocate the frequency bands 132 – 136 MHz and 136 – 137 MHz in some States to the aeronautical mobile (off-route) service (AM(OR)S). Since these frequency bands are heavily utilized for ICAO-standard VHF voice and data communications, those allocations should be deleted.

c) In the frequency band 1 215 – 1 300 MHz, which is used by civil aviation for the provision of radionavigation services through No. **5.331.** Footnote No. **5.330** allocates the band in a number of countries to the fixed and mobile service. Given the receiver sensitivity of aeronautical uses of the frequency band, ICAO does not support the continued inclusion of an additional service through country footnotes. ICAO would therefore urge administrations to remove their name from the No. **5.330**.

d) In the frequency bands 1 610.6 – 1 613.8 MHz and 1 613.8 – 1 626.5 MHz, which is assigned to the aeronautical radionavigation service, No. **5.355** allocates the band on a secondary basis to the fixed service in a number of countries. Given that this band is allocated to a safety of life service, ICAO does not support the continued inclusion of an additional service through country footnotes. ICAO would therefore urge administrations to remove their name from the No. **5.355.**

e) In the frequency band 1 559 – 1 610 MHz, which is used for elements of the ICAO global navigation satellite system (GNSS), Nos. **5.362B** and **5.362C** allow the operation of the fixed service in some countries on a primary basis until 1 January 2010 and on a secondary basis until 1 January 2015. As both dates are now past, these footnotes should be deleted.

f) In the frequency band 3 400 – 4 200 MHz, the existing allocation to the fixed satellite service (FSS) (space-Earth) is used to provide aeronautical VSAT service, see discussion under agenda items 1.1 and 9.1.5. No. **5.430A** allocates this band also to the mobile service in a number of States in Region 1, including States in Africa. African States are recommended to withdraw their names from this footnote.

g) In the frequency band 4 200 – 4 400 MHz, which is reserved for use by airborne radio altimeters, No. **5.439** allows the operation of the fixed service on a secondary basis in some countries. Radio altimeters are a critical element in aircraft automatic landing systems and serve as a sensor in ground proximity warning systems. Interference from the fixed service has the potential to affect the safety of all-weather operations. Deletion of this footnote is recommended.

ICAO Position:

To support deletion of Nos. **5.181, 5.197** and **5.259**, as access to the frequency bands 74.8 – 75.2, 108 – 112 and 328.6 – 335.4 MHz by the mobile service is not feasible and could create the potential for harmful interference to important radionavigation systems used by aircraft at final approach and landing as well as systems operating in the aeronautical mobile service operating in the frequency band 108 – 112 MHz.

To support deletion of Nos. **5.201** and **5.202,** as use by the AM(OR)S of the frequency bands 132 – 136 MHz and 136 – 137 MHz in some States may cause harmful interference to aeronautical safety communications.

To support deletion of No. **5.330** as access to the frequency band 1 215 – 1 300 MHz by the fixed and mobile services could potentially cause harmful interference to services used to support aircraft operations.

To support deletion of No. **5.355** as access to the frequency bands 1 610.6 – 1 613.8 and 1 613.8 – 1 626.5 MHz by the fixed services could potentially jeopardize aeronautical use of these frequency bands.

To support the deletion of Nos. **5.362B** and **5.362C** as of 2015 in order to eliminate harmful interference that has been caused by the fixed service to essential aeronautical radionavigation satellite functions in the frequency band 1 559 – 1 610 MHz and to permit the full utilization of GNSS services to aircraft on a global basis.

To support the removal of States in the African region from No. **5.430A** to ensure the protection of the safety operation of the aeronautical VSAT in the frequency band 3 400 – 4 200 MHz, where it is allocated on primary basis to the mobile service.

To support the deletion of No. **5.439** to ensure the protection of the safety critical operation of radio altimeters in the frequency band 4 200 – 4 400 MHz.

Note 1.— Administrations indicated in the footnotes mentioned in the ICAO Position above which are urged to remove their country names from these footnotes are as follows:

No. ***5.181***	*Egypt, Israel and Syrian Arab Republic*
No. ***5.197***	*Syrian Arab Republic*
No. ***5.201***	*Angola, Armenia, Azerbaijan, Belarus, Bulgaria, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Iraq, Japan, Kazakhstan, Latvia, Moldova, Mongolia, Mozambique, Uzbekistan, Papua New Guinea, Poland, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine*
No. ***5.202***	*Saudi Arabia, Armenia, Azerbaijan, Belarus, Bulgaria, the United Arab Emirates, the Russian Federation, Georgia, Iran (Islamic Republic of), Jordan, Latvia, Moldova, Oman, Uzbekistan, Poland, the Syrian Arab Republic, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine*
No. ***5.259***	*Egypt and Syrian Arab Republic*
No. ***5.330***	*Angola, Bahrain, Bangladesh, Cameroon, Chad, China, Djibouti, Egypt, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Nepal, Oman, Pakistan, the Philippines, Qatar, Saudi Arabia, Somalia, Sudan, South Sudan, the Syrian Arab Republic, Togo, the United Arab Emirates and Yemen*
No. ***5.355***	*Bahrain, Bangladesh, Congo (Rep of the), Djibouti, Egypt, Eritrea, Iraq, Israel, Kuwait, Qatar, Syrian Arab Republic, Somalia, Sudan, South Sudan, Chad, Togo and Yemen*
No. ***5.362B***	*Algeria, Armenia, Azerbaijan, Belarus, Benin, Cameroon, Democratic People's Republic of Korea, Gabon, Georgia, Guinea, Guinea-Bissau, Jordan, Kazakhstan, Kyrgyzstan, Libya, Lithuania, Mali, Mauritania, Nigeria, Pakistan, Poland, Romania, Russian Federation, Saudi Arabia, Senegal, the Syrian Arab Republic, Tajikistan, Tanzania, Turkmenistan, Tunisia, Ukraine and Uzbekistan*
No. ***5.362C***	*Chad, Congo (Rep of the), Eritrea, Iraq, Israel, Jordan, Qatar, Somalia, Sudan, South Sudan, the Syrian Arab Republic, Togo and Yemen*

No. ***5.430A***	*Algeria, Saudi Arabia, Bahrain, Benin, Botswana, Burkina Faso, Cameroon, Congo (Rep. of the), Côte d'Ivoire, Egypt, French overseas departments and communities in Region 1, Gabon, Guinea, Israel, Jordan, Kuwait, Lesotho, Malawi, Mali, Morocco, Mauritania, Mozambique, Namibia, Niger, Oman, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Senegal, Sierra Leone, South Africa, Swaziland, Chad, Togo, Tunisia, Zambia and Zimbabwe*
No. ***5.439***	*Iran (Islamic Republic of)*

WRC-15 Agenda Item 9.1

Agenda Item Title:
To consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention:
On the activities of the Radiocommunication Sector since WRC-12.

Note: The subdivision of Agenda Item 9.1 into sub-items, such as 9.1.1, 9.1.2, etc. was made at the first session of the Conference Preparatory Meeting for WRC-15 (CPM15-1) and is summarized in the BR Administrative Circular CA/201 of 19 March 2012.

Sub-item 1 (9.1.1);
Resolution 205 – Protection of the systems operating in the mobile-satellite service in the band 406 – 406.1 MHz

Discussion:

This resolution calls for studies into the protection requirements of the distress and safety system operating at 406 MHz from interference and that the Director of the Radiocommunication Bureau to report any regulatory action required to WRC-15.

Emergency Locating Transmitters (ELTs) are an element of the COSPAS-SARSAT system. Mandatory carriage of ELTs for aircraft is specified in Annex 6 to the ICAO Convention. SARPs for ELTs are contained in Annex 10 to the Chicago Convention. The use of ELTs offers the possibility of dramatically shortening the time required to alert rescue forces to the distress and to assist in final "homing" by the rescue team. In the ITU, such beacons are named emergency position-indicating radio beacons (EPIRBs). ICAO supports the continued protection of this system through appropriate provisions in the Radio Regulations.

ICAO Position:

To support increased protection of COSPAS-SARSAT system in the frequency band 406 – 406.1 MHz.

Sub-item 5 (9.1.5);
Consideration of technical and regulatory actions in order to support existing and future operation of fixed-satellite service earth stations within the band 3 400 – 4 200 MHz, as an aid to the safe operation of aircraft and reliable distribution of meteorological information in some countries in Region 1 (Resolution 154 (WRC-12))

Discussion:

The efficient provision of air navigation services requires the implementation and operation of ground communications infrastructure with high availability, reliability and integrity in order to fulfil aviation performance requirements.

In the Africa and Indian Ocean Region, the difficulty of fulfilling these requirements, given the extent of the airspace and weakness in terrestrial communication infrastructure, led, in 1997, the ICAO AFI Planning and Implementation Regional Group to approve the use of fixed satellite technology (VSAT) to support terrestrial aeronautical communications services in the frequency band 3.4 – 4.2 GHz. In tropical regions, due to more pronounced rain attenuation at higher frequency bands, this frequency band remains the only viable option for satellite links with high availability.

Since the 90s, States and / or organizations in the AFI Region have developed and implemented networks of satellite-based VSAT systems in this fixed satellite service (FSS) band. These VSAT networks support all aeronautical communications services including the extension of VHF aeronautical mobile, navigation and surveillance systems.

Today, these VSAT systems constitute a real infrastructure spanning the entire African continent and beyond and the availability of the entire 3.4 – 4.2 GHz FSS frequency band is crucial for the AFI Region to ensure the continued growth of traffic while maintaining the required level of safety in this region.

Recommendation **724**, adopted by the WRC-07, indicates that satellite communication systems operating in the fixed satellite service may be the only medium to support the requirements of the ICAO communication, navigation, surveillance and air traffic management systems, where an adequate terrestrial communication infrastructure is not available.

WRC-07 allocated the frequency band 3.4 – 3.6 GHz to the mobile, except aeronautical mobile, service on a primary basis in some countries, including Region 1, subject to regulatory and technical restrictions (No. **5.430A**). The deployment of (non-aeronautical terrestrial) mobile service systems in vicinity of airports has led to an increased number of cases of interference into the FSS (VSAT) receivers. Consequently, some additional measures need to be adopted to improve the protection of the FSS links supporting aeronautical communications.

ICAO supports ITU-R studies on the appropriate regulatory and/or technical measures that Administrations in the AFI Region should apply to facilitate protection of VSATs used for the transmission of aeronautical and meteorological information in the 3.4 – 4.2 GHz frequency band from other services operating in the band. This will ensure the continued growth of traffic while maintaining the required level of safety in this region.

Note: The problem can also occur in other regions. The 3.4 – 4.2 GHz frequency range is used by VSAT networks for aeronautical communications in tropical regions of Central/South America and the Asia Pacific as well as Africa. Hence there is a potential link to WRC-15 AI 1.1.

ICAO Position:

To support possible technical and regulatory measures to ensure protection of VSATs used for the transmission of aeronautical and meteorological information in the frequency range 3.4 – 4.2 GHz from other services operating in the same or adjacent frequency range.

Sub-item 6 (9.1.6);
Resolution 957 – Studies towards review of the definitions of *fixed service, fixed station* and *mobile station*

Discussion:

These three definitions are indirectly related to aeronautical services and hence any change in the definitions could have an impact on the interpretation of the definition of aeronautical mobile services. This Resolution calls for studies into whether a change in the definition of these terms is required and for the Director of the Radiocommunication Bureau to report to WRC-15.

ICAO Position:

To ensure that any change to the definitions as a result of a review of the studies referenced in Resolution **957,** do not adversely impact aviation.

Global Flight Tracking for Civil Aviation

Resolution 185 (Busan, 2014):
To instruct WRC-15, pursuant to No. 119 of the ITU Convention, to include in its agenda, as a matter of urgency, the consideration of global flight tracking, including, if appropriate, and consistent with ITU practices, various aspects of the matter, taking into account ITU-R studies.

Discussion:

The 2014 Plenipotentiary Conference of the ITU (PP-14) adopted Resolution 185 (Busan, 2014) on global flight tracking (GFT) for civil aviation. The Resolution resolved: "to instruct WRC-15, pursuant to No. 119 of the ITU Convention, to include in its agenda, as a matter of urgency, the consideration of global flight tracking, including, if appropriate, and consistent with ITU practices, various aspects of the matter, taking into account ITU-R studies". PP-14 further instructed the Director of the Radiocommunication Bureau to prepare a report on GFT for consideration by WRC-15. Studies within the ITU-R related to GFT are to be conducted as a matter of urgency in order to support that report.

ICAO, upon the completion of a Special Meeting on Global Flight Tracking of Aircraft in Montreal, May 2014, forged consensus among its Member States and the international air transport industry sector on the near-term priority to track airline flights, no matter their global location or destination. The meeting concluded that global flight tracking should be pursued as a matter of urgency and as a result, two groups were formed, an ICAO Ad hoc Working Group on Aircraft Tracking which developed a concept of operations to support future development of a Global Aeronautical Distress and Safety System (GADSS) and an industry-led group within the ICAO framework, the Aircraft Tracking Task Force (ATTF), that identified near-term capabilities for normal flight tracking using existing technologies.

With regard to the flight tracking technology, the ICAO Second High-level Safety Conference 2015 (HLSC 2015) noted the ATTF Report which detailed existing technologies such as automatic dependent surveillance-contract (ADS-C) which are already installed on aircraft and which could be used to perform global aircraft tracking. This range of technologies and related services will enable operators to take a performance-based approach when implementing aircraft tracking capabilities. The ATTF report contained a set of performance-based criteria that could be used to establish a baseline level of aircraft tracking capability. Additionally, the report also identified future technologies that could support flight tracking in oceanic and remote airspace such as satellite-based ADS – broadcast (ADS-B). In this regard, the conference supported that ICAO should encourage States and the ITU to discuss allocation requirements at WRC-15 to provide the necessary frequency spectrum allocations to enable global air traffic services (ATS) surveillance.

Elements of the final GFT configuration will not likely be available by WRC-15. Given the recent trend toward performance-based communications/navigation/surveillance, that final configuration may be a "system of systems" composed of both current and evolving capabilities, taking into account it must consider GFT for commercial/transport, as well as general aviation and business, aircraft. As a result, the ICAO WRC-15 position on GFT supports consideration by the Conference of all possible options as supported by studies. That could include addition of an allocation around 1 090 MHz to the aeronautical mobile satellite (R) service (AMS(R)S) to support satellite reception of ADS-B, and support of a future Conference (WRC-19) agenda item to address evolving GFT applications. Consideration should be given to ensuring new allocations do not constrain the existing aeronautical safety systems.

ICAO Position:

To support consideration of all possible options for support of ICAO global flight tracking as supported by studies. This should include:

- a new provision in the Earth-to-space direction only for an AMS(R)S allocation at 1 090 MHz for the satellite reception of existing aircraft ADS-B signals that operate in accordance with recognized international aeronautical standards under the condition that it not constrain existing aeronautical safety systems

- a future Conference (WRC-19) agenda item to address evolving GFT requirements.

WRC-15 Agenda Item 10

Agenda Item Title:
To recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention.

GLOBAL AERONAUTICAL DISTRESS AND SAFETY SYSTEM

Discussion:

ICAO, upon the completion of a Special Meeting on Global Flight Tracking of Aircraft in Montreal, May 2014, forged consensus among its Member States and the international air transport industry sector on the near-term priority to track airline flights, no matter their global location or destination. The meeting concluded that global flight tracking should be pursued as a matter of urgency and as a result, two groups were formed, an ICAO Ad hoc Working Group on Aircraft Tracking which developed a concept of operations to support future development of a Global Aeronautical Distress and Safety System (GADSS) and an industry-led group within the ICAO framework called the Aircraft Tracking Task Force (ATTF) that identified near-term capabilities for normal flight tracking using existing technologies. While not yet complete, in combination, those efforts will address issues such as:

- Aircraft tracking under normal and abnormal conditions
- Autonomous distress tracking
- Automatic deployable flight recorder
- Procedures and information management

The collective urgency of the situation is highlighted by the decision of the ITU Plenipotentiary Conference, through Resolution 185, to instruct WRC-15, pursuant to No. 119 of the ITU Convention, to include in its agenda, as a matter of urgency, the consideration of global flight tracking, including, if appropriate, and consistent with ITU practices, various aspects of the matter, taking into account ITU-R studies. As a result, the ICAO WRC-15 position regarding global flight tracking is contained above.

With respect to the GADSS however, while the systems needed have yet to be fully defined it is anticipated that there will be a need to change the Radio Regulations in order to facilitate the introduction of such a system. It is therefore proposed that an agenda item be established for WRC-2019 that is flexible enough to address any required changes to the Radio Regulations necessary to allow the implementation of the GADSS.

ICAO Position:

To support the inclusion of an item on the agenda of a future World Radiocommunication Conference to address the needs of the global aeronautical distress and safety system.

— — — — — — — —

Agenda Item 5: Operational implementation of new ATM automated systems and integration of the existing systems

5.1 Under this agenda item, the Meeting analysed the following papers:

a) WP/10 – *Follow-up to the implementation of AIDC interconnection in the SAM Region* (presented by the Secretariat);
b) WP/11- *Follow-Up to the implementation activities under the project on Improved ATM Situational Awareness in the SAM Region* (presented by the Secretariat); and
c) IP/04 - *Modernisation of the French ATM System in French West Indies and French Guyana* (presented by French Guyana).

Follow-up to the implementation of AIDC interconnection in the SAM Region

5.2 The Meeting took note of the progress in the implementation of AIDC interconnection in the SAM Region in accordance with the Bogotá Declaration. Out of the 15 foreseen AIDC interconnections, only the AIDC between Lima ACC and Guayaquil ACC has started the operational phase on 3 August 2015 as planned.

Lima-Guayaquil AIDC

5.3 The delegates of Peru and Ecuador reported that, although the AIDC was in operational phase since 3 August 2015 between the two ACCs, the level of utilization was still low due to the reluctance shown by the ATC staff of both States mainly due to the impact of the transition from oral coordination to automated coordination using data transmission.

5.4 In this regard, the AIDC experts in the Region have been working individually with some of the controllers so that they can become more familiar with, and gain confidence in, the tool and so that they can use it more. In addition, an attempt has been made to demonstrate that the tasks that involve the use of AIDC entail an insignificant effort by controllers, and, instead of increasing their workload tends to simplify their tasks, improve situational awareness, and helps mitigate LHD occurrences.

5.5 However, in general, the panel has not had sufficient support from aeronautical authorities and/or ATS providers for the provision of operational training in the workplace for all ATC personnel, since, in most cases, such personnel has other functions and tasks to fulfil which are inherent to their regular jobs. No follow-up has been given to Conclusion SAM/IG/15-08 regarding facilities to be given by State aeronautical authorities to the personnel in charge of the AIDC implementation.

5.6 Furthermore, the lack of practical experience in the use of AIDC by ATC staff makes them distrust the tool, resulting in a vicious cycle that leads them to avoid using it, resulting in a self-imposed limitation on learning and gaining the practical experience necessary and, hence, such staff continues to reject the use of the tool.

5.7 The Meeting decided that the signing of new Letters of Agreement between the States concerned that includes the AIDC as a primary means of coordination would be one of the tools that would help require the ATC staff to use and become more familiar with AIDC and to provide the facilities for the AIDC experts of the countries concerned can provide on-the-job training to all ATC personnel.

5.8 The Meeting was informed that the version of the 2100 Aircon system in the Lima ACC has some functionality limitations regarding the transmission of TOC messages (must be done manually

through the AIDC coordination window since it is not possible through the label as a normal handoff), and the delivery of AOC messages in response to a TOC (is not possible). It was highlighted that the representatives of the adjacent FIRs should take note of these limitations and relay them to the ATC personnel concerned.

5.9 The delegation of Peru reported the need for modernizing the automated system of the Lima ACC in order to have a proper physical configuration of the consoles to allow the two controllers of each sector (Executive and Planner) to perform their duties fully, without the current limitations. It is also necessary to update the 2100 Aircon system software in the Lima ACC to resolve the aforementioned operational deficiencies concerning TOC/AOC messages.

Lima-Bogota, Guayaquil-Bogota, Bogota-Panama AIDCs

5.10 Regarding the interconnections between the Bogota ACC and the Lima, Guayaquil and Panama ACCs, the Meeting was informed that testing among the ACCs concerned had been successful. However, Colombia has not yet completed the training of 100% of its ATC staff. Completion of training is scheduled for the last week of October 2015. Once training is completed, the operational phase, originally scheduled for late 2015 or early 2016, can be planned.

5.11 Submission of the draft letters of agreement between the Lima ACC and Bogotá ACC, the Guayaquil ACC and Bogota ACC, and the Panama ACC and Bogota ACC was left pending. The delegate of Colombia requested that such documents be sent to the aeronautical authority for review at the meeting. These documents would be sent by Colombia to the AIDC focal points of Ecuador, Panama, Peru, and the SAM Regional Office by mid-November 2015 for review and approval.

5.12 As foreseen in the AIDC plan of activities established in the SAM/IG/15 meeting, an AIDC workshop for the Panama ATC personnel was held from 22 to 26 June 2015, with the support of project RLA/06/901, and was attended by two SAM AIDC experts (Argentina and Peru). During that week, successful AIDC testing between the Panama ACC and the Bogota ACC was also performed. The pre-operational phase would start at the end of October 2015, as soon as Colombia has completed training of its ATC personnel. The AIDC operational phase is planned for late 2015 or early 2016.

5.13 The Meeting learned about the progress made in the AIDC tests between the Panama ACC and CENAMER, which would be ready to enter operational phase soon.

5.14 The Meeting noted that there was an opportunity for the Guayaquil ACC to start interconnection tests with the CENAMER ACC.

Lima-Santiago AIDC

5.15 The AIDC interconnection pre-operational tests between the Lima ACC and the Santiago Oceanic ACC were suspended since August 5 due to technical problems with the Thales Topsky system, which had not yet been resolved by the manufacturer. In this regard, testing was expected to be resumed on the second semester of 2016.

Lima – Iquique and Cordoba – Iquique AIDC

5.16 AIDC interconnection pre-operational tests between the Lima ACC and the Iquique ACC, and the Cordoba ACC and the Iquique ACC were suspended due to damage to the equipment of the new Iquique ACC during the mid-August rains. Those tests will be resumed as soon as such equipment is operational again.

5.17 In this sense, considering that the Iquique ATC staff should be moving into the new ACC in late 2015, the operational phase of the AIDC interconnection between the Lima ACC and the Iquique ACC was expected to begin by the end of the first quarter of 2016.

Córdoba-Ezeiza AIDC

5.18 The Meeting was informed that the AIDC interconnection between the Ezeiza ACC and the Córdoba ACC was in the pre-operational phase since September 2015, after completing the training of the ATC personnel concerned.

Lima AIDC - Amazon ACC

5.19 The Meeting took note that the initial tests of interconnection and exchange of AIDC messages between the Lima ACC and the Amazónico ACC had been successful, once Brazil had solved a problem detected in the Manaus AFTN-AMHS gateway.

5.20 It should be noted that the tests run by the Amazónico ACC are conducted in the Atech test environment, while those run by the Lima ACC are done using the operational system.

5.21 The delegates of both countries reported that tests included the delivery of the flight plan (FPL) and the exchange of ABI and LAM messages, leaving pending the tests with the remaining AIDC messages.

