GREPECAS

CAR/SAM Regional Planning and Implementation Group

FOLLOW-UP TO IMPLEMENTATION INTRA AND INTER-REGIONAL ACTIVITIES

GREPECAS C and D Projects

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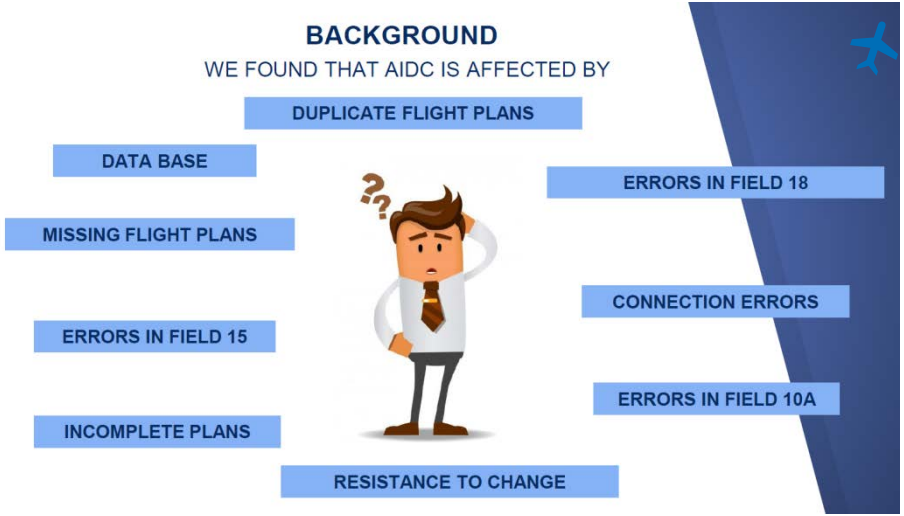
International Civil Aviation Organization North American, Central American and Caribbean Regional Office

Fifth Meeting of the Programmes and Projects Review Committee (PPRC/5)
Mexico City, Mexico, 16 to 18 July 2019
Agenda Item 3.3, 5.3, 5.4, 6.1 - P/02

AGENDA

- NAM/CAR/SAM Interregional activities follow-up
  (Agenda Item 3.3).
- NAM/CAR Regional Implementation Status
  (Agenda Item 5.3 y 5.4).
  - ATM Standardization and Situational Awareness Programme (B0-RSEQ, BO-SNET, BO-ASUR y B0-SURF) follow-up
  - Ground-Ground and Ground-Air Communications Programme (B0-FICE, B0-TBO) follow-up
- Follow-up to the GREPECAS Conclusions
  (Agenda Item 3.3).
- Meeting recommendations.

NAM/CAR Regional Implementation Status



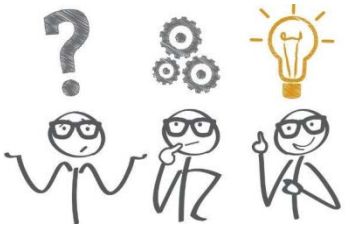
- AIDC Implementation;
  - Relevant aspects that have affected negatively this implementation:
    - Lack of accurate definition of technical and operative requirements or its operation.
    - Errors in flight plans messages.
    - Training of AIM personnel.
    - Particular issues of each State.

NAM/CAR Regional Implementation Status

AIDC implementation

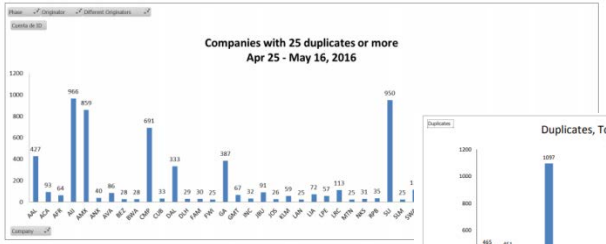
Technical and operative requirements definitions:

- Statistics of interconnection issues among the diverse ATC
- Data Sharing with the ATC Systems Providers
- Provide lessons learnt information