5.22 The delegate of Brazil stressed the importance of focal points having the necessary time available for testing and mentioned that the fact that the delegate of Peru had to fulfil operational shifts limited the time he has available for testing; this could delay the planned schedule. He further stressed the need for complying with Conclusion SAM/IG/15-08 *Provision by State aeronautical authorities of facilities to the personnel in charge of AIDC operational implementation*.

Maiquetia ACC AIDC - Amazónico ACC

5.23 The Meeting took note of the interest of Brazil and Venezuela to resume coordination for the implementation of the interconnection of automated systems for both radar data exchange and for automated coordination (handoff). In this regard, the strategy was to use more the messages set out in Doc. 4444 for handoff, since the automated system of Venezuela did not have AIDC yet.

Letter of Operational Agreement between the Lima ACC and the Guayaquil ACC

5.24 The delegates of both countries reviewed the draft of the new Letter of Agreement between the Lima ACC and the Guayaquil ACC; the following are the main changes:

a) Introduce AIDC as a primary means of coordination between adjacent ACCs
b) Reduce longitudinal separation from 80 nm / 10 min to 40 nm / 5 minutes for all aircraft having as final destination the aerodromes located in Peru, Ecuador, Colombia, and Panama, and those entering the Amazónica FIR.

5.25 After fine-tuning some details, the parties agreed to sign this Letter of Agreement on 23 October, effective on 31 March 2016 by mutual agreement between the parties involved.

5.26 The Meeting took note that the letter of operational agreement amended to include the use of AIDC, shown in **Appendix A**, had been used as a model for amending the letters of operational agreement between Peru-Colombia, Colombia-Ecuador, and Colombia-Panama.

5.27 The AIDC messages used for the operation of AIDC between the Lima ACC and the Guayaquil ACC are:

ABI is generated automatically
PAC is generated automatically
EST is generated automatically
CPL, if used, is generated automatically
ACP is generated manually by the Control
TOC is generated manually by the Control
AOC is generated manually by the Control
LRM and **LAM** messages are generated automatically

5.28 In this regard, the Meeting agreed to use the amendment to the letter of operational agreement between Ecuador and Peru as a model for the drafting of amendments to the rest of the letters of agreement between the States implementing AIDC between adjacent centres. In this sense, it formulated the following conclusion:

Conclusion SAM/IG/16/01: Model amendment to the letter of operational agreement on AIDC between two centres

That SAM States, when implementing AIDC between adjacent ATS units, make the corresponding amendments to the letters of operational agreement using as a model the amendment to the letter of operational agreement between the Lima ACC and the Guayaquil ACC for the operation of AIDC, shown in Appendix A to this agenda item.

5.29 The Meeting, based on the progress made in AIDC implementation between adjacent control centres, went on to amend the dates of AIDC implementation established in the Bogotá Declaration for the period 2014-2016. The result is shown in **Appendix B** to this agenda item, according to which AIDC between the ACCs of Brazil and the ACCs of adjacent States would be implemented in the second half of 2016. The implementation of AIDC between Venezuela (Maiquetia ACC) and the ACCs of adjacent States could be implemented beyond 2016 since Venezuela did not have an AIDC yet and would be starting a modernization process that could be completed beyond 2016.

5.30 The Meeting agreed to update the focal points designated by the States to coordinate AIDC activities, as shown in **Appendix C** to this agenda item.

5.31 The Meeting took note that in order to follow up AIDC implementation, teleconferences had been held on a fortnightly basis since the SAM/IG/15 meeting. In this regard, the Meeting agreed to maintain the timetable of such teleconferences either on a fortnightly or monthly basis, depending on the activities to be undertaken.

5.32 The Meeting felt that two meetings on AIDC implementation should be held in 2016 for operational technical staff, automation system experts, or AIDC focal points, in order to comply with AIDC interconnection implementation as foreseen in the Declaration of Bogota.

5.33 The holding AIDC panel meetings within the scope of the SAM/IG meetings has not met its goal, since few States have included in the list of delegates participating in the SAM/IG/15 and SAM/IG/16 meetings--especially so in the latter--AIDC focal points or automation system experts, despite the letters of invitation to these events clearly stating the importance of AIDC implementation and the granting of two fellowships to staff with expertise in automation systems.

5.34 The first meeting on AIDC implementation would take place on 28-30 March 2016 and the second on 26-28 September 2016. In order to have experts in this area attending these events, the next coordination meeting of project RLA/06/901 will be requested to grant one fellowship per State.

5.35 **Appendix D** to this agenda item contains the timetable of activities as updated by the Meeting.

5.36 The Meeting took note of AIDC implementation activities for the period 2017-2019 adopted by the Second Meeting of Air Navigation and Safety Directors, which considered that all AIDC interconnections had to be completed by the end of 2019, provided that the States that had not yet installed AIDC did so. To date, Bolivia, Guyana, French Guiana, Suriname, and Venezuela had installed AIDC in their ACCs.

5.37 The Meeting took note that AIDC implementation was included in ASBU module BO-FICE, Increased interoperability, efficiency and capacity through ground-ground integration. It also noted that the number of AIDC interconnections considered for the period 2017-2019 was 12 at intra-regional level (out of which 2 AIDC interconnections were foreseen for the period 2014-2016) and 9 at inter-regional level, distributed as follows: Colombia (3), Ecuador (1), Panama (1), and Venezuela (4). The distribution for the period 2017-2019 is shown in **Appendix E** to this agenda item.

Follow-up to the implementation of activities to improve situational awareness

5.38 With regard to the activities to improve situational awareness, the Meeting took note that as a follow-up to conclusion SAM/IG/15-09 *Review and approval of the Guide on technical/operational considerations for multilateration (MLAT) implementation*, the Secretariat circulated the guide (Letter SA389) to all SAM States on 24 June 2015, sending a reminder on 17 August 2015 (Letter SA466), for review and approval.

5.39 The Meeting was informed that out of all States consulted, only Bolivia, Chile, Brazil, and Ecuador had sent in their comments. In this regard, the Meeting went on to approve the comments for their inclusion in the guide and approved the latter as a guide to be published in the eDocument section of the ICAO SAM Regional Office website.

5.40 The Meeting took note of the inclusion of the action plan for the implementation of ADS-B in the SAM Region in project C2 (ATM situational awareness in the SAM Region), adopted at the third meeting of the GREPECAS Programmes and Projects Coordination Committee, shown in **Appendix F** to this agenda item.

5.41 The Meeting recalled the need to update the FASID surveillance table, CNS 4, in order to include ADS-B and MLAT implementations, in accordance with conclusion SAM/IG/14-17.

5.42 Regarding the "Guide on technical considerations to support ATFM implementation," pending development, it was expected to be presented at the SAM/IG/17 meeting, if the Ninth Meeting of the Review Committee of Project RLA/06/901 approved the mission of one expert for one week in the month of April 2016 to Lima, Peru, to develop this guide.

5.43 The Meeting was informed that the Seminar/Workshop on the Implementation of Advanced Surveillance and Automation Systems for the NAM/CAR/SAM Regions was held in Panama City, Panama, from 22 to 25 September 2015. At this workshop/seminar, participants received valuable information to support the implementation of advanced surveillance (ADS-B and multilateration) and automation (AIDC) systems in CAR/SAM States, Territories, and International Organizations so as to

meet the operational surveillance and automation requirements specified in NAM/CAR and SAM regional performance-based implementation plans within the framework of the ICAO Global Air Navigation Plan (Fourth Edition).

5.44 The Meeting was informed that 82 representatives of 18 NAM/CAR/ SAM States, two international organizations of the Regions, and 12 companies attended the workshop. All presentations and documentation of the seminar/workshop were posted on the ICAO SAM Regional Office webpage http://www.icao.int/SAM/Pages/ES/MeetingsDocumentation_ES.aspx?m=2015-SEMAUTOM. The summary of the event, including the recommendations and conclusions, is contained in **Appendix G** to this agenda item.

Surveillance activities considered for the period 2017-2019

5.45 The Meeting, in answer to the requirements of the Second Meeting of Air Navigation and Safety Directors (AN&FS/2), went on to analyse air navigation implementation activities in the CNS area planned for 2017-2019 in relation to the following ASBU modules: *B0-SUR: Initial capability for ground surveillance, B0-SURF: Safety and efficiency of surface operations (A-SMGCS Level 1-2), and B0 - TBO: Improved safety and efficiency through the initial application of data link en-route,* and identified the indicators and goals for the period 2017-2019. A summary of such analysis is presented below:

1- BO – SUR: the Meeting discussed the metrics adopted in the PBIP and its need for adjustment to make it more representative, taking into account that States already have plans for implementing ADS-B and MLAT to meet their operational needs, which can be summarized in use as radar backup, as supplement to coverage already provided by radar, to support coverage at congested airports, and to fill coverage gaps in specific situations. As a result, a new metric was reached, based on the percentage of surveillance coverage provided by ADS-B and/or MLAT in upper airspace. The changes are listed in **Appendix H**.

2- BO - SURF: The Meeting considered that the current metric is adequate.

3- B0 - TBO: The Meeting considered that the metric should contemplate the implementation of ADS-C-based surveillance in oceanic areas as required, since some oceanic areas were already covered by radar-based surveillance (e.g. Colombia and Venezuela). In this sense, the Meeting proposed the following indicator: % of oceanic FIRs with ADS C implemented. To date, 82% ADS-C implementation had been achieved and the goal was to achieve 100% by the end of 2019. With regard to the CPDLC implementation, the analysis led to the conclusion that in oceanic areas, 82% implementation had been achieved, and the goal was to achieve 100% in 2019. In continental areas, 5% coverage was considered for 2019. Details are contained in Appendix H.

5.46 With regard to the interconnection of automated systems, it was concluded that the most appropriate indicator was the percentage of surveillance coverage in flight control transfer areas between adjacent ACCs in the Region. The goal for 2019 was 30% surveillance coverage in areas of flight control transfer between adjacent ACCs in the Region.

5.47 The Meeting also analysed the issue of automated systems and agreed to change the expression “modernization of automated systems” for "implementation of automated systems in the ACCs," whose metric was the number of automated systems implemented. It was considered that 90% of ACCs already had automated systems and the goal was to achieve 100% by 2019.

5.48 The Meeting agreed that the result of the analysis of surveillance activities presented in Appendix H to this agenda item should be presented at the next meeting of Civil Aviation Authorities, RAAC/14, pursuant to that agreed by Air Navigation and Safety Directors at the AN&FS/2 meeting.

Modernization of the French ATM system in the French Antilles and French Guiana

5.49 The meeting was informed that the Air Navigation Services Directorate of France (DSNA) had decided to launch a program to modernize the ATC systems in French territories around the world called "seaflight". Five French territories were considered in this program, starting with French Guiana.

5.50 The Meeting took note that all the installed systems would be replaced by an integrated product, capable of handling surveillance and AFTN messages in a homogeneous HMI (Human Machine Interface) environment. The following features would integrated in a single disply:

- Flight Data Processing System;
- Surveillance Data Processing System (RADAR and ADSB);
- ADS-C / CPDLC;
- Electronic stripping;
- Automatic coordination (AIDC);
- A flight data operator; Y
- Technical position (supervision).

APPENDIX A

CARTA DE ACUERDO OPERACIONAL SUSCRITA ENTRE EL CENTRO DE CONTROL DE AREA DE LIMA (PERU) Y EL CENTRO DE CONTROL DE AREA DE GUAYAQUIL (ECUADOR)

(Spanish only)

Dirección General de Aviación Civil del Ecuador

Corporación Peruana de Aeropuertos y Aviación Comercial

CARTA DE ACUERDO OPERACIONAL SUSCRITA ENTRE EL CENTRO DE CONTROL DE AREA DE LIMA (PERU) Y EL CENTRO DE CONTROL DE AREA DE GUAYAQUIL (ECUADOR)

XXXXX de 2015

CARTA DE ACUERDO OPERACIONAL SUSCRITA ENTRE EL CENTRO DE CONTROL DE AREA DE LIMA (PERU) Y EL CENTRO DE CONTROL DE AREA DE GUAYAQUIL (ECUADOR)

Asunto: Procedimientos relacionados con la coordinación del Tránsito Aéreo IFR entre los Centros de Control de Área de Lima y Guayaquil.

1. INTRODUCCION

1.1 PROPÓSITO

Este documento establece los procedimientos operacionales para la coordinación, encaminamiento del tránsito aéreo, establecimiento de puntos de transferencia de control y comunicaciones, aplicables al tránsito IFR que operen en los límites comunes de la FIR Lima y la FIR/UIR Guayaquil. Dichos procedimientos se complementan con las normas y métodos recomendados por la OACI, así como las Regulaciones de cada uno de los Estados.

1.2 FECHA DE ENTRADA EN VIGENCIA: 00:00 UTC del 01 de XXXXXX de 2015

1.3 DISTRIBUCIÓN

Este documento será distribuido a: Las DGAC de ambos países, proveedores ANS, Supervisores y Controladores de Tránsito Aéreo de los Centros de Control de Lima y Guayaquil.

1.4 ESPACIOS AEREOS Y DEPENDENCIAS DE CONTROL

1.4.1 La UTA Guayaquil es un espacio aéreo controlado clase “A” desde FL 245/UNL, con límites laterales y características publicadas en el AIP/ECUADOR, administrada y controlada por la Dirección de Aviación Civil del Ecuador. El Servicio de Tránsito Aéreo es provisto para todos los vuelos IFR por la dependencia denominada “Guayaquil Control” (ACC Guayaquil).

1.4.2 La FIR Guayaquil es un espacio aéreo controlado clase “G” desde GND/FL 245, con límites laterales y características publicadas en el AIP/ECUADOR, administrada por la Dirección de Aviación Civil del Ecuador. El Servicio de Tránsito Aéreo es provisto para todos los vuelos por la dependencia denominada “Guayaquil Control” (ACC Guayaquil).

1.4.3 La FIR Lima, es un espacio aéreo clase “A” desde FL 245/UNL con límites laterales y características publicados en AIP/PERÚ, administrado y controlado por los servicios de CORPAC S.A. El Servicio de Tránsito Aéreo es provisto para todos los vuelos IFR por la dependencia denominada “Lima Control” (ACC Lima).

2. PROCEDIMIENTOS DE CONTROL

2.1 ENCAMINAMIENTO DEL TRÁNSITO AÉREO

Normalmente todo el tránsito aéreo que atraviesa el límite común de las FIR indicadas, será encaminado por las rutas ATS y rutas RNAV publicadas en los AIP y cartas de navegación de Ecuador y Perú.

Los vuelos fuera de rutas ATS y RNAV, estarán sujetos a coordinación expresa para cada caso y en forma individual.

Las aeronaves serán autorizadas al nivel de vuelo apropiado conforme lo indicado en el ANEXO 1 de este documento y deberán estar en el nivel asignado por lo menos cinco (5) minutos antes del ETO al punto de transferencia de control.

Sin embargo, respecto a las aeronaves que despegan del aeropuerto internacional de Guayaquil "José Joaquín de Olmedo" y que ingresarán a la FIR Lima, serán normalmente transferidas al ACC Lima con un nivel inicial previamente coordinado de FL 270 ó FL 290, correspondiendo a ACC Lima autorizar el ascenso y nivel final en ruta.

Sin embargo cuando se haya coordinado expresamente con el ACC aceptante, el ACC transferidor podrá autorizar a las aeronaves para que crucen el punto de transferencia en ascenso o descenso hacia el nivel de crucero previamente coordinado.

2.2 SEPARACIONES

El ACC Guayaquil y el ACC Lima, proveerán separación de la siguiente manera:

2.2.1 SEPARACIÓN VERTICAL en espacio NO RVSM

Para todas las aeronaves, la separación por debajo de FL290 será de 1000 pies. La separación por encima de FL410 será de 2000 pies.

2.2.2 SEPARACIÓN VERTICAL en espacio RVSM

En espacio RVSM entre FL290 hasta FL410 inclusive, se aplicará la separación de 1000 pies entre aeronaves con aprobación RVSM.

Sólo las aeronaves de Estado, HEAD, en mantenimiento, en vuelo humanitario, ambulancia aérea o primera entrega, que no tengan aprobación RVSM, están autorizadas para operar en espacio RVSM y se aplicará una separación de 2000 pies entre éstas y todo otro tránsito que evolucione en el espacio aéreo referido.

NOTA: *De acuerdo a la OACI, entiéndase como HEAD únicamente la primera autoridad de un Estado (Presidente, Primeros Ministros, Reyes).*

NOTA: *El ACC que realice la transferencia deberá indicar los casos que son de excepción.*

SEPARACION VERTICAL MINIMA

	APROBACION DE AERONAVE	
ESPACIO AEREO	**APROBADO RVSM**	**NO APROBADO RVSM**
ESPACIO NO RVSM: SUPERIOR A FL 410	**2000 pies**	**2000 pies**
ESPACIO RVSM: FL 290 - FL 410	**1000 pies**	**2000 pies ***
ESPACIO NO RVSM: INFERIOR A FL 290	**1000 pies**	**---------**
(*) SOLO PARA AERONAVES DE ESTADO, MANTENIMIENTO, HEAD, HOSPITAL, PRIMERA ENTREGA O HUMANITARIOS		

2.2.3 SEPARACIÓN LONGITUDINAL

2.2.3.1 La separación longitudinal mínima aplicable entre los vuelos que mantengan la misma velocidad y el mismo nivel de crucero en la misma ruta o en rutas convergentes será de diez minutos (10') u ochenta millas (80 NM RNAV), ver ANEXO 1.

2.2.3.2 Se podrá aplicar una separación de cinco minutos (5') o cuarenta millas (40 NM RNAV), con las siguientes condiciones:

a) Para aeronaves que procedan a destinos dentro de las FIR Guayaquil, Lima, Bogotá y Panamá con respecto a otros tránsitos, y
b) El ACC transferidor garantice la separación (no haya velocidad de alcance), y
c) Sistemas de vigilancia, de coordinación y comunicaciones aeroterrestres se encuentren operando normalmente en los ACC Guayaquil y ACC Lima.

2.2.3.3 Para mantener la separación se aplicará la técnica de número MACH descrita en el Documento 4444 ATM/501 sección 5.4.2.4.

2.2.4 SEPARACIÓN LATERAL

En caso de circunstancias o condiciones que afecten la separación lateral debido a desvíos, se aplicará la separación vertical entre las aeronaves afectadas.

2.2.4.1 En sentido sur- norte, no existe separación lateral por converger en espacio aéreo de Guayaquil:

a) entre las rutas **UB696, UL780, UM665 y UM530**, y
b) entre las rutas **UM665, UM795 y UM674**.

Por lo tanto el ACC de Lima proveerá separación vertical o longitudinal, conforme lo indican los numerales 2.2.1, 2.2.2 y 2.2.3.

2.2.4.2 En sentido norte- sur, no existe separación lateral por converger en espacio aéreo del Perú:

a) entre las rutas **UG436 / UM542 y UB696,**
b) entre las rutas **UB696 y UL780**,
c) entre las rutas **UL312, UL344 y UL308** y
d) entre las rutas **UM776 y UM665**.
e) entre las rutas **UM795 y UM665**.

Por lo tanto el ACC de Guayaquil proveerá separación vertical o longitudinal, conforme lo indican los numerales 2.2.1, 2.2.2 y 2.2.3.

3 PROCEDIMIENTOS DE COORDINACION

3.1 COORDINACION DE INFORMACION PREVIO A LA TRANSFERENCIA

3.1.1. AIDC Operativo:

El centro transferidor enviará de manera automática los siguientes mensajes AIDC con la información relevante para la transferencia de control:

a. ABI: Por lo menos (20) minutos antes del ETO de la aeronave al punto de transferencia de control.
b. PAC: Para aeronaves que van a despegar de aeródromos situados muy cerca de la frontera, cuando el tiempo calculado por el sistema para el ETO de la aeronave al punto de transferencia de control de acuerdo al EOBT del FPL es menor al tiempo configurado para la emisión de un EST o CPL.
c. EST o CPL: Por lo menos (15) minutos antes del ETO de la aeronave al punto de transferencia de control.

NOTA: *Los tiempos de transferencia de estos mensajes estarán definidos en la Base de Datos de cada sistema automatizado.*

3.1.2. AIDC Inoperativo:

El centro transferidor, deberá proporcionar la siguiente información al centro aceptante, por lo menos quince (15) minutos antes del ETO de la aeronave al punto de transferencia de control:

a) Identificación de la aeronave (*)
b) Tipo de aeronave
c) Velocidad indicada
d) Hora estimada sobre el punto de transferencia de control (*)
e) Nivel de vuelo (*)
f) Porción restante de la ruta de vuelo
g) Límite de autorización si es diferente al aeródromo de destino.
h) Clave SSR asignada (*).
i) Disponibilidad de capacidad RVSM (*)

NOTA: *Si los ACC Lima o Guayaquil disponen de los datos del Plan de Vuelo (FPL) en el sistema FDP, solamente se requerirán los datos marcados con (*).*

NOTA: *Si los ACC Lima o Guayaquil no tienen datos del FPL en el sistema FDP, el controlador receptor copiara los datos de FPL y aceptará la transferencia. Internamente proseguirá según el protocolo establecido en los Manuales de Procedimientos propios de cada dependencia.*

3.2 COORDINACION DE DESVIOS PREVIO A LA TRANSFERENCIA DE RESPONSABILIDAD

La dependencia ACC transferidora deberá informar a la dependencia ACC aceptante desvíos significativos de la ruta (más de 10 NM), desvíos en tiempo (3 minutos o más), restricciones de velocidad y en general, cualquier restricción que se haya impartido a las aeronaves en el espacio aéreo de la dependencia ACC transferidora y que éstas mantendrán al momento de ingresar al espacio aéreo de la dependencia ACC aceptante.

La dependencia ACC transferidora NO autorizará cambios en el plan de vuelo para aeronaves que se encuentren a cinco minutos (5') / 40 NM o menos del punto de transferencia, sin previa aceptación de la dependencia ACC aceptante.

NOTA: *En condiciones normales esta información será transmitida vía AIDC mediante un mensaje CDN. Si fallara la coordinación vía AIDC, se transmitirá por vía oral.*

3.3. TRANSFERENCIA DE RESPONSABILIDAD DE CONTROL.

3.3.1. AIDC Operativo:

La transferencia de control se realizará mediante un mensaje TOC 3 minutos antes de que la aeronave sobrevuele el punto de transferencia especificado para la Ruta ATS o RNAV correspondiente y que figura en el ANEXO 1 de esta Carta de Acuerdo Operacional, a menos que exista tránsito en conflicto antes del punto de transferencia mencionado, en cuyo caso se esperará a que la aeronave esté libre de tránsito.

La dependencia aceptante responderá el mensaje TOC mediante un mensaje AOC, indicando de esta manera que asume la responsabilidad indicada en el párrafo anterior y que ha establecido comunicación con la aeronave. A partir de ese momento la dependencia aceptante es libre de actuar sobre dicha aeronave, aún cuando esta no haya cruzado efectivamente el punto de transferencia.

3.3.2. AIDC Inoperativo:

La transferencia de control se realizará cuando la aeronave haya sobrevolado el punto de transferencia especificado para la Ruta ATS o RNAV correspondiente y que figura en el ANEXO 1 de esta Carta de Acuerdo Operacional, a menos que sea coordinado de otra manera.

La dependencia aceptante no necesitará notificar a la dependencia transferidora cuando asuma la responsabilidad indicada en el párrafo anterior, ni cuando establezca comunicación con la aeronave, a menos que específicamente se solicite.