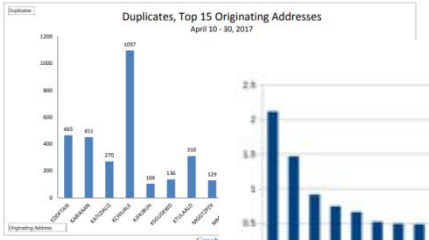


NAM/CAR Flight Plan Errors Statistics

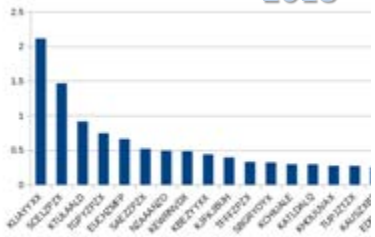
2016



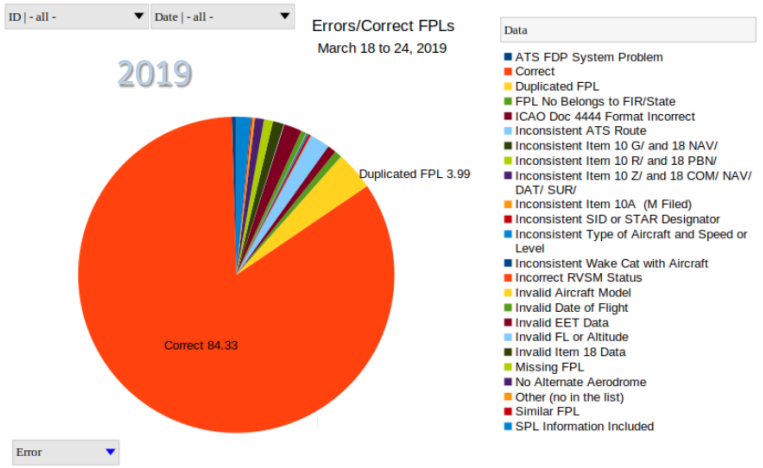
2017



2018



2019



SOUTH AMERICA

Data from July 2017 to March 2018

TOP 10 FLIGHT PLAN ERRORS

Error	Total	
-- DUPLICATE FPL STORED	895	74.52%
-- INCONSISTENT ITEM 10 AND 18 PBN/	110	9.15%
-- DIFFERENT FLIGHT PLAN STORED	47	3.91%
-- WRONG NUMBER OF FIELDS	45	3.74%
-- FILL REG/ IN FIELD 18 ONLY IF DIFFERENT -- FROM THE AIRCRAFT IDENTIFICATION IN ITEM 7	27	2.26%
-- NO FPL STORED	18	1.50%
-- INVALID SEL/REPEATED LETTERS	17	1.41%
-- NON RVSM STATUS	14	1.17%
-- INVALID COM NAV EQIP	14	1.17%
-- INCONSISTENT ITEM 10 AND 18 R WITH NO PBN	14	1.17%

Adopted measures to mitigate flight plan errors percentage

- Training to AIM personnel of the States;
  - Cuba, Mexico, Central America and COCESNA, (8 States and 1 Organization).
- Approach with IATA and Airlines:
  - Avianca, American Airlines, DELTA, Jetblue, Aeromexico, Volaris, United, etc.
- Training on ATC systems database maintenance.
  - INDRA, THALES, LEONARDO.
- Training for AMHS systems database maintenance in the region.
  - Provided by EUROCONTROL and the FAA.

Flight Plan Rejection System

CUBA

UNITED STATES

COCESNA (Central America)

```
(AYA331 090613
FF MHCCZQZX
090613 MROCZPZX
(FPL-PST9905-IS
-F100/M-SDFGRZ/C
-MROC0630
-N0239F270 UG440 TBG DCT TBG DCT
-MPPA0100 MPMG MROC
-PBN/A1C1D1S1B1 NAV/GNSS GPS DOF/171009 REG/HP1896
EET/MPZL0018 )
))
```