3.4 TRANSFERENCIA DE COMUNICACIONES.

Normalmente, las comunicaciones aeroterrestres de una aeronave serán transferidas tres (3´) minutos antes de la hora en que se calcule que la aeronave llegará al punto de transferencia indicado para ruta ATS correspondiente y que figura en el ANEXO 1 de esta Carta de Acuerdo Operacional.

No obstante cuando las condiciones de tránsito así lo requieran, la dependencia transferidora, previa coordinación, podrá demorar la transferencia de comunicaciones hasta que la aeronave notifique haber sobrevolado dicho punto de transferencia o haber alcanzado el nivel autorizado.

3.5 FRECUENCIAS DE TRANSFERENCIA.

CENTRO DE CONTROL	FRECUENCIA PRINCIPAL	FRECUENCIA SECUNDARIA	OBSERVACIONES
GUAYAQUIL Sector 1	128,3 MHZ	127,95 MHZ (*)	(*) Guayaquil Sector 2
LIMA Sector Norte	128,1 MHZ 10024 KHZ (*)	124.3 MHZ 10024 KHZ - 6649 KHZ (*)	AMERO – ANPAL – ARNEL PAGUR – VAKUD (*) Lima Radio KARAZ - OSAKI
LIMA Sector Oriente	128,5 MHZ	133.1 MHZ 10024 KHZ (*)	EVLIM – KORBO LOBOT – TERAS (*) Lima Radio

3.6 MEDIOS DE COORDINACION

Los medios de Coordinación principales y alternos de los Centros de Control de Guayaquil y Lima se detallan en el ANEXO 3 de la presente Carta de Acuerdo.

3.7 MEDIDAS DE CONTROL DE AFLUENCIA

Las medidas de Control de Afluencia deberán ser aplicadas con el menor impacto posible sobre los ACC involucrados.

Se evitarán las restricciones en los puntos de transferencia que impliquen espaciamientos en tiempo con independencia de nivel de vuelo, ya que afectan la capacidad y eficiencia de los espacios aéreos considerados y de otras FIRs no adyacentes.

Paralelamente, los Supervisores de ambos ACC de mutuo acuerdo gestionarán la flexibilidad de las medidas y considerarán los casos especiales estableciendo puntos de espera en la FIR que implemente la medida, si fuera necesario.

3.8 INTERCAMBIO DE MENSAJES

Excepto por lo que se refiere a la transmisión de planes de vuelo repetitivos, el intercambio de información se efectuará normalmente como se indica en el ANEXO 2 de esta carta de acuerdo.

3.9 NOTIFICACIÓN DE INCIDENTES DE TRANSITO AEREO

En caso de presentarse cualquier incidente ATS, se tramitará a través de los supervisores de turno y Jefes de Centro de Control, la información de los mismos.

3.10 GRANDES DESVIACIONES DE ALTITUD (LHD)

Cuando ocurra un LHD, este se tramitará entre los puntos de contacto de los ACC Guayaquil y Lima y se analizarán de acuerdo a la clasificación de los mismos realizada por CARSAMMA. (ANEXO 7)

4 CONTINGENCIAS

En caso de interrupción Total o Parcial de la prestación de los Servicios de Control de Tránsito Aéreo, se aplicaran los procedimientos de contingencia descritos en los ANEXOS 5 y 6 de esta Carta de Acuerdo Operacional.

Durante el periodo que dure la contingencia se deberá emitir el respectivo NOTAM, indicando la naturaleza del mismo y las acciones tomadas para enfrentar la contingencia.

En caso de presentarse simultáneamente más de una contingencia el supervisor del ACC afectado, aplicará el procedimiento descrito en la contingencia más restrictiva a las operaciones aéreas.

4.1 FALLA DE COMUNICACIONES.

4.1.1 Falla en los medios de coordinación entre dependencias.

Cuando se presenten dificultades de comunicaciones para las coordinaciones entre las dependencias ACC, las aeronaves ingresaran a la FIR adyacente, únicamente por los puntos de transferencia asignados, según la tabla contenida en el ANEXO 1 de ésta Carta de Acuerdo, en vuelo nivelado, con las separaciones consideradas en el numeral 2.2. (Excepto lo dispuesto en 2.2.3.2)

En caso de falla de los circuitos orales ATS principales, las coordinaciones se realizarán utilizando los medios alternativos, descritos en el ANEXO 3 de ésta Carta de Acuerdo.

Si la falla persiste también en los medios alternativos, y la coordinación de transferencia no puede ser efectuada, la dependencia transferidora hará lo siguiente:

a) Notificará al piloto tan pronto sea posible que la dependencia adyacente no tiene conocimiento de su vuelo, por lo tanto, la autorización para operar en aquel espacio aéreo controlado no es válida.
b) Autorizará el vuelo según el FPL hasta el límite común de ambas FIR y realizará la transferencia de comunicaciones por lo menos cinco minutos (5') o 40 NM antes del límite común.
c) Requerirá al piloto que comunique a la dependencia transferidora cuando establezca contacto con la dependencia receptora, siempre que sea posible.

NOTA: *Si el piloto decide continuar su vuelo, lo puede hacer, solamente bajo la responsabilidad de éste y correrá a cargo del mismo el trámite de la respectiva autorización de entrada a la UTA adyacente, mediante el procedimiento de Auto – Transferencia.*

4.1.2 Falla de comunicaciones Aeroterrestres.

En el caso de falla total del equipo de radio en tierra utilizado para el control, el controlador, a menos que pueda seguir suministrando servicio de vigilancia ATS por medio de otros canales de comunicación disponibles, procederá según se indica a continuación:

a) Informará sin demora a la dependencia ACC adyacente, acerca de la falla;
b) Mantendrá, a dicha dependencia, al tanto de la situación del tránsito vigente;
c) Pedirá su asistencia, respecto a aeronaves que puedan establecer comunicaciones con dicha dependencia, para establecer y mantener la separación entre tales aeronaves; y
d) Dará instrucciones a la dependencia ACC adyacente para que mantengan en espera o modifiquen la ruta de todos los vuelos controlados que estén fuera del área de responsabilidad de la dependencia ACC que haya experimentado la falla, hasta el momento en que pueda reanudarse el suministro de servicios normales.
e) Se informará a la dependencia ACC adyacente cuando se supere la falla de comunicaciones.

Para que disminuya el impacto de una falla completa del equipo de radio en tierra en la seguridad del tránsito aéreo, se han establecido procedimientos de contingencia que habrían de seguir las dependencias ACC en caso de que ocurran tales fallas. (ANEXOS 5 y 6 del presente documento).

En tales procedimientos de contingencia se ha previsto la delegación de control a un puesto de control, o a una dependencia ATC, adyacente para que pueda proporcionarse tan pronto como sea posible un nivel mínimo de servicios, después de la falla del equipo de radio en tierra y hasta que puedan reanudarse las operaciones normales.

En caso de que la falla de comunicaciones aero-terrestres se extienda más allá de dos horas en su resolución, el supervisor de turno podrá solicitar la activación la red simplificada de rutas alternativas de emergencia, contenidas en los Planes de Contingencia de cada Centro de Control.

4.2 FALLAS DEL SISTEMAS DE VIGILANCIA ATS

En caso de falla total del sistema de vigilancia ATS, cuando persistan las comunicaciones aeroterrestres, el controlador tomará las medidas necesarias para establecer la separación de diez minutos (10') u ochenta millas (80 NM) entre las aeronaves que estaban evolucionando con separación longitudinal reducida de cinco minutos (5') o 40 millas, y de ser necesario, limitará el número de aeronaves a las que se les permite entrar en el área.

Como medida de emergencia, puede recurrirse temporalmente al uso de niveles de vuelo espaciados la mitad de la separación vertical mínima aplicable, si no pudiera proporcionarse inmediatamente la separación normal basada en los procedimientos.

Cuando se presenten fallas en los sistemas de vigilancia ATS del Centro de Control de Guayaquil, independientemente de la publicación del respectivo NOTAM se procederá de la siguiente forma:

a) Se informara al ACC adyacente sobre la falla del sistema radar y tiempo estimado de duración de la misma.
b) Se mantendrán los procedimientos de control establecidos en el numeral 2 del presente documento, con excepción de 2.2.3.2.
c) Se notificará al ACC adyacente, la reanudación del servicio radar.

4.3 EMERGENCIAS y/o INTERFERENCIA ILÍCITA.

En el caso de que una aeronave se encuentre, o parezca encontrarse, en alguna situación de emergencia, el controlador proporcionará toda clase de ayuda, y los procedimientos aquí prescritos pueden variarse de acuerdo con la situación, considerando la posibilidad que se produzcan cambios repentinos en la ruta, nivel de vuelo o destino y la imposibilidad del cambio de frecuencia de control.

El vuelo de una aeronave identificada en situación de emergencia se vigilará y, siempre que sea posible, se seguirá su posición en la presentación de la situación, hasta que la aeronave salga de la cobertura del sistema de vigilancia ATS, y deberá proporcionarse información respecto a su posición a todas las dependencias de los servicios de tránsito aéreo que puedan prestar ayuda a la aeronave. Cuando corresponda, se efectuará también la transferencia a sectores adyacentes.

5 SERVICIO DE ALERTA.

Cuando se tenga dudas sobre la posición de una aeronave, la responsabilidad de las tareas de coordinación para brindar el Servicio de Búsqueda y Salvamento, recaerá en aquella dependencia ATS:

a) En cuya FIR se haya registrado la última comunicación; o
b) En la que la aeronave se disponía a entrar, cuando se sepa que ya ha cruzado el punto de transferencia, mediante información obtenida por radiotelefonía.

6 SERVICIO DE INFORMACIÓN DE VUELO - FIS

6.1 Coordinación necesaria cuando se proporcione solamente los servicios de información de vuelo y de alerta.

6.1.1 Los procedimientos señalados en esta parte, además de facilitar los servicios de tránsito aéreo, pueden evitar acciones innecesarias de interceptación de aeronaves civiles, debido a la existencia de zonas de identificación de defensa aérea o zonas especiales de control aéreo, en las FIR Lima y Guayaquil, respectivamente.

6.1.2 Cuando se proporciona solamente los servicios de información de vuelo y de alerta, se efectuará la coordinación correspondiente con respecto a los vuelos VFR e IFR que atraviesen el límite común de las FIR. Esta coordinación incluirá la transmisión de la siguiente información sobre los vuelos en cuestión:

a) Partes apropiadas del plan de vuelo actualizado;
b) La hora en que se estima sobre el punto de transferencia acordado y;
c) La hora en que se efectuó el último contacto con la aeronave.

6.1.3 La información indicada se transmitirá por lo menos 20 minutos antes que la aeronave salga de la Región de Información de vuelo a cargo del ACC que la origina.

6.1.4 **Información meteorológica.-** La dependencia de control que tenga conocimiento de información meteorológica o de ceniza volcánica relevante para las operaciones aéreas, informará tales condiciones a la dependencia adyacente para que esta a su vez la retransmita oportunamente a las tripulaciones interesadas.

7 ASIGNACION DE CODIGOS SSR.

La asignación de códigos SSR estará de acuerdo al Sistema de Asignación de Código Internacional de las Regiones CAR - SAM y se establecen de la siguiente manera:

GUAYAQUIL:	5400-5477 / 5500-5577
LIMA:	5600-5677 / 5700-5777

8 REVISIONES.

La presente Carta de Acuerdo deberá ser revisada cuando los procedimientos indicados en la misma resulten afectados por enmiendas a las normas, métodos recomendados, procedimientos suplementarios y planes regionales de la OACI o cuando se habiliten nuevas instalaciones de: radio ayudas a la navegación, comunicaciones y Servicios de Tránsito Aéreo. En el caso de nuevas instalaciones y modificaciones de las actuales, el inicio de la acción corresponderá al Estado causante. Respecto a cualquier otro caso, el Estado interesado propondrá la enmienda pertinente.

9 DIVULGACION.

La presente Carta de Acuerdo, será convenientemente divulgada por las partes a todo el personal de Controladores de Tránsito Aéreo por lo menos 30 días antes de la fecha de entrada en vigencia, dando lugar a las correspondientes acciones de capacitación en cada administración.

10 CANCELACION

La presente Carta de Acuerdo, cancela la Carta de Acuerdo Operacional vigente desde el 23 de Diciembre de 2011.

11 ANEXOS

Anexo 1: "Tabla de referencia para la transferencia de responsabilidad de control entre el Centro de Control de Lima y el Centro de Control de Guayaquil"

Anexo 2: "Tabla de referencia para el intercambio de mensajes entre el Centro de Control de Lima y el Centro de Control de Guayaquil"

Anexo 3: "Medios de coordinación".

Anexo 4: "Contingencias RVSM".

Anexo 5: "Plan de Contingencia en caso de suspensión total o parcial de los Servicios de Tránsito Aéreo del Centro de Control de Guayaquil".

Anexo 6: "Plan de Contingencia ATS para la FIR LIMA".

Anexo 7: "Datos de Contacto de los Puntos Focales LHD".

12 FIRMAS

Firmado en Lima, Perú, a XX de XXXXX de 2015

En representación de Perú:

FERNANDO HERMOZA HUBNER
Coordinador técnico de Navegación Aérea
Dirección de Seguridad Aeronáutica
DGAC PERU

JORGE RAEZ ANCAYA
Gerente de Operaciones Aeronáuticas
CORPAC

En representación de Ecuador:

ING. IVAN TULCAN ORMAZA
Director de Navegación Aérea
DGAC ECUADOR

SR. MARCELO VALENCIA T.
Jefe de Gestión de Tránsito Aéreo Nacional
DGAC ECUADOR

ING. DARWIN SUAREZ L.
Coordinador de Seguridad Operacional DNA
DGAC ECUADOR

ANEXO 1

TABLA DE REFERENCIA PARA LA TRANSFERENCIA DE RESPONSABILIDAD DE CONTROL ENTRE EL CENTRO DE CONTROL DE LIMA Y EL CENTRO DE CONTROL DE GUAYAQUIL

RUTAS ATS	TABLA DE NIVELES ASIGNADOS POR:		PUNTOS DE TRANSFERENCIA	MINIMOS APLICABLES PARA LA SEPARACION LONGITUDINAL	
	GUAYAQUIL	LIMA		Minutos/ Distancia (b)	Observaciones
	FL	FL			
UL401	IMPAR	PAR	**KARAZ** 03°24´00´´S 087°34´30´´W	10 min / 80NM	**a)** Aeronaves que procedan a aterrizar dentro de las FIR Guayaquil, Lima, Bogotá y Panamá sin velocidad de alcance; sistemas de vigilancia ATS, coordinación y comunicaciones normales. **b)** Rutas paralelas UM674 y UM795, designadas RNAV 5 con espaciado mayor a 30NM. ACFT en las mismas pueden ser transferidas al mismo FL. **c)** Si la aeronave que sigue tiene velocidad igual o menor que la precedente. ***NOTA:*** *La separación se podrá incrementar en 5 minutos cuando fallen los enlaces orales ATS.*
UL312	IMPAR	PAR	**OSAKI** 03°24´00´´S 084°41´00´´W	10 min / 80NM	
UL344	IMPAR	PAR	**AMERO** 03°24´00´´S 083°46´00´´W	10 min / 80NM	
UL308	IMPAR	PAR	**ANPAL** 03°24´00´´S 083°00´12´´W	10 min / 80NM	
UG436/ UM542	IMPAR	PAR	**ARNEL** 03°24´00´´S 081°35´00´´W	10 min / 80NM	
UB696 G675	IMPAR	PAR	**PAGUR** 04°28´46´´S 080°21´34´´W	10 min / 80NM 5 min /40NM(a)	
UL780	IMPAR	PAR	**VAKUD** 04°30´12´´S 079°34´00´´W	10 min / 80NM 5 min /40NM(a)	
UM530 UM674(c)	IMPAR	PAR	**EVLIM** 03°50´46´´S 078°19´31´´W	10 min / 80NM 5 min /40NM(a)	
UM665 A566	IMPAR	PAR	**KORBO** 03°01´00´´S 077°52´00´´W	10 min / 80NM 5 min /40NM(a)	
UM795(c)	IMPAR	PAR	**LOBOT** 02°52´32´´S 077°39´40´´W	10 min / 80NM 5 min /40NM(a)	
UM776	IMPAR	PAR	**TERAS** 02°00´00´´S 075°56´00´´W	10 min / 80NM 5 min /40NM(a)	
UL305	PAR	IMPAR	**TERAS** 02°00´00´´S 075°56´00´´W	10 min / 80NM 5 min /40NM(a)	
V1	PAR	IMPAR	**MOXOM** 03°30´03´´S 080°13´07´´W	10 min 5 min (c)	Coordinaciones entre Tumbes y Santa Rosa

ANEXO 2

TABLA DE REFERENCIA PARA EL INTERCAMBIO DE MENSAJES ENTRE EL CENTRO DE CONTROL DE LIMA Y EL CENTRO DE CONTROL DE GUAYAQUIL

TIPO DE MENSAJE	CIRCUNSTANCIAS EN QUE ES APLICABLE	TIEMPO LIMITE PARA LA TRANSMISION	MEDIOS A UTILIZAR
FPL	Todos los vuelos	Inmediatamente después de ser presentado	AFTN/AMHS
ABI	Todos los vuelos	20 minutos antes del ETO al punto de transferencia según plan de vuelo	AIDC
PAC	Determinado por el sistemas	Cuando el ETO calculado desde el despegue hasta el punto de transferencia es menor que el tiempo definido para el EST o CPL	AIDC Circuito oral
DEP	Todos los vuelos	Inmediatamente después del despegue	AFTN/AMHS
MAC	Según sea necesario	Tan pronto como sea posible después de producirse la circunstancia	AIDC Circuito oral
CPL	Según sea necesario	Tan pronto como sea posible después de producirse la circunstancia	AIDC AFTN/AMHS
EST	Todos los vuelos	15 minutos antes del ETO al punto de transferencia	AIDC AFTN/AMHS Circuito oral
CHG	Según sea necesario	Tan pronto como sea posible después de producirse la circunstancia	AFTN/AMHS Circuito oral
CDN	Según sea necesario	Tan pronto como sea posible después de producirse la circunstancia	AIDC AFTN/AMHS Circuito oral
ACP	Según sea necesario	Tan pronto como sea posible después de producirse la circunstancia	AIDC Circuito oral
REJ	Según sea necesario	Tan pronto como sea posible después de producirse la circunstancia	AIDC Circuito oral
TOC	Todos los vuelos	3 minutos antes del ETO al punto de transferencia	AIDC
AOC	Todos los vuelos	Tan pronto como sea posible después de recibirse el TOC	AIDC
ALR	Según sea necesario	Tan pronto como sea posible después de producirse la circunstancia	AFTN/AMHS Circuito oral
LAM	Determinado por el sistema	Automático	AIDC
LRM	Determinado por el sistema	Automático	AIDC

La dependencia transferidora notificará a la dependencia aceptante acerca de los cambios importantes en los datos transmitidos bajo la forma CPL / EST. Los cambios incluirán entre otros:

a) Variación de la velocidad verdadera de 5% o más respecto de lo consignada en el plan de vuelo.
b) Una variación de más de tres (3) minutos con respecto a la hora calculada sobre el punto de transferencia.

ANEXO 3

TIEMPOS DE EMISIÓN DE MENSAJES AIDC (ABI Y EST)
ENTRE EL CENTRO DE CONTROL DE LIMA Y EL CENTRO DE CONTROL DE GUAYAQUIL

RUTAS ATS	PUNTOS DE TRANSFERENCIA	TIEMPOS DE EMISIÓN (MINUTOS)			
		GUAYAQUIL		LIMA	
		ABI	EST	ABI	EST
UL401	**KARAZ** 03°24´00´´S 087°34´30´´W	60	30	60	30
UL312	**OSAKI** 03°24´00´´S 084°41´00´´W	40	20	40	20
UL344	**AMERO** 03°24´00´´S 083°46´00´´W	40	20	40	20
UL308	**ANPAL** 03°24´00´´S 083°00´12´´W	40	20	40	20
UG436/ UM542	**ARNEL** 03°24´00´´S 081°35´00´´W	40	20	40	20
UB696 G675	**PAGUR** 04°28´46´´S 080°21´34´´W	40	20	40	20
UL780	**VAKUD** 04°30´12´´S 079°34´00´´W	40	20	40	20
UM530 UM674(c)	**EVLIM** 03°50´46´´S 078°19´31´´W	40	20	40	20
UM665 A566	**KORBO** 03°01´00´´S 077°52´00´´W	40	20	40	20
UM795(c)	**LOBOT** 02°52´32´´S 077°39´40´´W	40	20	40	20
UM776	**TERAS** 02°00´00´´S 075°56´00´´W	40	20	40	20
UL305	**TERAS** 02°00´00´´S 075°56´00´´W	40	20	40	20
V1	**MOXOM** 03°30´03´´S 080°13´07´´W	30	20	30	20

ANEXO 4

MEDIOS DE COORDINACION

Los procedimientos de coordinación establecidos en la presente carta de acuerdo operacional se efectuarán utilizando Circuito Oral ATS (REDDIG) como medio principal, y en caso de falla del mismo, se utilizaran como medios alternos indicados en el siguiente cuadro:

Desde GUAYAQUIL hacia LIMA		
Medio Principal	AIDC (En Pruebas Pre-Operacionales hasta su definitiva implantación) Circuito conmutado oral ATS Lima ACC sector Norte y Oriente	SPIMAIDC **Hotline**
Medios Alternos	REDDIG Sector Norte	6035 – 6053
	REDDIG Sector Oriente	6039 – 6052
	REDDIG Supervisión	6060
	Discado directo internacional (DDI)	Sector Norte 511-575-5227 Sector Oriente 511-575-5108 Supervisión: 511-575-0886, 511-575-1995
	AFTN/AMHS	SPIMZQZX

Desde LIMA hacia GUAYAQUIL		
Medio Principal	AIDC (En Pruebas Pre-Operacionales hasta su definitiva implantación) Circuito conmutado oral ATS Guayaquil ACC sector 1	SEFGAIDC **Hotline**
Medios Alternos	REDDIG	**5060 / 5051 / 5052 / 5053**
	Discado directo internacional (DDI)	Directo Sector 1: 593-4-2924219 593-4-2925495 PBX ACC SEGU: 593-2-2947400 Ext. 2130
	Circuito conmutado oral ATS Guayaquil	02008
	AFTN/AMHS	SEFGZQZX

ANEXO 5

CONTINGENCIAS RVSM

Para el caso de una sola aeronave que experimenta una contingencia en vuelo, los mensajes de coordinación asociados, serán proporcionados oralmente mediante una descripción de la causa de la contingencia. Los mensajes de coordinación asociados incorporarán los siguientes términos:

a) Incapacidad RVSM debido a equipo, o
b) Incapacidad RVSM debido a turbulencia, según sea el caso.

Suspensión de las operaciones en espacio RVSM.

Los ACC Guayaquil y Lima, coordinarán los procedimientos para la suspensión de RVSM dentro de las áreas afectadas en las UTA LIMA y UTA GUAYAQUIL, cuando existan informes de pilotos sobre turbulencia mayor que moderada.

Dentro de las áreas donde los procedimientos RVSM han sido suspendidas, la separación vertical mínima aplicable entre todas las aeronaves será de 2000 FT.

En caso de la suspensión de las operaciones RVSM, las aeronaves se transferirán con los siguientes niveles según corresponda:

a) En sentido Norte / Sur, en los puntos de transferencia con niveles de vuelo impares; FL 290, FL 330, FL 370 y FL 410 únicamente.

b) En sentido Sur/ Norte, en los puntos de transferencia con niveles de vuelo pares; FL310, FL350 y FL390 únicamente.