ITEM 10 - PBN TABLE

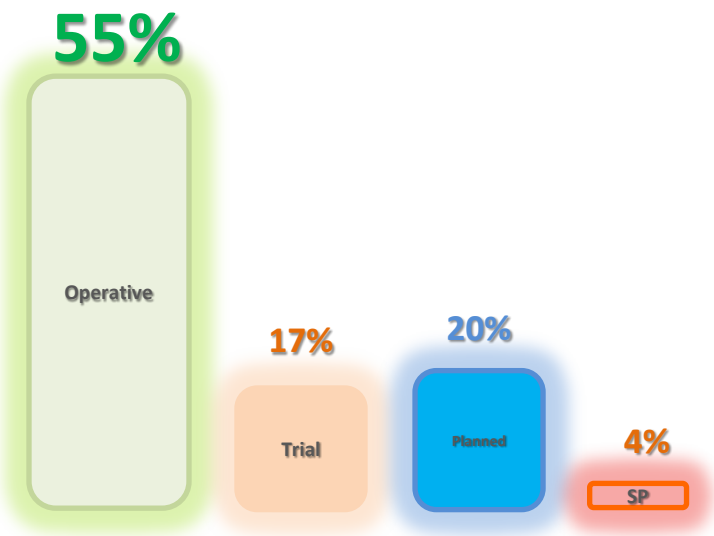
REJECTED

```
*INCONSISTENT ITEM 10 AND 18 PBN/ IF PBN HAS B1
THEN COMNAV EQUIP MUST HAVE R AND G AND D AND I AND O
OR S
*INCONSISTENT ITEM 10 AND 18 PBN/ IF PBN HAS C1 OR D1
OR O1 THEN COMNAV EQUIP MUST HAVE R AND G AND D AND I
```

1. Standardization of the flight plan rejection messages.
2. Training to receive, besides the flight plan rejection, the reason of this rejection.
3. Same Solutions implementation.

NAM/CAR Automation

The AIDC Task Force informed that up to date 39 interphases are operational, 12 are in trial and 14 are already planned. Furthermore, three are in implementation status, two are being planned and three are pending,



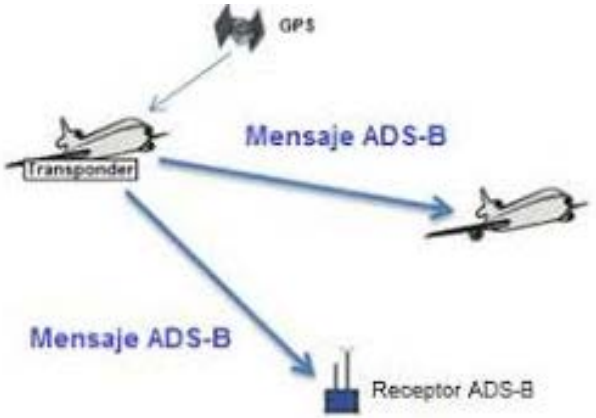
AMHS Implementation

- Completed

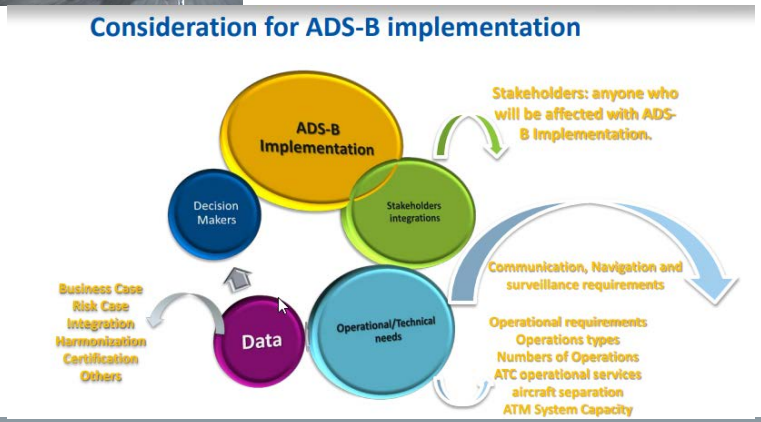
- Current activities in the AMHS Platform.
  - Backup connections implementation.
  - XML and IWXXM trial kick off.
  - AMHS Addressing Monitoring
    (Validation of Correct addressing)

ADS-B Implementation

- Supported by the FAA, NAV Canada and ATC Systems providers, the region has developed seminars on ADS-B implementation, including the following:
  - Technical and operative implementation
  - Avionics certification
  - Integration and certification of ATC data
  - ICAO Standards compliance
  - Aeronautics publications
  - ADS-B Legislation.