Las aeronaves deberán estar en el nivel asignado por lo menos cinco minutos (5') o cuarenta millas (40 NM) antes del ETO al punto de transferencia de control. Sin embargo cuando se haya coordinado expresamente con el ACC aceptante, el ACC transferidor podrá autorizar a las aeronaves para que crucen el punto de transferencia en ascenso o descenso hacia el nivel de crucero previamente coordinado.

ANEXO 6

DIRECCIÓN GENERAL DE AVIACIÓN CIVIL
DIRECCIÓN DE NAVEGACIÓN AEREA

PLAN DE CONTINGENCIA

EN CASO DE DEGRADACION GRAVE O SUSPENSIÓN DE LOS SERVICIOS DE TRÁNSITO AÉREO DEL CENTRO DE CONTROL DE ÁREA DE GUAYAQUIL

1. OBJETIVO.

Establecer las coordinaciones y procedimientos a seguir en caso de presentarse contingencias que provoquen una degradación grave o suspensión de los servicios ATS que brinda el Centro de Control de Área de Guayaquil por más de dos horas, basados en normas y métodos establecidos en los Manuales y Normativas de tránsito aéreo de la DGAC; a fin de dar continuidad a dichos servicios.

2. ALCANCE.

Aplicable a todas las posiciones operacionales del Centro de Control de Área de Guayaquil, Centros de Control adyacentes, así como al personal operativo que se encuentre laborando en dichas posiciones al ocurrir una situación de contingencia.

3. DOCUMENTACION DE REFERENCIA.

- Manual de los Servicios de Tránsito Aéreo del Ecuador.
- Normativa 11 DGAC. Servicios de Tránsito Aéreo.
- Manual SMS de la DNA-DGAC.

4. GENERALIDADES.

Para la aplicación del Plan de Contingencia del Centro de Control de Área de Guayaquil, se dispone la conformación del **"Comité de Contingencia"**, conformado por los siguientes funcionarios:

- Responsable de la Gestión de Tránsito Aéreo, Región 2;
- Responsable del Centro de Control de Área de Guayaquil; y
- Supervisor de turno del Centro de Control de Área de Guayaquil.

El Responsable de la Gestión de Tránsito Aéreo Región 2, asume funciones como Director del Comité de Contingencias y es el responsable de la correcta ejecución del presente Plan de Contingencia, con el fin de garantizar la continuidad, regularidad y seguridad de las operaciones aéreas dentro de la FIR/UTA Guayaquil.

La base de operaciones del Comité de Contingencias se localizará en el Edificio de los Servicios para la Navegación Aérea SNA, Avenida de las Américas S/N 2do Piso. Guayaquil – Ecuador
Teléfonos: 593-4-2925760 / 593-4-22925606
593-2-2947400 Ext. 2161 - 2132
Fax: 593-4-2394960

El Centro de Control de Área Guayaquil (ACC-Guayaquil) se encuentra ubicado en el Edificio de los Servicios para la Navegación Aérea SNA, Avenida de las Américas S/N, Guayaquil - Ecuador
AFTN: SEFGZQZX
Teléfonos: 593-4-2924219 / 593-4-2925495
593-2-2947400 Ext. 2130
REDDIG: 5060

5. DISPOSICIONES APLICABLES A LAS DEPENDENCIAS ACC.

a) En el caso de que ocurra una degradación grave o suspensión de los servicios de tránsito aéreo provocado por cualquier contingencia ocurrida en el Centro de Control Área de Guayaquil, cuya duración se prevea que tome dos horas o más para su resolución y regreso a las operaciones normales, se activará el Presente Plan y se notificará a los ACC adyacentes el uso de la Red Simplificada de Rutas.

b) En el caso de que ocurra una falla en el equipo de radio en tierra del ACC Sector 1, éste se apoyará en las frecuencias VHF y HF disponibles, respectivamente: en el ACC Sector 2, en el APP Guayaquil o en el APP Quito, conforme haya recibido la atribución de prestar los servicios ATS en una determinada porción del espacio aéreo designada por el Comité de Contingencias.

c) Solamente se permitirán vuelos bajo las reglas de vuelo IFR de aeronaves que estén realizando vuelos de transporte aéreo regular nacional o internacional, vuelos de búsqueda y salvamento, aeronaves de Estado con designación "HEAD" y vuelos de evacuación y auxilio (aeronaves ambulancias).

Nota: *De acuerdo a la OACI entiéndase como HEAD únicamente a la primera autoridad de los estados (Presidentes, Primeros Ministros, Reyes).*

d) Disponer y coordinar con las dependencias ACC adyacentes, el ingreso de las aeronaves a la FIR Guayaquil, con una separación longitudinal de **10 minutos** en el mismo fijo, independientemente del nivel de vuelo.

e) Dependiendo de la diferencia de velocidad y del tiempo de vuelo en el tramo en contingencia y del nivel de degradación de los servicios, se debe coordinar con la dependencia ACC transferidora, las restricciones correspondientes (aplicación de la "Técnica del Número Mach") a fin de mantener la separación longitudinal de 10 minutos a lo largo de la FIR Guayaquil, hasta la salida del mismo.

f) Cumplir las disposiciones emitidas por el Comité de Contingencias, correspondientes a ajustes en las medidas de mitigación aplicadas durante la contingencia, hasta el momento en que el sistema haya vuelto a la normalidad.

g) Solicitar a las dependencias ACC adyacentes, para que las transferencias de tránsito se realicen con no menos de 30 minutos de antelación a las horas estimadas sobre los puntos de entrada de la FIR Guayaquil, a través de los circuitos de coordinación ATS u otros disponibles.

h) Las dependencias ATS en la FIR Guayaquil deberán coordinar con el ACC Guayaquil, con no menos de 20 minutos de antelación, la autorización de despegue y niveles de vuelo solicitados.

i) Las aeronaves que ingresen y sobrevuelen la FIR Guayaquil, deberán utilizar la red simplificada de las rutas conforme se indica en el ADJUNTO A, numerales 1, 2, 3, 4 y 5.

j) Las aeronaves que ingresen a la FIR Guayaquil, con destino a los aeropuertos internacionales de Quito y Guayaquil, deberán utilizar la red simplificada de las rutas conforme se indica en el ADJUNTO A, numeral 6, en el cual constan las rutas de llegada a Quito y Guayaquil.

k) Las aeronaves en salida desde los aeropuertos internacionales de Quito y Guayaquil, deberán utilizar la red simplificada de las rutas conforme se indica en el ADJUNTO A, numeral 6, en el cual constan las rutas de salida desde Quito y Guayaquil, hacia las FIR de Bogotá, Lima y Cenamer.

l) Las aeronaves en salida desde los aeropuertos internacionales de Quito y Guayaquil hacia la FIR Lima, deberán utilizar la red simplificada referida en ***k)*** con Nivel de Vuelo 290 como máximo.

m) Las aeronaves en salida desde los aeropuertos internacionales de Quito y Guayaquil hacia la FIR Bogotá, deberán utilizar la red simplificada referida en ***k)*** con Nivel de Vuelo 280 como máximo.

n) Solicitar a las dependencias ACC adyacentes que las aeronaves que van a entrar a la FIR Guayaquil, deberán estar niveladas, por lo menos 10 minutos / 80 millas antes del punto de ingreso de la FIR Guayaquil.

o) Coordinar con las dependencias ACC adyacentes que durante la activación del Plan de Contingencia, no se permitirán vuelos en el espacio aéreo RVSM de aeronaves sin aprobación RVSM, excepto los vuelos descritos en el literal C anterior.

p) Cuando no se puedan llevar a cabo las coordinaciones de tránsito aéreo debido a falla de la red fija de comunicaciones, pero dispongan de cobertura de comunicaciones para el servicio móvil, el permiso de tránsito tendrá validez hasta el punto de transferencia de la FIR, con la condición de que la autorización para el ingreso a la FIR adyacente será llevada a cabo por el piloto, por medio del procedimiento de auto transferencia (Ver 6.1).

6 DISPOSICIONES APLICABLES A LAS AERONAVES

a) Observar que, durante la activación de este Plan, solamente las aeronaves aprobadas RVSM podrán volar entre los FL 290 y FL 410.

b) Mantener escucha permanente en la frecuencia VHF, HF del sector que corresponda u otra designada, además de la frecuencia de Procedimientos de Radiodifusión de Información de Vuelo Aire/aire (123.45Mhz.) (Adjunto B - NORMATIVA 11 DGAC) y reportar cualquier maniobra de ascenso o descenso que las circunstancias así lo exijan. El mensaje deberá contener: identificación de la aeronave, posición, nivel abandonado, nivel que cruza y otras informaciones relevantes.

c) Poseer obligatoriamente sistema TCAS.

d) Mantener las luces de navegación y de anticolisión continuamente encendidas mientras sobrevuele la FIR Guayaquil.

e) Seleccionar el código 2000 en caso no haya sido asignado anteriormente otro código SSR.

f) Las aeronaves deberán, utilizar los procedimientos de radiodifusión de información en vuelo (TIBA), dentro de las 80 NM de los puntos de notificación que se indican en el ADJUNTO A, en la frecuencia aire-aire 123.45 Mhz.

g) En las aeronaves debidamente equipadas, los pilotos deberán volar 1 NM a la derecha del eje de la aerovía.

h) Al ocurrir una interrupción en las comunicaciones aeroterrestres, las tripulaciones de vuelo deben proceder con lo siguiente, utilizando todos los medios de comunicaciones auxiliares disponibles:
   1. Intentar establecer contacto con la Dependencia ACC, en la frecuencia asignada;
   2. Intentar establecer contacto con otra aeronave en la frecuencia asignada a la Dependencia ACC;
   3. Intentar establecer contacto con la Dependencia ACC u otra aeronave en la frecuencia ATC de la dependencia de alternativa (Ver ADJUNTO B);
   4. Intentar establecer contacto con otra aeronave en la frecuencia TIBA Freq. 123.45 MHz.

i) Si la aeronave no puede establecer comunicaciones con la Dependencia ACC, debe:
   - Proceder de conformidad con la ruta del plan de vuelo actualizado;
   - Mantener la última velocidad y nivel asignados;
   - Aplicar los procedimientos TIBA, de preferencia en el idioma inglés, utilizando las frecuencias ATC y TIBA;
   - Volar a 1 NM a la Derecha del eje de la aerovía;
   - Intentar periódicamente restablecer las comunicaciones.

j) En caso de no poder cumplir con las especificaciones establecidas en el Plan de Contingencia, deberán actualizar su plan de vuelo, evitando la FIR afectada.

6.1 PROCEDIMIENTOS DE AUTO TRANSFERENCIA.

Cuando las dependencias ACC no puedan llevar a cabo las coordinaciones de tránsito aéreo debido a falla en el servicio fijo de comunicaciones, los siguientes procedimientos de auto transferencia deberán ser aplicados:

La dependencia ACC deberá:

a) Informar al piloto la NO disponibilidad del servicio fijo con la dependencia ACC aceptante; y

b) Proporcionar la información e instrucciones necesarias para que el piloto obtenga contacto con la dependencia ACC aceptante.

El piloto deberá:
a) Intentar contacto con la dependencia ACC aceptante, por lo menos con 5 minutos de antelación del ETO en el fijo de transferencia;
b) Informar la dependencia ACC aceptante que está llevando a cabo una auto transferencia; y
c) Transmitir la siguiente información: Identificación de la aeronave, procedencia, destino, ruta, nivel de vuelo, código transponder, estado de aprobación RVSM y estimado al fijo límite de la FIR.

6.2 SUSPENSIÓN DE LOS PLANES DE VUELO REPETITIVOS (RPL)

Mientras dure la situación de contingencia, las listas de RPL quedarán suspendidas, debiendo los usuarios presentar en todos los casos, los FPL correspondientes.

7 PUBLICACIÓN DE NOTAM

Las disposiciones aplicables a las dependencias ACC y a las aeronaves que despegan, aterrizan o sobrevuelan la FIR Guayaquil, en función de un fallo parcial o total en la prestación de los servicios de tránsito aéreo, serán activadas por el Comité de Contingencia, por medio de la publicación del NOTAM correspondiente.

La notificación mediante NOTAM de la interrupción, prevista o real, de los servicios de tránsito aéreo o de los correspondientes servicios de apoyo, debería transmitirse tan pronto como sea posible a los usuarios de los servicios de navegación aérea. En los NOTAM deberían incluirse los arreglos correspondientes de contingencia. Si la interrupción de los servicios es previsible, la notificación debería hacerse en todo caso con una antelación de 12 horas como mínimo.

La notificación mediante NOTAM de que han dejado de aplicarse las medidas de contingencia y de que funcionan de nuevo los servicios de tránsito aéreo, debería transmitirse tan pronto como sea posible, para asegurar la transición ordenada del estado de contingencia a las condiciones normales.

Los textos a ser utilizados en los NOTAM, tanto en español como inglés, deben contener lo siguiente:
a) Fecha, hora de inicio y tiempo previsto de duración de la medida de contingencia.
b) Aplicación del Plan de Contingencia del Centro de Control de Área de Guayaquil.
c) Instalaciones y servicios disponibles (de ser necesario).
d) Procedimientos a seguir por las dependencias ACC adyacentes (de ser necesario).
e) Procedimientos a seguir por los pilotos (de ser necesario), quienes deberán mantener escucha en la frecuencia principal del sector que se está sobrevolando, así como también en la frecuencia de comunicación aire – aire 123.45 Mhz.
f) La NO disponibilidad del servicio móvil aeronáutico (de ser necesario).
g) Encaminamiento por la red simplificada de rutas ATS (de ser necesario).
h) No se autorizarán planes de vuelos repetitivos (de ser necesario).
i) Cualquier otro detalle relacionado con las contingencias que requiera ser de conocimiento inmediato de los usuarios (de ser necesario).

La oficina NOTAM internacional debe previamente contar con los textos de los NOTAM a ser publicados en la aplicación de medidas de contingencia.

7.1 Formato de referencia para emisión del NOTAM de inicio de la Contingencia.

NOTAM XXXX/XX DEBIDO A LA INTERRUPCIÓN DE LOS SERVICIOS DE CONTROL DE TRÁNSITO AÉREO DEL ECUADOR, SE ACTIVA EL PLAN DE CONTINGENCIA DEL CENTRO DE CONTROL DE GUAYAQUIL PARA LA FIR SEFG, DESDE XXXX (DATE-TIME) HASTA AAAA (TIEMPO ESTIMADO). MÁS INFORMACIÓN LA ENCONTRARÁ EN EL PLAN DE CONTINGENCIA EN CASO DE SUSPENSIÓN TOTAL O PARCIAL DE LOS SERVICIOS DE CONTROL DE TRÁNSITO AÉREO DEL ACC DE GUAYAQUIL, PUBLICADO EN EL (AIC, AIP) DE ECUADOR.

NOTAM XXXX/XX DUE TO THE INTERRUPTION OF THE AIR TRAFFIC CONTROL SERVICES OF ECUADOR, IS ACTIVE THE CONTINGENCY PLAN OF CONTROL CENTER OF GUAYAQUIL TO THE FIR SEFG, FROM XXXX (DATE-TIME) UNTIL YYYY (ESTIMATED TIME). MORE INFORMATION YOU WILL FIND IN THE CONTINGENCY PLAN IN CASE OF TOTAL OR PARTIAL SUSPENSION OF AIR TRAFFIC CONTROL SERVICES OF ACC OF GUAYAQUIL, POSTED ON THE (AIC, AIP) OF ECUADOR.

7.2 Formato de referencia para emisión del NOTAM de cancelación de la Contingencia.

NOTAM XXXX/XX, A PARTIR DE XXXX (FECHA-HORA) EL PLAN DE CONTINGENCIA DEL CENTRO DE CONTROL DE GUAYAQUIL PARA LA FIR SEFG, HA SIDO CANCELADO. PRESTACION DE LOS SERVICIOS DE TRANSITO AEREO NORMAL.

NOTAM XXXX/XX, FROM XXXX (DATE-TIME) THE CONTINGENCY PLAN OF CONTROL CENTER OF GUAYAQUIL TO THE FIR SEFG, HAS BEEN CANCELLED. THE PROVISION OF AIR TRAFFIC SERVICES ARE NORMAL.

8 FECHA DE ENTRADA EN VIGENCIA: a las 00:00 UTC del lunes 04 de mayo de 2015

Dado en Quito DM, el 18 de abril de 2015

Firmado por:
Ing. Iván Tulcán Ormaza
DIRECTOR DE NAVEGACION AEREA DGAC

16-04-15
DS/JR/CB

ADJUNTO A DEL ANEXO 6

RED SIMPLIFICADA DE RUTAS EN CASO DE CONTINGENCIA EN LA FIR GUAYAQUIL

1.- AERONAVES QUE EVOLUCIONAN ENTRE LAS FIR de GUAYAQUIL Y BOGOTA

AERONAVES VOLANDO DE NORTE A SUR					
Sentido de vuelo	***Aerovía***	***Punto***	***Capacidad en ruta***	***Coordinaciones***	***Restricciones***
FIR SKBO / FIR SEFG	UM674	ENSOL	Una (1) aeronave cada 10 minutos en el punto de Notificación	***Con coordinación entre las FIR:*** El ACC BOGOTA entregará al ACC GUAYAQUIL las aeronaves en el punto de notificación. ***Sin coordinación entre las FIR:*** Se utiliza el método de auto-transferencia, con no menos de 40 NM o 5 minutos antes y después del punto de notificación.	Las aeronaves aplicarán procedimiento de RADIODIFUSION DE INFORMACION EN VUELO a 80 NM o 10 minutos antes y después del punto de notificación.
	UL305	PULTU			
AERONAVES VOLANDO DE SUR A NORTE					
FIR SEFG / FIR SKBO	UL780	UGUPI	Una (1) aeronave cada 10 minutos en el punto de Notificación	***Con coordinación entre las FIR:*** El ACC GUAYAQUIL entregará al ACC BOGOTA las aeronaves en el punto de notificación. ***Sin coordinación entre las FIR:*** Se utiliza el método de auto-transferencia, con no menos de 40 NM o 5 minutos antes y después del punto de notificación.	Las aeronaves aplicarán procedimiento de RADIODIFUSION DE INFORMACION EN VUELO a 80 NM o 10 minutos antes y después del punto de notificación.
	UM795	BOKAN			

2.- AERONAVES QUE EVOLUCIONAN ENTRE LAS FIR de GUAYAQUIL Y CENAMER

AERONAVES VOLANDO DE NORTE A SUR					
Sentido de vuelo	***Aerovía***	***Punto***	***Capacidad en ruta***	***Coordinaciones***	***Restricciones***
FIR CENAMER / FIR SEFG	UG436	LIXAS	Una (1) aeronave cada 10 minutos en el punto de Notificación	***Con coordinación entre las FIR:*** El ACC CENAMER entregará al ACC GUAYAQUIL las aeronaves en el punto de notificación. ***Sin coordinación entre las FIR:*** Se utiliza el método de auto-transferencia, con no menos de 40 NM o 5 minutos antes y después del punto de notificación.	Las aeronaves aplicarán procedimiento de RADIODIFUSION DE INFORMACION EN VUELO a 80 NM o 10 minutos antes y después del punto de notificación.
	UL401	OSELO			
AERONAVES VOLANDO DE SUR A NORTE					
FIR SEFG / FIR CENAMER	UL344	ARTOM	Una (1) aeronave cada 10 minutos en el punto de Notificación	***Con coordinación entre las FIR:*** El ACC GUAYAQUIL entregará al ACC CENAMER las aeronaves en el punto de notificación. ***Sin coordinación entre las FIR:*** Se utiliza el método de auto-transferencia, con no menos de 40 NM o 5 minutos antes y después del punto de notificación.	Las aeronaves aplicarán procedimiento de RADIODIFUSION DE INFORMACION EN VUELO a 80 NM o 10 minutos antes y después del punto de notificación.

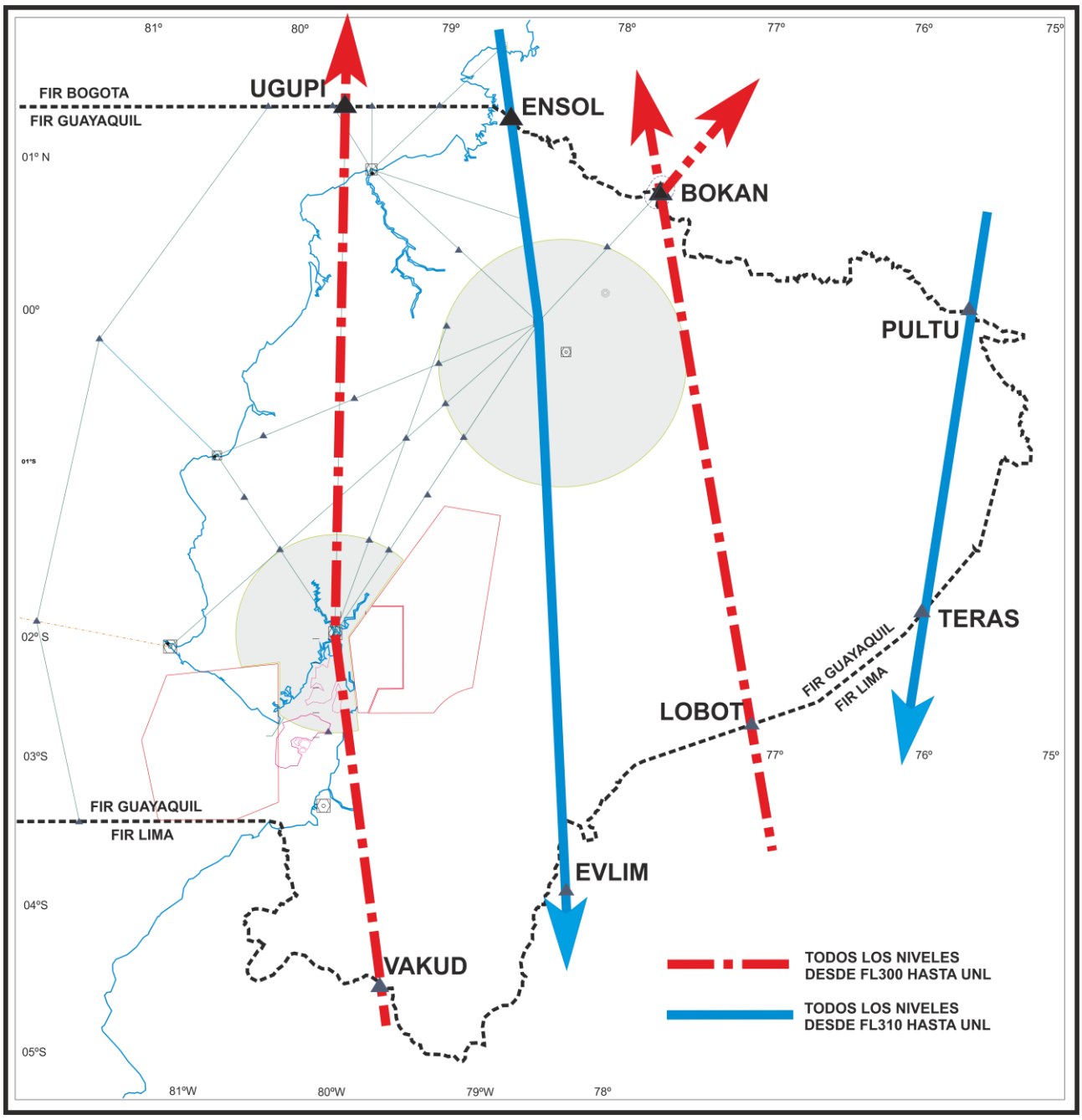
3.- AERONAVES QUE EVOLUCIONAN ENTRE LAS FIR de GUAYAQUIL Y LIMA

<table>
<tr><th colspan="6">AERONAVES VOLANDO DE NORTE A SUR</th></tr>
<tr><th>Sentido de vuelo</th><th>Aerovía</th><th>Punto</th><th>Capacidad en ruta</th><th>Coordinaciones</th><th>Restricciones</th></tr>
<tr><td rowspan="4">FIR SEFG / FIR SPIM</td><td>UM674</td><td>EVLIM</td><td rowspan="4">Una (1) aeronave cada 10 minutos en el punto de Notificación</td><td rowspan="4">Con coordinación entre las FIR:
El ACC GUAYAQUIL entregará al ACC LIMA las aeronaves en el punto de notificación.