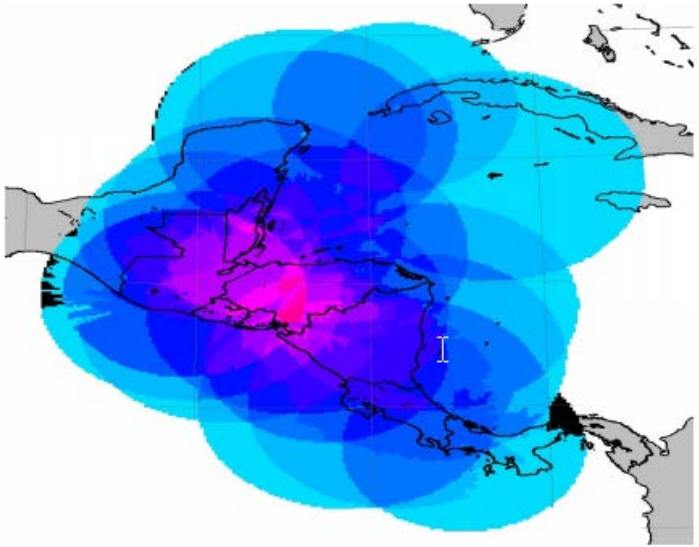


ADS-B Implementation



- ADS-B implementation factors.
- Update of the publication of legislation.
- ADS-B data assessment.
- ADS-B integration with other surveillance data.
- Security alarms.
- Others related to the mandatory implementation on 1 January 2020.
- Support of the regional development using surveillance data for regional efficiency .

Surveillance data (radar data sharing)



- Mexico with Central America (Belize, Guatemala, COCESNA)
- All Central American States.
- Cuba, Jamaica, COCESNA
- Curacao, Dominican Republic.
- Central America with Panama.
- Central America with Ecuador.
- Trinidad and Tobago with French Guyana and Barbados

60%

The region developed a base-document to carry out radar data sharing agreements.

Surveillance data

- New CAR surveillance infrastructure implementation.
- ADS-B Satellite data implementation in FIR Curacao.
- Surveillance ConOps update by the ANI/WG/SURV Task Force.
- Integrate them to the regional objectives.

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ATFM

- A shift of the ATFM Regional approach from a centralized implementation to a multi-nodal approach. Consequently, the ATFM operational concept was updated in the CAR/SAM regions (ATFM CONOPS) providing a reference to this new implementation approach.
- In September 2019 a workshop on Airport collaborative decision making (A-CDM), related with the ATFM, will be held in the ICAO NACC Regional Office. After that event a an ATFM implementation regional meeting will be carried out, where are expected some considerations to allow better identifying the principal obstacles for the region and to adequate the working programme of the ATFM Task Force of the ANI/WG.

AIM

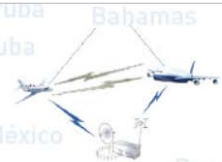
- 95% of the CAR States have already migrated manual to digital and electronic processes (DB) e-AIP.
- 80% implemented QMS in the CAR region with the support of Cuba, Curacao, Dominican Republic, Mexico, Trinidad and Tobago, and COCESNA, covering the rest of the States.
- 100% CAR States implemented the AIRAC System.

MEVA (Enhancements to the ATS Voice Link)

- All the AMHS channels in the CAR region
- Covers all the radar exchange channels among the CAR States
- Covers ADS-B Satellite data for Curacao.
- Covers Colombia, Panama.
- REDDIG connection for data sharing with SAM States.
- Kick off of the XML, IWXXM trials in the AMHS CAR platform (Results on DEC 2019)

MEVA

The radio electric spectrum is a limited natural resource with constant demand. CAR States decided to apply mechanism to warranty the protection of the frequencies that are required for current and future air navigation.



MEVA Network

Improvements to the ATS Voice Link

Terms of Reference
MEVA III Presentation

MEVA Network Coordinator: Ms. Mayda Ávila
MEVA TMG Coordinator: Ms. Dulce Roses

Area	States Members	Name/responsable
SWIM	Jamaica Trinidad and Tobago United States	Albert O'neill
Interoperability	Aruba Bahamas ICAO	Earl A. Rahming
Voice	Cuba Dominican Republic	Elvis Collado
Surveillance	Curaçao Haiti COCESNA	Roger Perez
Others	Cayman Islands Mexico Panama	Wendell Prout