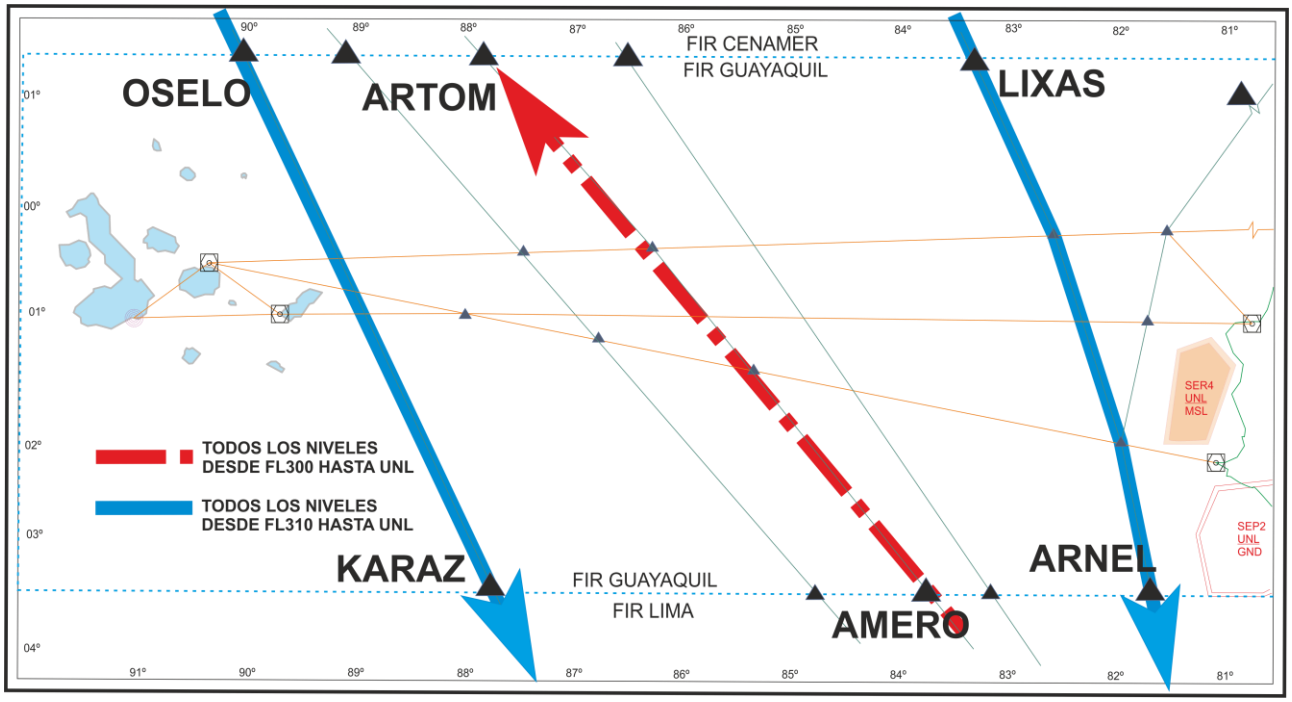
Sin coordinación entre las FIR:
Se utiliza el método de auto-transferencia, con no menos de 40 NM o 5 minutos antes y después del punto de notificación.</td><td rowspan="4">Las aeronaves aplicarán procedimiento de RADIODIFUSION DE INFORMACION EN VUELO a 80 NM o 10 minutos antes y después del punto de notificación.</td></tr>
<tr><td>UL305</td><td>TERAS</td></tr>
<tr><td>UG436</td><td>ARNEL</td></tr>
<tr><td>UL401</td><td>KARAZ</td></tr>
<tr><th colspan="6">AERONAVES VOLANDO DE SUR A NORTE</th></tr>
<tr><td rowspan="3">FIR SPIM / FIR SEFG</td><td>UL780</td><td>VAKUD</td><td rowspan="3">Una (1) aeronave cada 10 minutos en el punto de Notificación</td><td rowspan="3">Con coordinación entre las FIR:
El ACC LIMA entregará al ACC GUAYAQUIL las aeronaves en el punto de notificación.

Sin coordinación entre las FIR:
Se utiliza el método de auto-transferencia, con no menos de 40 NM o 5 minutos antes y después del punto de notificación.</td><td rowspan="3">Las aeronaves aplicarán procedimiento de RADIODIFUSION DE INFORMACION EN VUELO a 80 NM o 10 minutos antes y después del punto de notificación.</td></tr>
<tr><td>UM795</td><td>LOBOT</td></tr>
<tr><td>UL344</td><td>AMERO</td></tr>
</table>

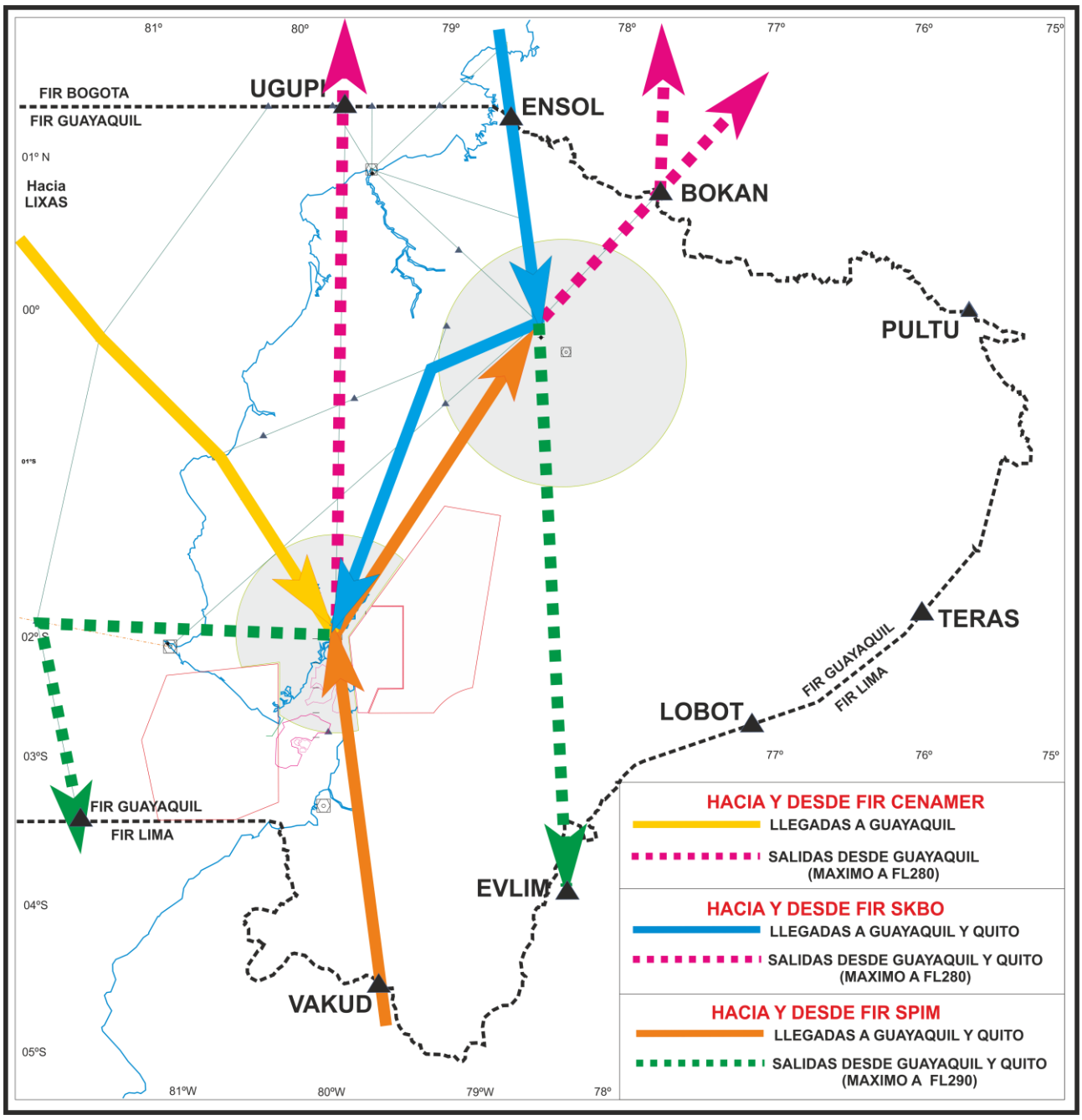
4.- GRAFICO DE RED SIMPLIFICADA RUTAS EN AREA CONTINENTAL



5.- GRAFICO DE RED SIMPLIFICADA RUTAS EN AREA OCEANICA



6.- GRAFICO DE RED SIMPLIFICADA RUTAS LLEG--ADA Y SALIDA A GUAYAQUIL Y QUITO



ADJUNTO B DEL ANEXO 6

DEPENDENCIAS PARA LA COORDINACIÓN.
FALLA DE COMUNICACIONES VHF.

DEPENDENCIA	DEPENDENCIA ALTERNATIVA	FRECUENCIA
ACC Guayaquil ACC 1 128.3 MHZ (Principal)	ACC Guayaquil ACC 1	123.9 MHZ (Secundaria)
	ACC Guayaquil ACC 2	127.95 MHZ (Principal) 128.0 MHZ (Secundaria)
	APP Guayaquil	120.7 MHZ (Principal) 119.3 MHZ (Secundaria)
	APP Quito	119.7 MHZ (Principal) 121.2 MHZ (Secundaria)
	ACC Bogotá	125.10 MHZ
	ACC CENAMER	124.10 MHZ 10024 KHZ
	ACC Lima	128.10 MHZ 128.50 MHZ

ANEXO 7

PLAN DE CONTINGENCIA ATS PARA LA FIR LIMA

1. FIR's AFECTADAS

Las siguientes FIR están directamente afectadas por el presente Plan de contingencia ATS:

- Ecuador (FIR Guayaquil)
- Colombia (FIR Bogotá)
- Brasil (FIR Amazónica)
- Bolivia (FIR La Paz)
- Chile (FIR Antofagasta)

2. GENERALIDADES

2.1 El objetivo de este Plan de Contingencia es establecer procedimientos ATS para el ingreso/salida de vuelos **internacionales** en el espacio aéreo de la FIR LIMA, en caso de una interrupción o degradación significativa de los servicios de tránsito aéreo, manteniendo el flujo ordenado y seguro.

Se considera dos niveles de contingencia ATS;

Contingencia ATS moderada; Significa que la degradación en los servicios de navegación aérea aun permite mantener el uso de la red de rutas ATS de la FIR Lima. Para este propósito se aplica mayor separación entre las aeronaves ingresando al FIR Lima.

Contingencia ATS severa; Significa que la interrupción y/o degradación en los servicios de navegación aérea no permite mantener el flujo rutinario de vuelos internacionales en la red de rutas ATS de la FIR Lima. Para este propósito se aplica mayor separación entre las aeronaves ingresando al FIR Lima **y se utiliza la red simplificada de rutas. (Ver Tablas 1 y 2 del presente adjunto)**

Este Plan de contingencia para la FIR LIMA no pretende establecer procedimientos que abarquen todas las magnitudes posibles de degradación en los servicios ATS, por cuanto estas pueden ser innumerables.

2.2 La Unidad de Contingencia ATM autorizada por la Dirección General de Aeronáutica Civil del Perú – DGAC, para activar y ejecutar el presente Plan y los arreglos de coordinación respectivos es:

Nombre de la Unidad	Corporación Peruana de Aeropuertos y Aviación Comercial - CORPAC S.A.		
Personas de Contacto			
- Luis Rivera Pérez Gerente Central de Aeronavegación	Telf. Fax email	: : :	(511) 230 1145 (511) 414 1430 lrivera@corpac.gob.pe
- Jorge Raez Ancaya Gerente de Operaciones Aeronáuticas	Telf. email :	:	(511) 2301150 jraez@corpac.gob.pe
- ACC LIMA **(Supervisor)**	Telf. REDDIG email	: : :	(511) 575 1995 (511) 575 0886 6060 acclima@corpac.gob.pe

2.3 Los procedimientos operacionales específicos para la FIR LIMA, en caso de contingencia, serán activados por la Unidad de Contingencia, por medio de la publicación del NOTAM específico o cualquier otro medio disponible. Este NOTAM especificará el nivel de contingencia (moderado o severo) que se está produciendo, así como las medidas de mitigación que correspondan.

2.4 Las Tablas 1 y 2 del presente Plan establece una red simplificada de rutas, puntos de entrada/salida y niveles de vuelo. Los Supervisores de los ACC involucrados pueden acordar, según el nivel de degradación de los servicios e instalaciones, la flexibilización de las limitaciones impuestas por dichas Tablas.

2.5 En caso de interrupción total de los servicios ATS en la FIR Lima y/o cuando la contingencia así lo demande, la Unidad de Contingencia debe coordinar con la DGAC - PERU la implantación de medidas adicionales no contempladas en este documento.

3. DISPOSICIONES APLICABLES A LAS DEPENDENCIAS ATS ADYACENTES:

3.1 El ACC adyacente debe coordinar con el ACC Lima, a través de los circuitos de coordinación ATS u otros medios disponibles, con no menos de 30 minutos de antelación, las horas estimadas sobre los puntos de entrada de la FIR Lima. Si ello no es posible, el numeral 6 del presente Plan dispone los procedimientos de auto transferencia aplicables;

3.2 El ACC adyacente debe transmitir un mensaje de estimado (EST) a la primera FIR subsiguiente a la FIR Lima.

3.3 Contingencia ATS Moderada

3.3.1 El ACC adyacente debe autorizar el ingreso de una aeronave en la FIR Lima, empleando, como mínimo, una separación longitudinal de 10 minutos en el mismo punto de transferencia, independientemente del nivel de vuelo.

Dependiendo de la diferencia de velocidad, del tiempo de vuelo en el tramo en contingencia y las condiciones e intensidad del tránsito aéreo, los respectivos Supervisores de ACC podrán, de mutuo acuerdo, aumentar la separación longitudinal mínima a 15 minutos. Cuando se requiera se utilizará la técnica de número Mach (MNT).

Complementariamente, para coadyuvar a la seguridad operacional, los Supervisores del ACC de Lima, pueden coordinar de manera temporal con los ACC adyacentes medidas o limitaciones específicas para una o más aerovías o puntos de ingreso/salida a la FIR Lima. De ser necesario estas limitaciones específicas pueden ser incorporadas en información NOTAM.

3.3.2 Si no es posible coordinar con el ACC Lima, el ACC adyacente debe instruir a los pilotos que sobrevuelan la FIR Lima a mantener el último nivel y velocidad aceptados por el ACC Lima;

3.3.3 El ACC adyacente debe instruir a las aeronaves en el sentido de establecer comunicación con las dependencias ATS adyacentes con por lo menos 5 minutos de antelación a la hora prevista de ingreso en la FIR Lima;

3.3.4 Durante la vigencia de la contingencia, no se permiten vuelos de aeronaves no aprobadas en el espacio aéreo RVSM de la FIR Lima, excepto los vuelos de carácter humanitario.

3.4 Contingencia ATS Severa

3.4.1 Se aplicarán las mismas condiciones y limitaciones que se indican en los párrafos anteriores 3.3.1,

3.3.2, 3.3.3 y 3.3.4. Adicionalmente, se utilizará la red simplificada de rutas ATS que se indica en las Tablas 1 y 2 del presente.

3.4.2 Considerando la intensidad de la contingencia ATS en progreso, el ACC Lima podrá coordinar de manera táctica la transferencia de aeronaves **saliendo de la FIR Lima** en puntos diferentes a los indicados en las Tablas 1 y 2, siempre que lo permitan las condiciones del tránsito aéreo.

3.4.3 Los Supervisores de los ACC involucrados podrán, de mutuo acuerdo, coordinar el ingreso de aumentar la separación longitudinal mínima a 15 minutos. Cuando se requiera se utilizará la técnica de número Mach (MNT).

3.4.4 El ACC adyacente debe asegurar que las aeronaves que ingresen a la FIR Lima deberán estar niveladas, de acuerdo con lo previsto en las Tablas 1 y 2, en el punto de transferencia de la FIR, salvo que se realicen coordinaciones específicas entre Supervisores de ACC.

4. DISPOSICIONES APLICABLES A LAS AERONAVES:

4.1 Solamente se permitirán vuelos de aeronaves bajo las reglas de vuelo IFR.

4.2 Solamente las aeronaves aprobadas RVSM podrán utilizar los niveles de vuelo entre FL 290 inclusive y FL 410 inclusive ajustándose a las limitaciones de las Tablas. Se exceptúa a los vuelos de carácter humanitario que podrán ser acomodados previa coordinación.

4.3 Las aeronaves en ruta deben comunicarse en la frecuencia del correspondiente sector del ACC Lima y/o Radio Lima en HF (10024 Khz. (SELCAL) / 6649 Khz.) y, de ser necesario, utilizarán la frecuencia aire – aire 123.45 Mhz, para realizar coordinaciones con las demás aeronaves. El mensaje deberá contener: identificación de la aeronave, posición, nivel de vuelo y cualquier otra información relevante;

4.4 Las maniobras de ascenso y descenso deben realizarse a la derecha del eje de ruta.

4.5 Las aeronaves deben mantener las luces de navegación y de anticolisión continuamente encendidas mientras sobrevuele la FIR Lima;

4.6 Las aeronaves deben activar el transpondedor en el código 2000 en caso no se haya asignado anteriormente otro código SSR;

4.7 Las aeronaves deben estar equipadas obligatoriamente con ACAS/TCAS operativo y tener capacidad de navegación RNAV con aprobación de especificación de navegación acorde con la ruta volada.

5. SUSPENSIÓN DE LOS PLANES DE VUELO REPETITIVO (RPL).

Mientras dure la situación de contingencia, los RPL quedarán suspendidos.

6. PROCEDIMIENTOS DE AUTO TRANSFERENCIA

6.1 Cuando las dependencias ATS no puedan llevar a cabo las coordinaciones de tránsito aéreo debido a falla en el Servicio Fijo de Comunicaciones - AFTN, los siguientes procedimientos de auto transferencia deben ser aplicados:

6.1.1 El ACC de origen deberá:

a) Informar al piloto la indisponibilidad del Servicio Fijo con el ACC aceptante; y

b) Poner a disposición las informaciones e instrucciones necesarias para que el piloto obtenga contacto con el ACC aceptante.

6.1.2 El piloto deberá:

a) Intentar contacto con el ACC aceptante, en la frecuencia del sector que corresponda o las alternas HF 10024 KHz. (SELCAL) / 6649 KHz., con por lo menos 5 minutos de antelación del ETO en el punto de transferencia;

b) Informar al ACC aceptante que está llevando a cabo una auto transferencia; y

c) Transmitir la siguiente información: Identificación de la aeronave, procedencia, destino, ruta, nivel de vuelo, código transponder, estado de aprobación RVSM, estado de aprobación PBN y estimado al fijo de auto transferencia, así como cualquier otra información relevante.

6.2 Los ACC deben orientar a los pilotos respecto al cumplimiento de estos procedimientos.

****

TABLA 1

(Ver TABLA 2 siguiente para los sobrevuelos)

RED SIMPLIFICADA DE RUTAS EN CASO DE CONTINGENCIA ATS SEVERA EN LA FIR LIMA

AERONAVES ORIGEN / DESTINO AEROPUERTOS INTERNACIONALES DE PERU

Nota.- *Considerando la intensidad de la contingencia ATS en progreso, el ACC Lima podrá coordinar de manera táctica la transferencia de aeronaves* ***saliendo de la FIR Lima*** *en puntos diferentes a los indicados en las Tablas 1 y 2, siempre que lo permitan las condiciones del tránsito aéreo.*

ACC adyacente afectado	**Entrada /salida**	**Ruta (s)**	**Puntos de Transferencia**	**Nivel (es) de vuelo entrada/salida FIR Lima**
Bogotá	Entrada a FIR LIMA	UG427	EKAMU	FL340 FL320 FL300 FL280
	Salida de FIR LIMA	UL305	TERAS (Posterior PULTU)	FL350 FL330 FL290

TABLA 2

RED SIMPLIFICADA DE RUTAS ATS EN CASO DE CONTINGENCIA ATS SEVERA EN LA FIR LIMA

AERONAVES EN SOBREVUELO FIR LIMA

Nota.- *Considerando la intensidad de la contingencia ATS en progreso, el ACC Lima podrá coordinar de manera táctica la transferencia de aeronaves* ***saliendo de la FIR Lima*** *en puntos diferentes a los indicados en las Tablas 1 y 2, siempre que lo permitan las condiciones del tránsito aéreo.*

ACC adyacente afectado	**Ruta (s)**	**Puntos de Transferencia**	**nivel (es) de vuelo entrada/salida FIR Lima**	
Bogotá, Amazónico y La Paz	UA 321– IQT VOR – UR559	PLG VOR POSKA ASOLA RAXUN	Par	Impar
			FL380 FL360	FL390 FL370

ANEXO 7

DATOS DE CONTACTO DE LOS PUNTOS FOCALES LHD DEL CENTRO DE CONTROL DE LIMA Y EL CENTRO DE CONTROL DE GUAYAQUIL

CENTRO DE CONTROL	PUNTO FOCAL	e-mail	Teléfono de contacto
ACC LIMA	Norma Nava Hernández	nnava@corpac.gob.pe	511-575-0886 511-575-1995
ACC GUAYAQUIL	Antonio Arias Hart	jose.arias@aviacioncivil.gob.ec	593-2-2947400 Ext. 2212

APPENDIX B / APÉNDICE B

INTERCONNECTION OF AIDC SYSTEM / INTERCONEXIÓN SISTEMAS AIDC

State/ Estado	AIDC interconnection requirement/ Requerimiento de interconexión AIDC	Implementation date/ Fecha de implantación	Remarks / Observaciones
Argentina	Bolivia	TBD (2017-2019)	Bolivia does not count with automated systems. Bolivia no cuenta con sistemas automatizados
	Brazil/Brasil (1)	Second Semester /Segundo semestre 2016	MoU implemented/ MoU implantado Brazil reported that will be ready for AIDC operation interconnection for the second semester of 2016. Brasil reportó que la interconexión operacional AIDC será para el segundo semestre de 2016.
	Chile (2)	First quarter 2016 Primer trimestre 2016	MoU implemented/ MoU implantado Positive AIDC trials were made between ACC Iquique and ACC Cordoba.
	Paraguay (3)	First Quarter / Primer trimestre 2016	Positive trial was made between ACC Asuncion and ACC Ezeiza. Pruebas positivas se realizaron entre el ACC de Asunción y el ACC de Ezeiza. The AIDC operational requirement is between ACC Asuncion and ACC Resistencia. The AIDC in Resistencia ACC is under installation process and will be in operation by the end of 2015. El requerimiento operacional de AIDC es entre el ACC de Ezeiza y el ACC de Resitencia. El ACC de Resistencia está en proceso de instalación y su operación está prevista para finales del 2015.
	Uruguay (4)	First Quarter / Primer trimestre 2016	MoU implemented/ MoU implantado Initial AIDC coordination was made between Argentina and Uruguay.

State/ Estado	AIDC interconnection requirement/ Requerimiento de interconexión AIDC	Implementation date/ Fecha de implantación	Remarks / Observaciones
			Coordinaciones AIC iniciales se realizaron entre Argentina y Uruguay
Bolivia	Argentina	TBD (2017-2019)	Bolivia does not count with automated systems / Bolivia no cuenta con sistemas automatizados
	Brazil/Brasil	TBD (2017-2019)	
	Paraguay	TBD (2017-2019)	
	Peru	TBD (2017-2019)	
Brazil/Brasil	Argentina	Second Semester /Segundo semestre 2016	MoU implemented/ MoU implantado Brazil reported that will be ready for AIDC operation interconnection for the second semester of 2016. Brasil reportó que la interconexión operacional AIDC será para el segundo semestre de 2016.
	Bolivia	TBD (2017-2019)	Bolivia does not count with automated systems/ Bolivia no cuenta con sistemas automatizados.
	Colombia (5)	Second Semester /Segundo semestre 2016	Brazil reported that will be ready for AIDC operation interconnection for the second semester of 2016. Brasil reportó que la interconexión operacional AIDC será para el segundo semestre de 2016.
	Guyana	TBD (2017-2018)	Guyana does not count with AIDC. Guyana no cuenta con AIDC.
	French Guiana (France)/ Guyana Francesa (Francia)	TBD (2017-2018)	French Guiana does not count with AIDC. Guyana Francesa no cuenta con AIDC.
	Paraguay (6)	Second Semester /Segundo semestre 2016	Brazil reported that will be ready for AIDC operation interconnection for the second semester of 2016. Brasil reportó que la interconexión operacional AIDC será para el segundo semestre de 2016.

State/ Estado	AIDC interconnection requirement/ Requerimiento de interconexión AIDC	Implementation date/ Fecha de implantación	Remarks / Observaciones
	Peru (7)	Second Semester /Segundo semestre 2016	MoU implemented/ MoU implantado Initial AIDC trial was made between ACC Lima and ATECH AIDC system in Brazil. Pruebas AIDC iniciales se realizaron entre el ACC Lima con el AIDC ATECH en Brasil. Brazil reported that will be ready for AIDC operation interconnection for the second semester of 2016. Brasil reportó que la interconexión operacional AIDC será para el segundo semestre del 2016.
	Suriname/Surinam	TBD (2017-2019)	Suriname does not count with AIDC implemented. Surinam no cuenta con AIDC implantado.
	Uruguay (8)	Second Semester /Segundo semestre 2016	MoU implemented/ MoU implantado Brazil reported that will be ready for AIDC operation interconnection for the second semester of 2016. Brasil reportó que la interconexión operacional AIDC será para el segundo semestre de 2016.
	Venezuela (9)	Second Semester /Segundo semestre 2016	MoU implemented/ MoU implantado Venezuela does not count with AIDC they are studying a process to modernize the automation system in Maiquetia ACC. Venezuela informed that probably the interconnection of AIDC between ACC Bogotá and ACC Maiquetía will be made in the period 2017-2019. Venezuela no cuenta con AIDC están estudiando un proceso de modernización del ACC de Maiquetía.

State/ Estado	AIDC interconnection requirement/ Requerimiento de interconexión AIDC	Implementation date/ Fecha de implantación	Remarks / Observaciones
			Venezuela informó que probablemente la interconexión AIDC entre el ACC de Bogotá y Maiquetía será para el periodo 2017-2019.
Chile	Argentina	First quarter 2016 Primer trimestre 2016	MoU implemented/ MoU implantado Positive AIDC trials were made between ACC Iquique and ACC Cordoba. Pruebas positivas AIDC se realizaron entre ACC de Iquique y ACC de Córdoba.
	Peru (10)	First quarter 2016 Primer trimester 2016	Positive AIDC trials were made between ACC Iquique and ACC Lima. Pruebas positivas AIDC se realizaron entre ACC de Iquique y ACC de Lima.
Colombia	Brazil/Brasil	Second Semester /Segundo semestre 2016	Brazil reported that will be ready for AIDC operation interconnection for the second semester of 2016. Brasil reportó que la interconexión operacional AIDC será para el segundo semestre de 2016.
	Ecuador (11)	End 2015/Finales 2015	Positive AIDC trials were made between ACC Bogotá and ACC Guayaquil. AIDC in pre operational phase. Pruebas positivas AIDC se realizaron entre el ACC de Bogotá y el ACC de Guayaquil. AIDC en fase pre operacional.
	Panamá (12)	End 2015/Finales 2015	Positive AIDC trials were made between ACC Bogotá and ACC Panama. AIDC in pre operational phase. Pruebas positivas AIDC se realizaron entre el ACC de Bogotá y el ACC de Panamá. AIDC en fase pre operacional

State/ Estado	AIDC interconnection requirement/ Requerimiento de interconexión AIDC	Implementation date/ Fecha de implantación	Remarks / Observaciones
	Peru (13)	End 2015/Finales 2015	Positive AIDC trials were made between ACC Bogotá and ACC Lima. AIDC in pre operational phase. Pruebas positivas AIDC se realizaron entre el ACC de Bogotá y el ACC de Lima. AIDC en fase pre operacional.
	Venezuela (14)	Second Semester /Segundo semestre 2016	Venezuela does not count with AIDC they start a process to modernize the automation system in Maiquetia ACC. Venezuela informed that probably the interconnection of AIDC between ACC Bogotá and ACC Maiquetía will be made in the period 2017-2019. Venezuela no cuenta con AIDC están iniciando un proceso de modernización del ACC de Maiquetía. Venezuela informó que probablemente la interconexión AIDC entre el ACC de Bogotá y Maiquetía será para el periodo 2017-2019.
Ecuador	Colombia	End 2015/Finales 2015	Positive AIDC trials were made between ACC Bogotá and ACC Guayaquil. AIDC in pre operational phase. Pruebas positivas AIDC se realizaron entre el ACC de Bogotá y el ACC de Guayaquil. AIDC en fase pre operacional.
	Peru (15)	August /Agosto 2015	AIDC between ACC Guayaquil and ACC Lima in operational phase since August 2015. AIDC entre el ACC de Guayaquil y el ACC de Lima en fase operacional desde agosto 2015.
French Guiana (France)/	Brazil/Brasil	TBD (2017-2018)	French Guiana does not count with AIDC

State/ Estado	AIDC interconnection requirement/ Requerimiento de interconexión AIDC	Implementation date/ Fecha de implantación	Remarks / Observaciones
Guyana Francesa (Francia)			Guyana Francesa no cuenta con AIDC.
	Suriname/Surinam	TBD (2017-2018)	French Guiana and Suriname do not count with AIDC. Guyana Francesa y Surinam no cuentan con AIDC.
Guyana	Brazil/Brasil	TBD (2017-2018)	Guyana does not count with AIDC. Guyana no cuenta con AIDC.
	Surinam	TBD (2017-2018)	Guyana does not count with AIDC. Guyana no cuenta con AIDC.
	Venezuela	TBD (2017-2018)	Guyana and Venezuela do not count with AIDC. Guyana y Venezuela no cuentan con AIDC
Panama	Colombia	End 2015/Finales 2015	Positive AIDC trials were made between ACC Bogotá and ACC Panama. AIDC in pre operational phase. Pruebas positivas AIDC se realizaron entre el ACC de Bogotá y el ACC de Panamá. AIDC en fase pre operacional
Paraguay	Argentina	First Quarter / Primer trimestre 2016	Positive trial was made between ACC Asuncion and ACC Ezeiza. Pruebas positivas se realizaron entre el ACC de Asunción y el ACC de Ezeiza. The AIDC operational requirement is between ACC Asuncion and ACC Resistencia. The AIDC in Resistencia ACC is under installation process and will be in operation by the end of 2015. El requerimiento operacional de AIDC es entre el ACC de Ezeiza y el ACC de Resistencia. El ACC de Resistencia está en proceso de instalación y su operación está prevista para finales de 2015.
	Bolivia	TBD (2017-2019)	Bolivia does not count with automated systems. Bolivia no cuenta con sistemas automatizados.

State/ Estado	AIDC interconnection requirement/ Requerimiento de interconexión AIDC	Implementation date/ Fecha de implantación	Remarks / Observaciones
	Brazil/Brasil	Second Semester /Segundo semestre 2016	Brazil reported that will be ready for AIDC operation interconnection for the second semester of 2016. Brasil reportó que la interconexión operacional AIDC será para el segundo semestre de 2016.
Peru	Bolivia	TBD (2017-2019)	Bolivia does not count with automated systems. Bolivia no cuenta con sistemas automatizados.
	Brazil/Brasil	Second Semester /Segundo semestre 2016	MoU implemented/ MoU implantado Initial AIDC trial was made between ACC Lima and TECH AIDC system in Brazil. Pruebas AIDC iniciales se realizaron entre el ACC Lima con el AIDC ATECH en Brasil. Brazil reported that will be ready for AIDC operation interconnection for the second semester of 2016. Brasil reportó que la interconexión operacional AIDC será para el segundo semestre de 2016.
	Colombia	End 2015/Finales 2015	Positive AIDC trials were made between ACC Bogotá and ACC Lima. AIDC in pre operational phase. Pruebas positivas AIDC se realizaron entre el ACC de Bogotá y el ACC de Lima AIDC en fase pre operacional
	Chile	First quarter 2016 Primer trimestre 2016	Positive AIDC trials were made between ACC Iquique and ACC Lima. Pruebas positivas AIDC se realizaron entre ACC de Iquique y ACC de Lima.
	Ecuador	August /Agosto 2015	AIDC between ACC Guayaquil and ACC Lima in operational phase since August 2015. AIDC entre el ACC de Guayaquil y el ACC de Lima en fase operacional

State/ Estado	AIDC interconnection requirement/ Requerimiento de interconexión AIDC	Implementation date/ Fecha de implantación	Remarks / Observaciones
			desde agosto 2015.
Surinam	Brazil/Brasil	TBD (2017-2019)	Suriname does not count with AIDC implemented. Surinam no cuenta con AIDC implantado.
	French Guiana (France)/ Guyana Francesa (Francia)	TBD (2017-2019)	Suriname and French Guiana have not AIDC implemented. Surinam y Guyana Francesa no cuentan con AIDC implantado
	Guyana	TBD (2017-2019)	Suriname and Guyana not have AIDC implemented. Surinam y Guyana no cuentan con AIDC implantado.
Uruguay	Argentina	First Quarter /Primer trimestre 2016	MoU implemented/ MoU implantado Initial AIDC coordination was made between Argentina and Uruguay. Coordinaciones AIDC iniciales se realizaron entre Argentina y Uruguay.
	Brazil/Brasil	Second Semester /Segundo semestre 2016	MoU implemented/ MoU implantado Brazil reported that will be ready for AIDC operation interconnection for the second semester of 2016. Brasil reportó que la interconexión operacional AIDC será para el segundo semestre de 2016.
Venezuela	Brazil/Brasil	Second semester /Segundo semestre 2016	MoU implemented/ MoU implantado Venezuela does not count with AIDC they start a process to modernize the automation system in Maiquetia ACC. Venezuela informed that probably the interconnection of AIDC between ACC Bogota and ACC Maiquetia will be made in the period 2017-2019. Venezuela no cuenta con AIDC están iniciando un proceso de

State/ Estado	AIDC interconnection requirement/ Requerimiento de interconexión AIDC	Implementation date/ Fecha de implantación	Remarks / Observaciones
			modernización del ACC de Maiquetía. Venezuela informó que probablemente la interconexión AIDC entre el ACC de Bogotá y Maiquetía será para el periodo 2017-2019.
	Colombia	Second Semester /Segundo semestre 2016	Venezuela does not count with AIDC they start a process to modernize the automation system in Maiquetia ACC. Venezuela informed that probably the interconnection of AIDC between ACC Bogota and ACC Maiquetía will be made in the period 2017-2019. Venezuela no cuenta con AIDC están iniciando un proceso de modernización el ACC de Maiquetía. Venezuela informó que probablemente la interconexión AIDC entre el ACC de Bogotá y Maiquetía será para el periodo 2017-2019.
	Guyana	TBD (2017-2019)	Guyana and Venezuela do not count with AIDC. Guyana y Venezuela no cuentan con AIDC.

APPENDIX C / APÉNDICE C

NATIONAL FOCAL POINTS/PUNTOS FOCALES NACIONALES
IMPLEMENTATION OF INTERCONNECTION OF AUTOMATED SYSTEMS/IMPLANTACIÓN INTERCONEXIÓN SISTEMAS AUTOMATIZADOS

STATE/ ESTADO	ADMINISTRATION/ ADMINISTRACIÓN	NAME/ NOMBRE	POST/ CARGO	TELEPHONE/ TELEFONO	E-MAIL
ARGENTINA	DGCTA	Rubén Silva	Especialista ATM sistemas automatizados		rubengsilva@hotmail.com
		Mario Correa	Jefe sistemas automatizados ATS	(54 11) 4317-6015	mario_correa@yahoo.com.ar
		Javier Vittor	Especialista CNS	(54 11) 4480-2362 (54 911) 6894-0692	javiervittor@gmail.com
	ANAC	Diego Agüero	Técnico automatización	(54911) 2258-7836 (5411) 5941-3000 Ext.69-128	daguero@anac.gob.ar
BOLIVIA					
BRAZIL/ BRASIL	DECEA	Alexander Santoro	Especialista CNS	(55 21) -2101-6620	santoroaas@decea.gov.br
		Murilo Loureiro	Asesor sistemas automatizados	55 (21) 2101-6658	murilo.loureiro@gmail.com
COLOMBIA	UAEAC	Harlen Mejía	Jefe de Aeronavegación		harlen.mejia@aerocivil.gov.co
		Mauricio Ferrer	Especialista ATM sistemas automatizados		mauricio.ferrer@aerocivil.gov.co
		Pedro Alejandro Velasco	Jefe Grupo de Vigilancia Aeronáutica	(57) 317656-7203	pedro.velasco@aerocivil.gov.co
CHILE	DGAC	Pedro Pastrian	Especialista radar y sistemas automatizados	(56 2) 836-4005 (56 2) 644-8345	ppastrian@dgac.gob.cl
		Christian Vergara	Especialista comunicaciones	(56 2) 836-4005 (56 2) 644-8345	cvergara@dgac.gob.cl

STATE/ ESTADO	ADMINISTRATION/ ADMINISTRACIÓN	NAME/ NOMBRE	POST/ CARGO	TELEPHONE/ TELEFONO	E-MAIL
		Gustavo Cáceres Moraga	Controlador Tránsito Aéreo Ofc. Operaciones ACCS	(56 2) 91581853 (56 2) 28364018	gcaceres@dgac.gob.cl
ECUADOR	DAC	Raul Avellan	Especialista CNS coordinador sistema AMHS	(593 4) 269-2829 (593 9) 9530-2735	raul.avellan@aviacioncivil.gob.ec
		Jorge Zúñiga	Programación FDP y coordinaciones		jorzu40@hotmail.com
GUYANA					
GUYANA FR./ FRENCH GUIANA					
PANAMA	Autoridad Aeronáutica Civil (AAC)	Mario Antonio Facey Howard	Especialista radar y sistemas automatizados	(507) 315-9852/65	mfacey@aeronautica.gob.pa
PARAGUAY	DINAC	David Torres	Jefe de Sección, Encargado del Sistema ATM ARCON2100	(595) 9812-31575	dr.torres33@gmail.com
		Diego Ramón Aldana Fernández	Supervisor ACC/APP	(595) 21 645-707	diegoaldana@gmail.com
		Enrique Alfredo Sánchez	Supervisor ATS	(595) 9948-80924	esanchez69@gmail.com
PERÚ	CORPAC	Johnny Ávila	Jefe equipos centro de control	(511) 230-1000 Anexo:1267	javila@corpac.gob.pe
		Jorge Eduardo Merino Rodríguez	Especialista ATM Controlador de Tránsito Aéreo	(51 1) 230-1000 Ext 1158 (511) 5750886 (Centro de Control Lima) (511) 5750995 Mobile: 51 99737407	jmerino@corpac.gob.pe jemr69@yahoo.com
		Gino Lago	Especialista ATM Controlador de Tránsito Aéreo	(51 1) 414-1000	glago@corpac.gob.pe
		Raul Anastasio Granda	Supervisor Comunicaciones	(511) 230-1018	ranastacio@corpac.gob.pe

STATE/ ESTADO	ADMINISTRATION/ ADMINISTRACIÓN	NAME/ NOMBRE	POST/ CARGO	TELEPHONE/ TELEFONO	E-MAIL
			AMHS-AFTN Área de Comunicaciones Fijas Aeronáuticas		
SURINAM/ SURINAME					
URUGUAY	DINACIA	Antonio Lupacchino	Especialista CNS sistemas automatizados	(598) 2604-0408 Ext.4520	alupacch@yahoo.com.ar
		Gustavo Turcatti	Jefe Departamento Operativo de Tránsito Aéreo	(598) 2604-0408 Ext.5111	blantur@gmail.com
VENEZUELA	INAC	Alfredo A. Dávila Alfonzo	Coordinador Área de Trabajo ATS	(58 212) 2774-439	a.davila@inac.gob.ve
		Francisco Antonio Ortiz	Gestión Operacional ATM		f.ortiz@inac.gob.ve

APPENDIX D

PLAN OF ACTIVITIES FOR INITIAL AIDC IMPLEMENTATION

	Start	End	Responsible party	Status
1. **Establishment of initial activities for completing the technical implementation of AIDC**	**10/10/2014**	**16/10/2014**	**ICAO**	**Completed** The initial plan of activities for AIDC implementation is scheduled for 2015. The plan of activities contemplates the conduction of AIDC courses for air traffic controllers working at ACCs and the operational implementation of AIDC between adjacent ACCs. These activities will be conducted in Chile, Colombia, Ecuador and Peru. Interconnection tests between the Lima and Bogota ACCs were added to the list shown in paragraph 1.1.1.
1.1 Based on the results of AIDC tests conducted from February 2014 to June 2014, the technical documentation of the automated systems installed in the Region, and the SAM AIDC implementation guide, develop: 1.1.1 Plan of activities to complete technical feasibility tests for AIDC interconnection between: Santiago ACC - Lima ACC Guayaquil ACC - Lima ACC Bogota ACC - Guayaquil ACC 1.1.2 Contents of AIDC course for ATS controllers and programmers of AIDC automated system databases, to be conducted in Chile, Colombia, Ecuador and Peru.	10/10	16/10	ICAO	
2. Review of activities at the SAM/IG/14 meeting	**09/10**	**13/11**	**ICAO and SAM/IG**	**Completed** The SAM/14 reviewed and approved the plan of activities for AIDC implementation
2.1 Submission of the plan of activities and contents of the AIDC course at the SAM/IG/14 meeting	09/10	13/11	ICAO	
2.2 Review and approval for submission at the Eighth Coordination Meeting of Project RLA/06/901	09/10	13/11	SAM/IG	

	Start	End	Responsible party	Status
3. Approval of activities by the RCC/8 meeting	**25/02/15**	**27/02/15**	**RLA/06/901 member States**	**Completed** The RCC/8 meeting held in Lima on 25-27 February 2015 approved the activities for initial implementation of AIDC interconnection in Chile, Colombia, Ecuador and Peru.
3.1 Submission of activities, with their respective cost, for approval.	25/02/15	27/02/15	RLA/06/901 member States	
4. Search and selection of experts	**24/11/14**	**28/01/15**	**ICAO**	**Completed** For the performance of the initial activities, three SAM experts with experience in database programming and operation of ACC automated systems were selected: **Rubén Silva of Argentina, Mauricio Ferrer of Colombia, and Jorge Merino of Peru**.
4.1 Search and selection of 4 experts from SAM States participating in Project RLA/06/901, with experience in the installation, operation and programming of AIDC databases, to perform the activities listed in item 1.	24/11/14	28/01/15	ICAO	
5. Missions to complete AIDC interconnection between States that started tests during the first semester of 2014	**06/04/15**	**01/05/15**	**3 automation experts ICAO**	**Completed** Missions were conducted for training purposes and to complete tests for AIDC interconnection and operation **Chile 6/4 to 10/4 2015 Peru 13/4 to 17/4 2015 Ecuador 20/4 to 24/4 2015 Colombia 27/4 to 1/5/2015**
5.1 Mission to Santiago de Chile	13/04/15	17/04/15	3 automation experts ICAO	**Completed** Implementation of AIDC activities at the Santiago ACC

	Start	End	Responsible party	Status
				• AIDC practical course • AIDC interconnection tests between: *Santiago ACC and Lima ACC*
5.1.1 Complete AIDC technical implementation between the Santiago and Lima ACCs	13/04/15	17/04/15	3 automation experts ICAO	Two-way communication was established in the AIDC interconnection tests between the Thales Topssky system of the Santiago ACC and the INDRA Aircon 2100 of the Lima ACC. For the operational interconnection, certain actions need to be taken as listed in Appendix B to this working paper. The practical course on AIDC and database programming was conducted, providing training to 16 controllers of the Santiago ACC and 2 aeronautical technicians.
5.1.2 Conduct AIDC course for ATS personnel of the Santiago ACC	13/04/15	17/04/15		
5.2 Mission to Lima:	13/04/15	17/04/15	3 automation experts	**Completed** Implementation of AIDC activities in the Lima ACC • AIDC practical course • AIDC interconnection tests between: *Lima ACC - Santiago ACC* *Lima ACC - Guayaquil ACC* *Lima ACC - Bogota ACC*

	Start	End	Responsible party	Status
5.2.1 Conduct AIDC course for ATS personnel of the Lima ACC	13/04/15	17/04/15	3 Automation experts ICAO	The practical course on AIDC and database programming was conducted, providing training to 44 controllers of the Lima ACC.
5.2.2 Complete AIDC tests between the Lima ACC and the Guayaquil ACC	13/04/15	17/04/15		AIDC tests between the Lima and Guayaquil ACCs were successfully conducted.
5.2.3 Complete AIDC tests between the Lima ACC and the Bogota ACC	13/04/15	17/04/15		AIDC tests between the Lima and Bogota ACCs were successfully conducted.
5.3 Mission to Guayaquil	20/04/15	24/04/15	3 Automation experts of the SAM Region	**Completed** Implementation of AIDC activities at the Guayaquil ACC • Practical course on AIDC • AIDC interconnection tests and pre-operational implementation: Guayaquil ACC - Lima ACC Guayaquil ACC- Bogota ACC
5.3.1 Complete AIDC technical implementation between the Guayaquil ACC and the Lima ACC	20/04/15	24/04/15	3 automation experts of the SAM Region	AIDC technical interconnection was completed, currently in the pre-operational phase.
5.3.2 Complete AIDC technical implementation between the Guayaquil ACC and the Bogota ACC	20/04/15	24/04/15		AIDC technical interconnection was completed, currently in the pre-operational phase
5.3.2 Conduct AIDC course for ATS personnel of the Guayaquil ACC	20/04/15	24/04/15		The practical course on AIDC and database programming was conducted, providing training to 31 controllers of the