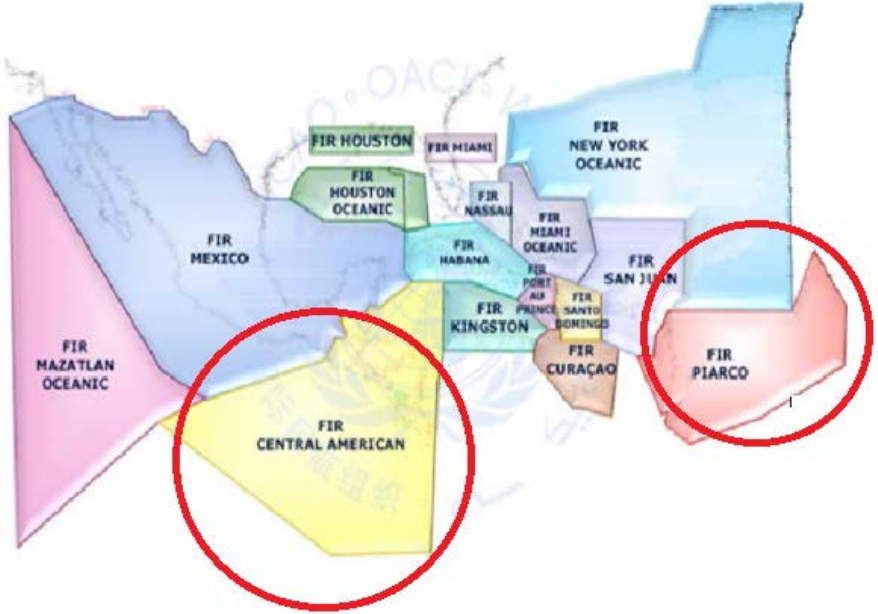
MEVA III TMG Website
Password is required

Frequentys Ad-hoc Group
Terms of Reference

MEVA III
Operational Site

Communication Ad-hoc Group
Terms of Refrence

ADS-C/CPDLC Implementation



- Central America carried out the ADS-C/CPDLC implementation over a South Pacific area of the CA FIR. Operative.
- PIARCO FIR: carried out the ADS-C/CPDLC implementation over an oceanic area in the Atlantic; currently in trials.

Inter-Regional Activities

(NACC Initiative)

- AIDC Workshop (Abril 2018); working table on regional implementation issues (ATC Systems, flight plan errors and lessons learnt).
- Two ADS-B Workshops (Nov 2017 and Nov 2018): Implementation, Failures, Data monitoring, ATC Systems integration, Legislation, etc.
- A workshop for NAM/CAR/SAM State to promote the adoption of Amendment 77 and 78 to Annex 3 on the ICAO Meteorological data exchange model (IWXXM) and Space-Climate (July 2018).
- NAM/CAR/SAM Workshop on Cybersecurity (December 2019)

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Projects under the Automation and ATM Situational Awareness Programme (BO-RSEQ, B0-FICE, B0-SNET, B0-ASUR and B0-SURF)

RPO4 NAM/CAR RPBAIP/RSEQ-SURF-ASUR-SNET-TBO (Automation)	RPO4 NAM/CAR RPBAIP/RSEQ-SURF-ASUR-SNET-TBO (surveillance)	RPO4 NAM/CAR RPBAIP/RSEQ-SURF-ASUR-SNET-TBO (ADS-B implementation)	RPO4 NAM/CAR RPBAIP/RSEQ-SURF-ASUR-SNET-TBO	RPO4 NAM/CAR RPBAIP/RSEQ-SURF-ASUR-SNET-TBO
Flight plan **80%** AIDC **55%**	**60%** Surveillance data shared among CAR States. **100%** Finalized documentation supporting radar data sharing.	Training and planned topics **100%** covered Publishing of pertinent regulation in the CAR Region **0%**	On evaluation	AIS—AIM transition **95%** QMS implementation— **80%** AIRAC cycle adaptation— **100%**

Ground-Ground and Ground-Air Communications Programme (B0-FICE, B0-TBO) follow-up

RPO 4,5,6, 7 y 8 NAM/CAR RPBANIP RSEQ-SURF-ASUR-SNET-TBO-ACDM-FICE-DAIM-AMET (new MEVA phase)	RPO 6 NAM/CAR RPBANIP ACDM-FICE (AMHS address plan)	RPO 6 NAM/CAR RPBANIP ACDM-FICE (Implementation plan of Ground-ground applications (AIDC)	RPO 6 NAM/CAR RPBANIP ACDM-FICE (ADS-C/CPDLC)	RPO 6 NAM/CAR RPBANIP ACDM-FICE (XML y IWXXM Trials)
In process	Address Plan **100%** implemented and in operation	Implemented and in operation at **100%**	Two of the three planned FIRs have been implemented **67%**	In process. Planned results by December 2019

Follow up of the CRPP/3 and CRPP/4 Meetings results

GREPECAS/18 D 18/2 A	Establishment of a Working Group to obtain better AMHS operational use	That, in order to exploit AMHS potentialities and take advantage of its operational use: a) a working group is formed by Brazil, Dominican Republic, United States and D Programme coordinators in the CAR and SAM Regions for ground- ground and air-ground communications infrastructure; b) the working group will work through virtual meetings and will prepare a strategy to ensure AMHS operational use, providing it to the Region disposal as soon as practicable.

✈ Completed

For the CAR region.

Group established for the CAR region, led by Cuba. SAM region to be integrated.

Follow up of the CRPP/3 and CRPP/4 Meetings results

GREPECAS/18 C-18/4 A,B y E	Development of air navigation plans aligned with the GANP and the regional performance-based air navigation plans	That, the CAR/SAM Regions States that have not yet amended or developed their National Plans aligned with the Global Air Navigation Plan (GANP) (4th edition) and the RPBANIP and SAM PBIP, complete them shortly in order to harmonize the implementation and facilitate the interoperability of systems and inter and intra-regional air navigation systems and services.

In process for the CAR region

Currently, NAM/CAR regions have developed 16 Air navigation plans related to 22 NAM/CAR States, which represents a compliance of **72%** for this activity.

The development of air navigation plans of the pending States has been planned for the second semester of 2019.

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https://www.icao.int/NACC/Pages/meetings-2018-asbu18.aspx

https://www.icao.int/NACC/Pages/meetings-2018-amrpbanip.aspx

Planes de Navegación Aérea		
--	Cronograma de implementación	SP
ANP/01	Belice	SP
ANP/02	República Dominicana	SP
ANP/03	Guatemala	SP
ANP/04	Costa Rica	SP
ANP/05	Nicaragua	SP
ANP/06	El Salvador	SP
ANP/07	COCESNA	SP
ANP/08	Honduras	SP

Air Navigation Plans		
ANP/01	Antigua and Barbuda	EN
ANP/02	Barbados	EN
ANP/03	Haiti	EN
ANP/04	Saint Vincent and the Grenadines	EN
ANP/05	Trinidad and Tobago	EN

Mexico

Santa Lucia

United States

Canada

GREPECAS Conclusions Developments

CONCLUSION GREPECAS18/15	**INTERFACE CONTROL DOCUMENTS FOR AIDC IMPLEMENTATION**	
That: For the implementation of the AIDC service between adjacent automated centers, it shall be adopted: a) AIDC / ASIA PAC Protocol Version 3.0 as the base document for the AIDC interconnections between the adjacent Control Centers between the CAR and SAM Regions. In the same way that it is the basis for interconnections in the SAM States; and b) that the CAR Region and the States adjacent to the United States use the NAM / ICD Protocol Version E or higher as the basis for its implementation.		**Expected impact:** ☐ Political / Global ☒ Inter-regional ☐ Economic ☐ Environmental ☒ Operational/Technical
Why: Facilitate the implementation of the AIDC service between adjacent automated centers.		
When: Adoption from GREPECAS/18		**Status:** Adopted by GREPECAS/18
Who: ☐ Coordinators ☒ States ☒ICAO Secretariat ☐ OACI HQ ☐ Others: XX		

✈ Completed

For the CAR Region.

GREPECAS Conclusions Developments

- Completed

For the CAR Region.