	Start	End	Responsible party	Status
				Guayaquil ACC.
5.4 ***Mission to Bogota***	**27/04/15**	**01/05/15**	**3 automation experts**	**Completed** Implementation of AIDC activities in the Bogota ACC • Practical course on AIDC • AIDC interconnection tests and pre-operational implementation: *Guayaquil ACC - Lima ACC* *Guayaquil ACC - Bogota ACC*
5.4.1 Complete AIDC technical implementation between the Bogota ACC and the Guayaquil ACC	27/04/15	01/05/15	3 automation experts of the SAM Region	The AIDC technical interconnection was completed, currently in pre-operational phase
5.4.2 Complete AIDC technical implementation between the Bogota ACC and the Lima ACC	27/04/15	01/05/15		The AIDC technical interconnection was completed, currently in pre-operational phase
6. First meeting of the AIDC operational implementation working group during the SAMIG/15 meeting	**11/05/15**	**15/05/15**	**RLA/06/90 member States**	
6.1 It is proposed that, as a matter of priority, the SAM/IG/15 meeting do the follow-up of AIDC implementation. Accordingly, the AIDC operational implementation working group will hold its first meeting.	11/05/15	15/05/15	RLA/06/901 member States	**In progress** As a result of AIDC technical implementation, the SAM/IG/15 established a group of activities to migrate from the pre-operational phase to the operational between the ACC Bogota, Guayaquil and Lima. Additionally the AIDC

	Start	End	Responsible party	Status
				messages to be used were defined.
7. AIDC operational implementation	**18/05/15**	**31/12/15**	Involved States	
7.1 Definition of the parameters of the AIDC database for the to AID operational interconnection between Colombia, Ecuador and Peru	25/05/15	29/05/15	Involved States	**Completed.**
7.2 Amend letter of operational agreement to include the AIDC for the coordination between the ACC Lima with AAC Bogota, ACC Bogota with ACC Guayaquil and ACC Lima with ACC Guayaquil	15/06/15	30/06/15	Involved States	**Completed.**
7.3 Teleconferences to coordinate and follow-up the migration from the AIDC pre-operational phase to the operational for Colombia, Ecuador and Peru		Monthly Tele-conferences at the beginning of each month until end 2016	Involved States ICAO	Teleconferences are been carried out twice a month since June 2014.
7.4 Complete courses for the ACC Lima and Guayaquil, Bogotá ATS staff as well as staff ARO/AIS	18/05/15	30/09/15	Involved States	
7.5 Start of AIDC operational implementation Guayaquil ACC - Lima ACC Bogota ACC - Guayaquil ACC Lima ACC - Bogota ACC Lima ACC – Santiago ACC*	18/05/15	31/12/15 03/08/15 03/08/15 03/08/15 31/12/15	States involved	Letter of operational agreement with corrections on AIDC between ACC Colombia, Ecuador, Panama and Peru have been amended. Letter of operational agreement between AAC Lima and Guayaquil with the

	Start	End	Responsible party	Status
				inclusion of AIDC was signed on 23 October 2015. Establishing of a pre-operational period completing the ATS staff training. Operational implementation. AIDC between ACC Lima - ACC Guayaquil in operational phase from August 3, 2015. The AIDC between the ACC Bogota with the ACC Lima and ACC Guayaquil is in pre-operational phase since May, 2015. * The AIDC operational implementation between the ACC Lima and ACC Santiago has postponed in view of the delay in the modernization of the ACC Santiago automated Center (2017). The AIDC between the ACC Iquique and the ACC Lima will be in operation with the new automated system of the ACC Iquique (June 2016).

	Start	End	Responsible party	Status
8. Other AIDC implementations **Bogota ACC - Panama ACC** **Ezeiza ACC - Montevideo ACC** **Resistencia ACC - Asunción ACC** **Curitiba ACC – Resistencia ACC**	**18/05/15**	**31/06/16**	States involved	AIDC course held in Panama, from 22 to 26 June 22 2015. AIDC interconnection tests between Bogota and Panama, successfully carried out in June 2015. AIDC between ACC Bogota and ACC Panama is in Pre-operational phase since October 2015 and will be operational by the first quarter 2016. AIDC tests between ACC Ezeiza and ACC Montevideo by December 2015. Pre-operational by January 2016 and Operation by April 2016. AIDC course – Paraguay, April 2016. AIDC tests between ACC Asuncion and ACC Resistencia by April 2016. Pre-operational by May 2016 and operational by July 2016. AIDC test between ACC Curitiba and ACC Resistencia by July 2016. Pre-operational

	Start	End	Responsible party	Status
				by August 2016. Operational by October 2016. AIDC Course ACC Curitiba.
9. Workshop on implementation of ATM automation, ADS B, and multilateration	**22/09/15**	**25/09/15**	ICAO	NAN/CAR/SAM workshop held in Panama (22-25 September 2015). The implementation of inter-regional AIDC interconnections was analysed at the workshop.
10. Second meeting of the AIDC operational implementation working group during SAMIG/16	**19/10/15**	**23/10/15**	ICAO	**Concluded.**
10.1 It is proposed, as a matter of priority, the SAM/IG/16 meeting do the follow-up of AIDC implementation. Accordingly, the second meeting of the AIDC operational implementation working group will be held.	**19/10/15**	**23/10/15**	ICAO	Follow-up was made on the operational implementation and programming of activities for operational implementation in 2016.
11. AIDC Implementation meetings ✓ First AIDC Implementation Meeting ✓ Second AIDC Implementation Meeting	**28/03/16** **26/09/16**	**30/03/16** **28/09/16**	ICAO ICAO	Events in Lima, Peru
12. Implementation and applications of ATN Workshop	**18/04/16**	**21/04/16**	ICAO	NAN/CAR/SAM event to be held in Sain Maarteen.

APPENDIX E

ACTIVITIES OF MODULE ASBU B0-FICE 2017-2019

(AIDC)

B0 – FICE: Increased interoperability, efficiency and capacity through ground-ground integration						
ELEMENTS	**SCOPE**	**INDICATORS / METRICS**	**GOALS: %/ Date**			**STATUS**
			2017	***2018***	***2019***	
AMHS implementation/ interconnection	All States	Indicator: % of AMHS systems interconnected Support metrics: Number of AMHS systems interconnected **13 AMHS systems interconnected by the end of 2019**	5	5	3	26 AMHS interconnections will be implemented by the end of 2016
Implementation of AIDC interconnections between adjacent ACCs	All States	Indicator: % of interconnections implemented between adjacent ACCs Support metrics: Number of AIDC interconnections implemented between adjacent ACCs **Implementation of 21AIDCs by the end of 2019**	8	7	6	13 of the 15 AIDC interconnections foreseen, will be implemented by the end of 2016
Implementation of domestic IP networks	All States	Indicator: % of States that have implemented domestic IP networks Support metrics: Number of domestic IP networks implemented **7 States implemented by the end of 2019**	3	2	2	

APPENDIX F

C2 SAM PROJECT DESCRIPTION

SAM Region	**PROJECT DESCRIPTION (PD)**	**PD N° C2**	
Programme	**Project Title**	**Starting Date**	**Ending Date**
ATM Automation and Situational Awareness *(Programme Coordinator: Onofrio Smarrelli*)	Improve ATM Situational Awareness in the SAM Region *Project Coordinator: Paulo Vila (Peru)* *Contributing experts: José Rubira, Marcos Vidal and Jorge Otiniano (Peru); Javier Vittor (Argentina), Ivan Salas (Ecuador)*	October 2011	May 2016
Objective	Develop guidelines supporting the implementation of improvements in the situational awareness of ATS units in the South American Region		
Scope	Guidelines supporting the implementation of various applications, such as common traffic visualization, common meteorological conditions visualization and communications in general • Analysis of the current surveillance infrastructure and identification of necessary improvements to support en route and terminal airspaces, airspace classification, PBN and ATFM • Implementation of ADS-B, ADS-c and/or MLAT surveillance systems at selected airspaces • Minimum common electronic information and data bases required in support of decision-making process and alert systems towards an interoperable situational awareness among centralized ATFM units • Implement flight plan data process systems (new FPL format) and data communications tools among ACC´s • Implement advanced automation support tools to contribute towards the sharing of aeronautical information		
Metrics	Drafting of following documents: • Regional surveillance strategy for the implementation of systems in support of improvement of situational awareness – revised • Evaluation of the surveillance systems coverage in the SAM Region - completed • Guideline on technical/operational considerations for ADS-B implementation – completed • Guideline on technical/operational considerations for MLAT implementation - completed • Guideline on technical considerations in support of ATFM implementation – completed • Guideline for the presentation of MET products in graphic format – completed • Action plan for ADS-B implementation in the SAM Region		

Strategy	• All tasks will be conducted by experts nominated by States and organizations of the SAM Region members of the Project *Improve ATM situational awareness in the SAM Region*, under management of the project coordinator. Communications among project members, as well as between the project coordinator and programme coordinator, shall be carried out through teleconferences and the Internet. • Once studies are completed, the results will be submitted to the ICAO programme coordinator as a final consolidated document for its analysis, review, approval and presentation at the GREPECAS PPRC
Goals	• Regional surveillance strategy for the implementation of systems in support to situational awareness improvement for July 2012 (completed) • Guideline on technical/operational considerations for ADS-B implementation for October 2012 (completed) • Guideline for the drafting of SIGMET in graphic format (December 2013) (completed) • Guideline for technical/operational considerations for MLAT implementation for March 2015 (completed) • Guideline for technical considerations in support of ATFM implementation (By May 2016) • Action plan for ADS-B implementation in the SAM Region (November 2014) (completed)
Justification	• Improve situational awareness has been identified as a great support for ATM, contributing in the increase of safety and in flight efficiency • In addition, a close relationship with the other programmes and their respective projects is necessary, with the aim of collecting the operational requirements demanded by the mentioned applications and their respective tentative implementation dates • This project contributes to the implementation of modules B0 ASUR, B0 SURV, B0 NOPS and B0 AMET of the *Air Navigation System Performance-Based Implementation Plan for the SAM Region (SAM PBIP)*
Related Projects	• Air Navigation Systems in Support of PBN • Automation • ATFM • ATN Ground-ground and Air-ground Applications

Project Deliverables	Relationship with Performance Based Regional Plan aligned with ASBU	Responsible	Status of Implementation[1]	Delivery Date	Remarks
Evaluation of surveillance infrastructure and identification of surveillance systems improvements					
Evaluation of surveillance systems coverage in the SAM Region	PFF SAM CNS 04 ANRF B0 ASUR	Paulo Vila (Peru)		October 2012	The evaluation of coverage was carried out in connected to the drafting activities of the Guideline on technical/operational considerations for ADS-B implementation. The results are presented as Appendix A to the Guideline and can be downloaded from site http://www.icao.int/SAM/Pages/eDocumentsDisplay.aspx?area=CNS
Drafting of regional plan for ADS-B and MLAT implementation					
Guideline on technical/ operational considerations for ADS-B implementation	PFF SAM CNS 04 ANRF B0 ASUR	José Rubira (Peru) Marco Vidal (Peru)		October 2012	The Guideline was approved for use in the interested States of the SAM Region, by the Eleventh Workshop/Meeting of the SAM Implementation group (SAM/IG/11) held in Lima from 13 to 17 May 2013 and can be downloaded from the following website http://www.icao.int/SAM/Pages/eDocumentsDisplay.aspx?area=CNS
Guideline on technical/ operational considerations for MLAT implementation	PFF SAM CNS 04 ANRF B0 ASUR	Ivan Salas (Ecuador)		October 2015	The Guideline was presented in the Fifteenth Workshop/Meeting of the SAM Implementation Group (SAM/IG/15) held in Lima from 11 to 15 May 2015 for initial review and was circulated to all SAM Region States. The final approval is foreseen for the Sixteenth Workshop/Meeting of the SAM Implementation Group (SAM/IG/16) to be held in Lima from 19 to 23 October 2015.

[1] ***Gray**: Activity has not started*
***Green**: Activity has or will deliver planned milestone as scheduled*
***Yellow**: Activity is behind schedule on milestone, but still within acceptable parameters to deliver milestone on time*
***Red**: Activity has failed to deliver milestone on time, mitigation measures need to be identified and implemented*

Project Deliverables	Relationship with Performance Based Regional Plan aligned with ASBU	Responsible	Status of Implementation[1]	Delivery Date	Remarks
Guideline on technical considerations in support of ATFM implementation	PFF SAM ATM 05 B0 NOPS	Pending designation		May 2016	The guideline will be supported with the CAR/SAM ATFM Manual approved through GREPECAS Conclusion 16/35.
Guideline for the presentation of MET products in graphical format	PFF SAM MET 03 ANRF B0 AMET	Jorge Otiniano (Peru)		October 2014	The document guideline was delivered to the Secretariat (MET) of SAM Region for its review by the corresponding meteorology specialists. The Guideline was review by the OPMET information exchange Meeting of SAM Region (27 – 29 October 2014) and will be used as guideline for the implementation of SIGMET graphic in Argentina, Chile, Ecuador, Paraguay and Peru by the second half of 2015 sponsored by the technical cooperation regional project RLA/06/901- http://www.icao.int/SAM/Pages/eDocumentsDisplay.aspx?area=CNS
Action plan for ADS-B implementation in SAM Region	ANRF B0 ASUR	Paulo Vila (Peru)		November 2014	The action plan for the regional implementation of the ADS B was presented an approved in the Fourteenth Workshop/Meeting of the SAM Implementation Group (SAM/IG/14) Lima, Peru, from 10 to 14 November 2014. The document can be downloaded from the website
Resources necessary	Experts in the carrying out of the deliverables				

- END-

APPENDIX G

CAR/SAM Seminar/Workshop for the Implementation of Advanced Surveillance and Automation Systems

(Panama City, Panama, 22 to 25 September 2015)

Summary of Discussions

International Civil Aviation Organization

NACC and SAM Regional Offices

CAR/SAM Seminar/Workshop for the Implementation of Advanced Surveillance and Automation Systems

(Panama City, Panama, 22 to 25 September 2015)

Summary of Discussions

Presented by the Secretariat

September 2015

CAR/SAM SEMINAR/WORKSHOP FOR THE IMPLEMENTATION OF ADVANCED SURVEILLANCE AND AUTOMATION SYSTEMS

SUMMARY OF DISCUSSIONS

Date:	22 to 25 September 2015
Venue:	Panama City, Panama
Participants:	The workshop was attended by 82 representatives of 18 NAM CAR SAM States, 2 international organisations of the Regions and 12 companies. The list of participants appears in the **Attachment** to this document.

1. Introduction

1.1 The workshop was conducted by ICAO and had the following objectives:

a) Support the implementation of advanced surveillance (ADS-B and multilateration) and automation (AIDC) systems to meet the operational surveillance and automation requirements specified in the NAM/CAR and SAM Regional performance-based implementation plans, within the framework of the ICAO Global Air Navigation Plan (Fourth Edition);

b) Receive information from ICAO, the industry, and NAM/CAR/SAM States, mainly on:

- Regional planning and status of implementation of surveillance and automation systems in the CAR/SAM Regions based on NAM/CAR and SAM regional performance-based air navigation plans and the goals of the *Declaration of Bogota* and the *Declaration of Port of Spain.*
- The importance of ADS-B and multilateration as technical enablers of ICAO ASBUs through operational guidance and implementation support.
- Users' vision on the implementation of surveillance and situational awareness systems on board the aircraft.
- Technical and operational information on the new surveillance and automated systems at ATS units, as well as on the activities to be taken into account for their implementation.

1.2 This event supported the implementation of the following Block 0 modules of the Aviation System Block Upgrades (ASBU), contemplated in the NAM/CAR and SAM Regional Plans, B0 *SURF - Safety and efficiency of surface operations;* B0 ASURF - *Initial capability for ground surveillance,* B0 FICE - *Increased interoperability, efficiency and capacity through ground-ground interaction,* and B0 SNET - *Increased effectiveness of ground-based safety nets.* All presentations are posted on the following website http://www.icao.int/SAM/Pages/MeetingsDocumentation.aspx?m=2015-SEMAUTOM

1.3 Mr. Onofrio Smarrelli, CNS Regional Officer of the ICAO SAM Regional Office welcomed the participants and highlighted the importance of the event in supporting the implementation of advanced surveillance and automation systems. Eng. Alfredo Fonseca Mora, Director General of the Civil Aviation Authority of Panama, stressed the relevance of these activities for efficiency and safety in the Region and officially inaugurated the event. Mr. Onofrio Smarrelli and Mr. Julio Siu, CNS Regional Officer of the ICAO NACC Regional Office, acted as Secretary of the event.

2. Conduction of the Workshop

2.1 The workshop was conducted in 5 sessions, as proposed during the introduction:

SESSION 1: ICAO SARPS, DOCUMENTATION, AND GLOBAL AND REGIONAL PLANS FOR THE IMPLEMENTATION OF AERONAUTICAL SURVEILLANCE AND AUTOMATION SYSTEMS FOR ATS OPERATIONS

2.2 ICAO presented a list of ICAO Annexes and Documents containing technical information on surveillance and ATM automation systems at ATS units concerning technical, operational, and training aspects.

2.3 ICAO presented an overview of air navigation implementation, from its vision of the global ATM operational concept to the implementation of national and regional plans, including the aviation system block upgrades (ASBU) methodology, describing block 0 modules related to surveillance and automation.

2.4 Likewise, ICAO presented surveillance and automation information related to the CAR/SAM Regional Air Navigation Plan; the NAM/CAR and SAM regional performance-based plans, GREPECAS organisation, and the implementation of surveillance and automation systems in the NAM/CAR and SAM Regions.

SESSION 2: AVIONIC SOLUTIONS AND ADVANCED SURVEILLANCE SYSTEM ROADMAP

2.5 The presentation by BOEING highlighted compliance by BOEING of existing global mandates on the installation of ADS B avionics, coordination with ANSPs to ensure common avionics requirements to support global harmonisation, and the willingness of BOEING to assist the CAR/SAM Regions in the implementation of ASBU modules.

2.6 The presentation by EMBRAER noted that the E-JET line meets existing global mandates on ADS B under Standard DO 260 since 2010 and under Standard DO 260B since 2012.

2.7 IATA presented the point of view of its members regarding the implementation of CNS infrastructure, stressing the surveillance aspect, the support to the implementation of ground-based ADS-B Out /In 1090 ES and its use for data link, TIS-B and MLAT.

2.8 Rockwell Collins/ARINC presented their Multilink flight tracking service in support of airlines, which uses multiple surveillance sources (ground-based ADS-B, ADS-C, United States TFM radar information, EUROCONTROL radar position information, ACARS reports, HFDL, etc.). Global tracking will be done by airlines together with IATA.

SESSION 3: TECHNICAL AND OPERATIONAL GUIDANCE ON ADVANCED SURVEILLANCE TECHNIQUES AND AIDC AS AUTOMATION APPLICATION

ADVANCED SURVEILLANCE ISSUES

3.1 Thales informed that it could support States in the identification of surveillance solutions and highlighted performance-based surveillance. Regarding performance-based surveillance, it was noted that ICAO had amended Document 9868 by introducing performance-based surveillance, since the initial document only contemplated the performance of communication systems.

3.2 INDRA underlined the benefits of ADS B, such as the high update ratio (0.5 seconds), higher radar precision, and lower installation and maintenance costs. It also described the INDRA ADS-B system, indicating that it had four ADS-B data validation methods: by angle of arrival, time of arrival, power *versus* distance, speed reported by the target *versus* position of the target. Furthermore, its multichannel receiver allowed for a reduction of multipath, reflection and noise, thus increasing range (300 nautical miles).

3.3 INDRA also highlighted that the precision of an MLAT system depended on two factors: the location of receiver stations and the aiming precision of the received signal. It also noted the benefits of the LAT/WAN, such as scalable coverage, ease of expansion, target detection on the surface and at levels where necessary, establishment of configurations to keep the MLAT in operation despite malfunction of one, two or N stations, better precision compared to conventional radar, higher update ratio compared to radar (0.5 sec to 1), stations are easy to install, lower maintenance requirements.

3.4 SAAB presented A SMGCS and ACDM solutions, as well as airspace solutions such as WAM and ADS-B. The multilateration system was first used in 2003 at Heathrow Airport, in London.

3.5 Note was taken of products manufactured by IACIT of Brazil, such as ADS-B and multilateration surveillance systems, VHF T/A communication systems, DME and NDB navigation systems, and meteorological equipment and radars.

3.6 AIREON informed that satellite ADS-B implementation was foreseen to be completed and operational in the period 2018-2020, initially providing surveillance coverage in oceanic and remote continental areas. The Meeting noted that in order to protect the aircraft-satellite link, the forthcoming ITU World Radiocommunication Conference (WRC-15) to be held in November 2015, was expected to approve such protection. The required protection for satellite ADS-B is supported by IATA and many States.

3.7 INTELCAN presented the ADS-B solution implemented in Guyana, with an ADS-B earth station integrated with the automated ATC system, and explained the components and functionalities of its SKYSURV system.

3.8 Harris provided an overview of the United States ADS-B Programme, explaining the requirements, design, integration, implementation, operation, and maintenance of ADS-B stations, which improve safety and efficiency to meet the growing air transport needs in the United States. Furthermore, Harris proposed possible solutions for the Caribbean and Central American Region, explaining the benefits of a regional ADS-B network architecture.

3.9 VNIIRA OVR presented the various surveillance and automation products, describing the experience in the construction of the multi-positional surveillance system with ground vehicle traffic control functions/WAM-MLAT Project in Varadero, Cuba, and the convenience of functional co-existence of ADS-B receivers and MLAT sensors.

3.10 ATECH presented the work done through its project in Bacía de Campos, with the installation of a set of ADS-B antennae on oil platforms, integrated into the SAGITARIO Multi Sensor Tracking System at the Macaé approach centre, in Rio de Janeiro, the purpose of which is to provide air surveillance for helicopters flying to oil platforms and commercial flights flying in the upper airspace.

AUTOMATION

3.11 The Secretariat presented information on regional activities for the integration of automated systems between adjacent ACCs in the NAM CAR and SAM Regions.

3.12 Likewise, ICAO presented various considerations relevant to the implementation of the AIDC service, including GREPECAS conclusions and the description of the CAR/SAM ICD. Information was provided on the benefits of AIDC implementation, such as a significant reduction of controller workload, reduced speech coordinations, reduced coordination errors, mitigation of LHDs, thus avoiding possible mid air collisions, possibility of reverting to manual procedures. The AIDC goals defined in the Declarations of Bogota and Port-of-Spain were identified. Information was provided on the AIDC implementation process in each NAM/CAR and SAM Region, and on the regional guides that had been developed. Finally, a comparison was made of messages between ICDs.

3.13 Thales informed about the implementation of ASBU Block 0 and Block 1 modules, such as B0 SURF, B1 SURF, B0RSEQ, B1 RSEQ, B0 FICE,B1 FICE, BO TBO and B1 TBO, flow management, A CDM and AIDC.

3.14 Thales also informed about its activities concerning ATM automation systems, such as the implementation of AIDC in 19 countries worldwide, the installation of AMN/DMAN, the installation of ACDM at the Charles De Gaulle airport, and the evolution of ASBU modules.