CONCLUSION GREPECAS 18/16	SHORT-TERM IMPLEMENTATION BY THE STATES OF AIDC FUNCTIONALITY
That: Radar data are shared between the FIRs of Curacao, Venezuela, the Dominican Republic, Ecuador and Central America. The States that possess the automation capacity installed in their ATC systems will promote the interconnection and start-up of their AIDC connections in the short term. It is invited to lead this initiative to the States of Guatemala, El Salvador, Nicaragua, Costa Rica, Panama, Ecuador, Brazil, Argentina and Colombia. In the ATC systems update projects, the integration requirements with their adjacent FIRs are integrated within the technical / operational requirements.	**Expected impact:** ☐ Political / Global ☒ Inter-regional ☒ Economic ☐ Environmental ☒ Operational/Technical
Why: Improve safety using the benefits of AIDC to reduce LHDs that drives the Region's safety and efficiency	
When: That States submit ther AIDC implementation plans to ICAO Office before 30 August 2018.	**Status:** Adopted by GREPECAS/18
Who: ☐ Coordinators ☒ States ☐ ICAO Secretariat ☐ ICAO HQ ☐ Otros: XX	

GREPECAS Conclusions Developments

CONCLUSION GREPECAS 18/17	MEASURES TO REDUCE FLIGHT PLAN ERRORS
That: Considering the discussions regarding the problems to solve errors in flight plans and their negative impact in automated coordinations, and taking note that the correct presentation and processing of flight plans is essential for ADS-B, AIDC, ATFM implementation, among other concepts and functionalities, and considering that the errors in flight plans among the different FIRs generate LHDs that should be treated as a short term regional problem, the Meeting urged: a) NAM/CAR/SAM States and IATA to extensively discuss the problems in the AIDC Implementation Meeting of all the regions, to be carried out in Lima, Peru, from 16 to 29 April 2018; b) States to instruct their representatives assisting to the Lima meeting, to integrate local and regional solutions that could permit to solve these problems in a short term in the region; and c) States and IATA to commit themselves to implement mechanisms to solve errors in flight plans that may result of the meeting in Lima, before the end of December 2018.	**Expected impact:** ☐ Político / Global ☒ Inter-regional ☐ Económico ☐ Ambiental ☒ Técnico/Operacional
Why: Minimize the negative impact of errors in flight plans in the automation and general management of operations in the region.	
When: By December 2018.	**Status:** Adopted by GREPECAS/18
Who: ☐ Coordinators ☒ States ☐ ICAO Secretariat ☐ ICAO HQ ☐ Otros: XX	

✈Completed

For the CAR Region.

Pending 2019 Activities

- New CAR mechanism for flight plan assessment/solution.
- **Workshop on flight plan errors to cover pending States training.**
- ICAO NACC Regional Office initiative for a Joint Project (OACI-ALTA-IATA) to reduce flight plan errors.
- **NAM/CAR Follow up Workshop for the ADS-B implementation (Ottawa, Canada, August 2019).**
- NAM/CAR Air navigation workshop in November 2019.
- **Workshop for air navigation plans development of 6 CAR States.**
- Implementation missions: (1) AIDC Jamaica, (2) GBAS Cuba and El Salvador.

CAR C AND D PROJECTS UPDATING

Terms of Reference and work plan of the implementation groups

Results of the Air navigation plans drafting of the States

BBB, GANP, GASP

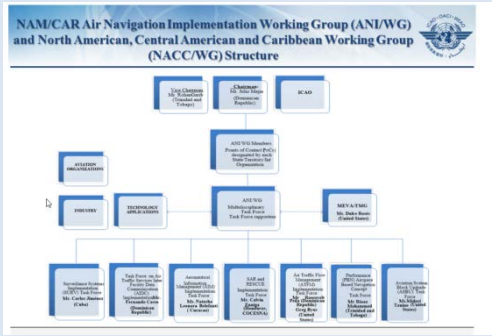
Deficiencies

Personnel training definition

CAR Region Users needs

Three Regional Strategic Objectives:
1. Aircraft longitudinal separation reduction (Efficiency).
2. Boost regional aeronautical information integration.
3. CO2 emissions reduction.

Cyber-security and other operational requirements



https://www.icao.int/NACC/Pages/nacc-regionalgroups-aniwg.aspx

GREPECAS Projects

Recommendations

- Support the development of the Regional ANI/WG Task Forces.
- Support the development of the activities aimed at eradicating flight plans errors.
- SAM States integration to flight plan errors management.
- Participation of the States in the activities aimed on boosting the regional development. The State must assure that the participants comply with the basic participation requirements for a positive impact in the State.
- https://www.icao.int/GREPECAS/Pages/default.aspx

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