3.15 United States noted the need for a harmonised process and the use of standard protocols for a successful and efficient implementation of automation, and described the various existing and valid ICDs, including the NAM ICD, the selection of the optimum protocol based on an interface environment between specific flight information regions (FIRs),

and continuity of AIDC/NAM information following operational implementation. It highlighted the status of implementation of AIDC in the United States with adjacent FIRs, which had reduced ATC controller workload by 50%.

3.16 ATECH informed the Meeting about the automation of ATM/ATFM systems in Brazil, highlighting its SIGMA and Sagitario systems.

SESSION 4: IMPLEMENTATION OF ADVANCED SURVEILLANCE AND AUTOMATION SYSTEMS BY CAR/SAM STATES

Argentina

4.1 Argentina informed that it had 28 radar stations. (It has started the radar updating process in Ezeiza, Córdoba, Mendoza, Mar del Plata and Paraná. ATM automated systems in Ezeiza and Córdoba. Three new automated systems in Comodoro Rivadavia, Mendoza and Resistencia are in the process of being installed, estimating their pre-operational commissioning in December 2015.) The Córdoba and Ezeiza systems were updated based on the version installed in Resistencia, Mendoza and Comodoro Rivadavia. Capability of automated systems to transmit the Asterix 62 protocol. Installation of two ADS-B stations in the Mendoza to Ezeiza route. Automated processes can process ADS-B and ADS-C (currently integrated into the system). Regarding AIDC: pre-operational phase in Ezeiza - Cordoba; satisfactory testing between Carrasco and Ezeiza; tests pending between Ezeiza - Chile until such time as they make the required adjustments to their system. Exchange of radar data with Uruguay completed through the REDDIG II; conversations were resumed to continue radar data interconnection between Argentina and Chile; and coordination started with Paraguay for radar exchange.

Brazil

4.2 Brazil provided information on the Sirius Programme, progress made in ADS implementation at Cuenca de Campo, plans for implementing ADS-B in the continental area, plans for implementing MLAT in Vitoria, and plans for implementing AIDC and FIXM.

COCESNA

4.3 COCESNA presented the results of its analysis of the reports received from its ADS-B station in Cerro de Hula, highlighting the coverage and precision observed, as compared to radar information. It informed on the status of implementation of the AIDC service through the NAM ICD with Mérida and Cuba and between CENAMER ACC and Central American APPs, illustrating the process of implementation and the operational benefits achieved.

Colombia

4.4 Colombia reported having 12 primary radars providing 80% coverage of airspace at 30000 feet, and 70% at 10000 feet, as well as 16 SSR radars providing 96% coverage at 30000 feet and 70% at 10000 feet. As to advanced surveillance systems, 13 ADS B stations, 4 WAM stations, and 13 ADS-B stations have been installed. Implementation planning in Colombia is recorded in document PNAV COL. The Bogota and Barranquilla ACCs and the Villavicencio, Cali, Rio Negro, San Andrés and Leticia ACCs that control lower level flights have been modernised.

Cuba

4.5 Cuba presented the advantages provided by its ADS-B data analysis software tool, the progress made in aircraft equipage, as well as future modules to be developed. It also described the experience in the implementation of the AIDC service under the NAM ICD, with class I messages.

Ecuador

4.6 Ecuador reported that before 1997, Ecuador had 35% radar coverage (Quito and Guayaquil). It currently has 95% coverage, and 4 additional radar stations have been installed. Likewise, WAM is available in Loja and Latacunga.

Mexico

4.7 Mexico stated that it was planning to implement some 35 ADS-B stations by 2018. At present, 10 stations have been implemented. Likewise, other three stations had been implemented and will be commissioned by late 2015, whose data will be shared with the United States in order to offer surveillance services in the Gulf of Mexico. A description was given of the benefits pursued with this implementation and the improvements to be introduced, such as DO-260B processing. Finally, Mexico shared its experience and benefits obtained with the implementation of AIDC/ PAN ICD between Oakland – Mazatlán and its current AIDC / NAM ICD implementations with the United States, Cuba, and Central America.

Panama

4.8 Panama informed about the evolution of surveillance and automation system implementation. Regarding AIDC, it noted that it had implemented a practical training programme and conducted positive tests with Bogota, and that it expected to enter the operational phase by late 2015.

Paraguay

4.9 It was noted that Paraguay had a single radar (type IRS/20/MP/S), located in Mariano Roque Alonso, which limited its coverage when considering range *versus* level. In terms of implementation of advanced surveillance systems, 6 ADS-B stations have been installed to meet radar coverage needs in support of the main Mode S radar surveillance system. At present, the ADS system is not fully implemented. The current AIRCON 2100 version does not support the ADS-B

Asterix 21 radar data protocol, reason why it cannot be integrated into the automated system. An attempt is being made to solve this problem by updating the AIRCON 2100 system to its latest version, which supports Asterix 21 processing.

4.10 Regarding AIDC, note was taken of positive AIDC tests conducted between Paraguay and Argentina and the implementation of the maintenance programme.

Peru

4.11 Peru informed about the operation of AIDC between Ecuador and Peru and plans to start operational interconnection between Peru-Brazil and Peru-Colombia, to be completed before the end of 2015. Information was also provided on surveillance coverage in the Lima FIR.

Dominican Republic

4.12 Information was provided on plans to implement AIDC under the NAM ICD to be resumed in October 2015, the revision of the draft MOU with the United States, and the achievements made by the technical assistance mission under Project RLA/09/801 for this implementation. Information was also provided on the existing radar coverage and ADS-B implementation plans.

4.13 The ANI/WG AIDC Task Force informed about the tasks it had been entrusted for the implementation of AIDC in the NAM/CAR Regions, describing its activities, mandate, establishment of the FPL monitoring *ad-hoc* group, the technical assistance through the Goteams of Project RLA/09/801, and an assessment of the progress made in the achievement of the regional AIDC goal.

Uruguay

4.14 It was noted that Uruguay had 2 radar stations, one in Durazno and the other in Carrasco, and that radar information of Ezeiza was integrated with the radars of Uruguay. Integration is also underway with the Carrasco radar of Argentina. There are plans to install MLAT, ADS-B in Punta del Este, and WAM in the northern part of the country to improve coverage at low levels.

Venezuela

4.15 Venezuela presented the current status of radar coverage and plan for implementing advanced surveillance system and automation at the Maiquetía ACC. In this regard, it was noted that 10 surveillance radars were interconnected through the Venezuelan VSAT network. This VSAT network also carries voice and data (AMHS) and there are plans to install VSAT, which carries voice, data and AMHS. There are plans to install multilateration and ADS-B systems.

SESSION 5: OPERATIONAL REQUIREMENTS, DESIGN, INSTALLATION, VALIDATION, AND COMMISSIONING OF SURVEILLANCE AND AUTOMATION SYSTEMS

5.1 The United States informed about the Acquisition Management System (AMS), describing its functions, policy, life cycle, and gave an example of WAM implementation. It also informed about the regulations and the list of reference documents required by the FAA for the implementation and operation of surveillance and automation systems, specifically highlighting those related to in-flight validation of ADS-B and multilateration stations.

6. CONCLUSIONS/ RECOMMENDATIONS

6.1 Based on the presentations and discussion, the participants agreed on the following conclusions and recommendations:

General

a) Surveillance implementations on civil aircraft must be coordinated between users and airspace service providers, and supported by a business case and/or a positive operational assessment.

b) Airborne equipment requirements must be harmonised and synchronised (standards and timelines) and be based on pragmatic needs in order to deliver feasible benefits to the customers of airspace users.

c) For air navigation implementation, all CAR/SAM States should follow the Global Air Navigation Plan (GANP), its technological roadmaps, the ICAO ASBU methodology, CAR/SAM regional plans, and align their implementation activities by developing their respective national air navigation plans.

d) The staff in charge of surveillance and automation system planning should have at their disposal all ICAO documents and annexes published on the topic.

e) It is recalled that the third meeting of the GREPECAS Programmes and Projects Review Committee formulated Conclusion 3/10 *Drafting of national air navigation plans aligned with the GANP and the regional performance-based implementation plans.* Accordingly, States that had already drafted their national air navigation plans and that were not yet aligned with the Global Plan (Fourth Edition) and the respective regional plans were urged to complete such process, and those States that had not yet drafted their national air navigation plans were urged to start doing so, based on the same considerations.

f) In order to address the installation of new advanced surveillance systems, the personnel in charge of their installation and maintenance must be properly trained. In this sense, TRAINAIR PLUS member States were invited to develop a standard training package (STP) in the areas of advanced surveillance and automation. Once developed, the STP could be acquired by interested States. Likewise, ICAO was requested to increase this type of activities and to continue collective efforts to help training centres meet these requirements.

AUTOMATION/ AIDC

g) In order to optimise AIDC implementation, States should consider taking action to mitigate/resolve filed flight plan (FPL) issues. It was recommended that regional efforts be consolidated in order to coordinate mitigation actions between the CAR and SAM Regions.

h) The importance for States to comply with plans and commitments to implement radar data and flight plan interconnection was recognised.

i) Close cooperation is required among States in order to achieve the interconnection of automated systems, for instance, the establishment of MoUs, letters of operational agreement, and definition of common aspects to be implemented.

j) Non-compliance with ICAO procedures on management of flight plans and associated messages results in increased flow of unnecessary messages.

k) AIDC implementation has shown its advantages in terms of safety and efficiency:
- ✓ significantly reduces the need for oral coordination between ATS units
- ✓ reduces controller workload
- ✓ reduces repetition/readback errors during coordination
- ✓ reduces coordination errors and "controller-to-controller" language barrier issues
- ✓ mitigates LHDs, thus avoiding mid-air collisions
- ✓ greater support to performance-based navigation initiatives and emerging technologies through automation

l) It recognised the importance of evaluating each operational scenario involving AIDC implementation and management of desirable messages, and subsequently assessing its impact on controller workload and its end results in order to select the most appropriate AIDC ICD for implementation.

m) The preferred ICD for the CAR and NAM Regions is the NAM ICD, and the PAN ICD for the SAM Region.

n) AIDC implementation represents the initial phase towards ground-ground integration and FF/ICE implementation.

SURVEILLANCE

o) Performance-based surveillance helps to identify the best surveillance solution, based on operational requirements.

p) ADS B and multilateration provide more precision compared to radar.

q) ADS-B acquisition and maintenance costs are much lower than those required for installing a radar.

r) ADS-B is an important element that makes it possible to derive the operational benefits of ASBU modules B0 ASUR, SURF, SNET, TBO, etc.

s) For ADS-B implementation, some established target dates shall be considered, such as 31 December 2018 for this same implementation for the NAM and CAR Regions, and 1 January 2020 for ADS-B out in the United States with DO-260B transponder. States/Territories should expedite the trials, analysis and commissioning of their ADS-B stations.

t) Support ICAO's position before the ITU WRC, and establish the necessary protection measures for the installation and operation of surveillance systems.

u) Taking into account the importance of having common situational awareness information, which is achieved by sharing surveillance data, CAR/SAM States/Territories were urged to continue striving to achieve data sharing both at radar and ADS-B system level.

v) The study, acquisition, installation, validation, and commissioning of advanced surveillance and automation systems require the development of a management process by a group of technical and operational experts. Examples are cited for the validation of these systems, such as those presented by the United States (Order 8200.25 for ADS-B and 8200.1D for different systems, including WAM).

— END —

Appendix

CAR/SAM Seminar/Workshop for the Implementation of Advanced Surveillance and Automation Systems

(Panama City, Panama, 22 to 25 September 2015)

	Name	State	E-mail
1	Moira Callegare	Argentina	mcallegare@anac.gob.ar
2	Mario Correa	Argentina	marioc_correa@yahoo.com.ar
3	Hernan Ibarra	Argentina	hernanibarra_87@hotmail.com
4	Federico Giorno	Argentina	fedegiorno@gmail.com
5	Erika B. Dedier	Aruba	erika.dedier@ansa.aw
6	Wendy Major	Bahamas	wmajor.ats@gmail.com
7	Donna Cash	Bahamas	dlcash@gmail.com
8	Murilo Albuquerque Loureiro	Brazil	loureiromal@decea.gov.br
9	Noel Dwyer	Canada	noel.dwyer@navcanada.ca
10	Cesar Nuñez	COCESNA	cesar.nunez@cocesna.org
11	Rómulo Velásquez	COCESNA	romulo.urtecho@cocesna.org
12	Javier Arturo Rave González	Colombia	javier.rave@aerocivil.gov.co
13	Jorge Enrique Chacón	Colombia	jorge.chacon@aerocivil.gov.co
14	Carmen de Armas Pérez	Cuba	carmen.dearmas@iacc.avianet.cu
15	Luis Ruiz Godoy	Cuba	luis.ruiz@cacsa.avianet.cu
16	Ramses Guilbeaux Cantillo	Cuba	ramses.guilbeaux@cacsa.avianet.cu
17	Irán Antonio Hormigó Puertas	Cuba	puertas567@gmail.com
18	Edey Marin Alvarez	Cuba	edeymarin1974@gmail.com/ edey@aeronav.ecasa.avianet.cu
19	Maxwell Chirino Palma	Cuba	mchirino@aeronav.ecasa.avianet.cu
20	Iván Tulcán	Ecuador	ivan.tulcan@aviacioncivil.gob.ec
21	Jacques Emmanuel Joseph	Haiti	emmanueljacques@gmail.com
22	Henry Marc - Ulrick	Haiti	marculrickhenry@gmail.com
23	José de Jesús Jimenez Medina	Mexico	disda@sct.gob.mx
24	Rodrigo Bruce Magallon de la Teja	Mexico	dta_seneam@sct.gob.mx
25	Ricardo Sánchez Gutierrez	Mexico	risangu@gmail.com
26	Fernando Bunting	Panama	fernandobunting_122@hotmail.com
27	Jonathan Kiefer	Panama	jfkiefer130576@gmail.com
28	Mauro Francisco Márquez	Panama	mauromarquez71@gmail.com
29	Ángel Olmedo	Panama	aolmedo@aeronautica.gob.pa
30	Leisle Guerra	Panama	lguerra@aeronautica.gob.pa
31	Daniel De Ávila	Panama	deavila@aeronautica.gob.pa
32	Luis Carlos De Gracia	Panama	lgracia@aeronautica.gob.pa
33	Raymundo Ledezma	Panama	ledezmaray.rl@gmail.com
34	Ana Montegro	Panama	anadeleon@aeronautica.gob.pa
35	Carlos D. Peña	Panama	cprivera@aeronautica.gob.pa
36	Abdiel Vásquez	Panama	abvasquez@aeronautica.gob.pa
37	Ivan de León	Panama	ideleon@aeronautica.gob.pa
38	Kerima Itzel Killingbeck	Panama	keri_k17@hotmail.com
39	Julio Fuentes	Panama	
40	Benjamín Borel	Panama	bborel@aeronautica.gob.pa
41	Eric Obaldia	Panama	eobaldia@aeronautica.gob.pa
42	Francisco Medela	Panama	fmedela@acilac.aero
43	Mario Facey	Panama	mfacey@aeronautica.gob.pa
44	Fabian Lasso	Panama	flasso@aeronautica.gob.pa
45	Nasli López	Panama	naslil@aeronautica.gob.pa
46	Diego Ramón Aldana Fernández	Paraguay	diegoaldana@gmail.com
47	Alfredo Bedregal	Peru	abedregal@mtc.gob.pe
48	Jorge Merino	Peru	jemr69@yahoo.com
49	Leonardo Colon Pujols	Dominican Republic	leonardocolon@hotmail.com
50	Francisco León	Dominican Republic	bleon@idac.gov.do
51	Fernando Casso	Dominican Republic	fernando.casso@idac.gov.do
52	Andrew Ramkissoon	Trinidad and Tobago	aramkissoon@caa.gov.tt
53	Rakesh Singh	Trinidad and Tobago	rsingh@caa.gov.tt
54	Tabaré Sardeña	Uruguay	tsardeña@gmail.com
55	Christopher Barks	United States	christopher.barks@faa.gov
56	Christopher Rucker	United States	christopher.rucker@faa.gov
57	Dan Eaves	United States	dan.eaves@faa.gov
58	Alex Rodriguez	United States	alex.rodriguez@faa.gov
59	Eduardo Rincón Madueño	Venezuela	erm.rincon33@gmail.com

CAR/SAM Seminar/Workshop for the Implementation of Advanced Surveillance and Automation Systems

(Panama City, Panama, 22 to 25 September 2015)

		Organization	E-mail
1	Cyriel Kronenburg	Aireon	cyriel.kronenburg@aireon.com
2	Manuel Góngora	Arinc	mgongora@arinc.com
3	Edson Gomes	Atech	egomes@atech.com.br
4	Lawrence Ley	Boeing	Lawrence.m.ley@boeing.com
5	William Richards	Boeing	william.r.richards@boeing.com
6	Charles E. Steigerwald	Boeing	charles.e.steigerwald@boeing.com
7	Luiz Antonio Madeira Junior	Embraer	luiz.madeira@embraer.com.br
8	Holmes Liao	HARRIS	holmes.liao@harris.com
9	Chris Metts	HARRIS	cmetts@harris.com
10	Robert E. Howley	HARRIS	
11	Reinaldo De Campos Goncalves Junior	IACIT	reinaldo.goncalves@iacit.com.br
12	Kieran Ocarroll	IATA	
13	Pablo de la Viuda	Indra	pdelaviuda@indra.es
14	Denis Pancorbo	Indra	dpancorbo@indra.es
15	Angel Martínez	Intelcan	angelm@intelcan.com
16	Jean Christophe Guay	Intelcan	jeancg@intelcan.com
17	Sergio Martins	SAAB	sergio.martins@saabgroup.com
18	Cuq Frederic	Thales	frederic.cuq@thalesgroup.com
19	Walid Perez	Thales	walid.perez@thales.group.com
20	Iurii Kapoiko	VNIIRA	office@vniiraovd.com
21	Tatiana Makarova	Vnirra OVD - JSC	office@vniiraovd.com

		ICAO	E-mail
1	Onofrio Smarrelli	OACI SAM	osmarrelli@icao.int
2	Julio Siu	OACI NACC	jsiu@icao.int

APPENDIX H

AIR NAVIGATION IMPLEMENTATION PLAN - PERIOD 2017- 2019

B0 – SUR: Initial ground surveillance capability						
ELEMENTS	**SCOPE**	**INDICATORS / METRICS**	**GOALS: %/ Date**			**STATUS**
			2017	***2018***	***2019***	
Implementation of ADS-B and MLAT	All States	Indicator: % of ADS B and/or multilateration implemented for higher air navigation levels Goal to 2019: 10% domestic implementation of coverage ADS-B and/or Multilateration for higher air navigation levels	6%	8%	10%	Current status 5% of ADS B and/or Multilateration ADS B Systems installed in Colombia (13), Guyana (1) and Paraguay (6) Multilateration in Colombia and Ecuador (2)
Surveillance interconnection systems	All States	Indicator: % of coverage in flight transferring control area between adjacent AAC of the Region Goal to 2019: 30% of coverage in flight transferring control area between adjacent AAC of the Region	10%	20%	30%	5% of coverage in flight transferring control area between adjacent AAC of the Region There is radar coverage in the radar transferring between AAC Montevideo and AAC Ezeiza
Implementation of the ACC automation system	All States	Indicator: % of ACC automation systems implemented Goal: 100% of ACC automation systems implemented **2019**	95%	10%		90% of automated systems implemented in AAC

B0-SURF: Safety and efficiency of surface operations (A-SMGCS Level 1-2)						
ELEMENTS	**SCOPE**	**INDICATORS / METRICS**	**GOALS: %/ Date**			**STATUS**
			2017	***2018***	***2019***	
A-SMGCS Level 1*		Indicator: % of applicable international aerodromes that have implemented A-SMGCS Level 1 Support metrics: Number of applicable international aerodromes that have implemented A-SMGCS Level 1 **4 A-SMGCS Level 1* by the end of 2019**		2	2	New implementation
A-SMGCS Level 2*		Indicator: % of applicable international aerodromes that have implemented A-SMGCS Level 2 Support metrics: Number of applicable international aerodromes that have implemented A-SMGCS Level 2 **2 A-SMGCS Level 2* by the end of 2019**			2	New implementation

B0 – TBO: Improved safety and efficiency through the initial application of data link en-route						
ELEMENTS	**SCOPE**	**INDICATORS / METRICS**	**GOALS: %/ Date**			**STATUS**
			2017	***2018***	***2019***	
Implementation of ADS C	All States with oceanic FIRS	Indicator: % of oceanic FIRs with ADS C requirement implemented Goal to 2019: 100% of oceanic FIRs with ADS C implemented	90%	100%		To date 82% ADS C implemented in oceanic FIRS
Implementation of CPDLC	All States	Indicator: % of CPDLC systems implemented in FIRs oceanic and continental areas Goal to 2019: 100% of CPDLC systems implemented in oceanic FIRs 5% of CPDLC implemented in continental area		2		To date 82% of oceanic FIRs with CPDLC implemented 0% of CPDLC implemented in continental area

Agenda Item 6: Other business

6.1 Under this agenda item the Meeting analysed the following papers:

a) WP/15 - *Review of the Letter of Operational Agreement between the Bolivia Area Control Centre and Brazil Area Control Centre* (presented by Brazil) (***Spanish only***);
b) WP/16 - *Review of the Letter of Operational Agreement between the Colombia Area Control Centre and Brazil Area Control Centre* (presented by Brazil) (***Spanish only***);
c) WP/17 - *Review of the Letter of Operational Agreement between the Cayenne Area Control Centre and the Amazônico Area Control Centre* (presented by Brazil);
d) WP/18 - *Review of the Letter of Operational Agreement between the Georgetown Area Control Centre and the Amazônico Area Control Centre* (presented by Brazil);
e) WP/19 - *Review of the Letter of Operational Agreement between the Paramaribo Area Control Centre and the Amazônico Area Control Centre* (presented by Brazil);
f) WP/20 - *Review of the Letter of Operational Agreement between Paraguay and Brazil* (presented by Brazil) (***Spanish only***);
g) WP/21 - *Review of the Letter of Operational Agreement between Peru and Brazil* (presented by Brazil) (***Spanish only***);
h) WP/22 - *Review of the Letter of Operational Agreement between Venezuela and Brazil* (presented by Brazil) (***Spanish only***); and
i) WP/24 - *Review of the Letter of Operational Agreement between Cayenne ACC and Atlantico ACC* (presented by French West Indies and French Guiana).

6.2 The Administrations of Brazil and French Guiana presented proposals of Operational Letters of Agreement containing adjustments and updates that were analysed by concerned States.

6.3 After corresponding review between States involved, following Letters of Operational Agreement were signed: Brazil and Peru, Brazil and the Bolivarian Republic of Venezuela, as well as Ecuador and Peru. Likewise, terms of revision to Letter of Operational Agreement between Brazil (ACC Curitiba) and Paraguay (ACC Asuncion) were accepted and signed after conclusion of SAM/IG/16 Meeting, at a later date[1]

6.4 Upon request of the interested State, South American Regional Office's Secretariat shall undertake necessary coordination with the ICAO NACC Regional Office on Letters of Agreement among States of SAM Region with those of NAM and CAR Regions having adjacent FIRs.

6.5 Likewise, the Secretariat recommended to use the teleconferences mechanism to make progress towards agreements and if required, to invite users to participate on same.

[1] Signed on 28/10/15 during the RAAC/14 Meeting in Santiago de Chile