



**Agenda Item 1: Follow-up on the AIDC Operation Performance and Test Results of the  
AIDC Interconnection in the NAM/CAR/SAM Region**

**FOLLOW-UP ON THE PERFORMANCE OF THE AIDC OPERATION IN THE NAM/CAR  
REGIONS**

(Presented by the Secretariat)

**SUMMARY**

This working paper presents updated information on the performance of the AIDC operation in the NAM/CAR Regions.

**REFERENCES:**

- Fifth North American, Central American and Caribbean Working Group Meeting (NACC/WG/5) Report, Port of Spain, Trinidad and Tobago, 22 – 26 May 2017
- Aeronautical Information Management (AIM), Error Management on Flight Plan (FPL) and Air Traffic Services Inter-facility Data Communication (AIDC) Meeting (AIM/FPL/AIDC) Report, Tegucigalpa, Honduras, 30 October to 3 November 2017
- Summary of the follow-up teleconferences for the AIDC implementation (November 2017 to February 2018)
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**1. Introduction**

1.1 The aforementioned meetings identified that the AIDC implementation, in addition to promoting the automation of the region and incorporating the operational benefits related to AIDC, also promoted an increase on safety.

1.2 The GREPECAS GTE Group identified the AIDC Implementation, as one of the factors that contributes to the LHD reduction, and therefore, the positive impact in the safety increase.

1.3 The NAM/CAR Regions have identified two automation protocols to be implemented in the Regions. The NAM/ICD Protocol (Currently, Version E) led by United States, and the AIDC Protocol (ASIA/PAC, Version 3) led by Central America. The differences in the functioning of both protocols can be found in **Appendix A** to this paper, and the reference documentation in the following link: <https://www.icao.int/NACC/Pages/regional-group-AIDC.aspx>

1.4 The Regional implementation status is presented in **Appendix B** to this paper.

1.5 The interconnection of an AIDC channel independently of the protocol to be used requires a series of preliminary works and coordination in the States before the channel can be put into operation. These requirements are listed in **Appendix C** of this paper.

1.6 The NAM/CAR Regions, based on their experience, have identified a series of weaknesses in the implementation of the AIDC and post-implementation problems that make it difficult for the protocol to work 100%, among which the most important are listed:

**Pre-Implementation:**

1. Need for a better definition of the requirements of the Air Traffic Control Systems.
2. Need to improve the training of personnel responsible for the integration, configuration and operation of automated channels.
3. Weaknesses in the integration and connection between ATC control centres of different suppliers.
4. Delivery of AIDC and NAM/ICD messages through AFTN and AMHS Systems.

**Post – Implementation:**

1. Maintenance of the ATC Systems database.
2. The need to extend the training programme to the personnel responsible for maintaining the communications infrastructure and maintenance of the systems.
3. Need to strengthen, evaluate and implement a procedure for continuous improvement in operational control procedures.
4. Finally, the negative impact that the errors in the information of the flight plans produces in the automation and the operational risk added to it.

1.7 In response to flight plan errors, the NAM/CAR Regions through the AIDC Implementation Task Force and its Ad-hoc Flight Plan (FPL) Monitoring Group have been working in developing the necessary mechanisms, decision making, and implementation of regional procedures among others, to minimize errors in flight plans. This information will be shared during the development of the meeting.

**2 Analysis**

2.1 In response to the prior information, the ICAO NACC Regional Office is working in coordination with the providers of the ATC systems to support the CAR States in the short-term implementation of the AIDC.

2.2 That, in order to reduce the causes of errors in flight plans, the AIDC Task Force develops a procedure for the homogeneous emission of applicable flight plans for the NAM/CAR Regions with the aim of possibly including it in the Doc 7030 - *Regional Supplementary Procedures*.

2.3 States and Territories that have the capacity to implement AIDC in their ATC systems, implement it as a strategy (procedures) in the region, in order to mitigate the risk of LHD

2.4 In response to the studies carried out by the GTE Task Force of GREPECAS, critical points have been identified in the Region, to which we must pay close attention, such as the coordination between Curaçao-Dominican Republic, Dominican Republic -Jamaica, COCESNA-Ecuador, for this reason the implementation of the AIDC must be a priority for these States.

2.5 Finally, the ICAO NACC Regional Office urges that the States that already have automated channels in operation, to implement the maintenance procedures of the systems databases so that the coordination is based on reliable information and one hundred percent certified.

### **3 Suggested Actions**

3.1 The Meeting is invited to:

- a) Take note of the information presented in this working paper and the development of the meeting, and incorporate this information into its AIDC implementation programme;
- b) that the CAR States identify the differences in the functioning between the two automated protocols currently defined for the NAM/CAR Regions;
- c) prioritize the implementation of AIDC not only for operational benefits, but also as a tool to increase safety; and
- d) actively participate during the meeting in decision-making to minimize flight plan errors in the NAM/CAR/SAM Regions.

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**APPENDIX A**

<u>Phases</u>	<u>NAM</u>	<u>Additional Information</u>
First phase	NAM ICD automation is Class 1 which exchanges active flight plans using a CPL message	
Second phase	<p>The second phase of the automation is Class 2 which adds the following capabilities:</p> <ul style="list-style-type: none"> <li>a) Exchange of Filed Flight Plan (FPL) and Estimate (EST) messages.</li> <li>b) Modification of a CPL or of a FPL that was activated by an EST message (MOD).</li> <li>c) Modification of FPL messages (CHG).</li> </ul>	<p><b>Flight Data Coordination</b> A Class 2 interface adds the following capabilities to a Class 1 interface:</p> <ul style="list-style-type: none"> <li>a) Modification of a CPL or FPL that was activated by an EST message (MOD).</li> <li>b) Exchange of Filed Flight Plan (FPL) and Estimate (EST) messages.</li> <li>c) Cancellation of a previously sent FPL or CPL (CNL).</li> <li>d) Modification of FPLs (CHG).</li> <li>e) General Information (MIS) capability.</li> </ul>
		<p><b>Interface Management</b> Class 2 Interface Management adds the following capabilities:</p> <ul style="list-style-type: none"> <li>a) Logical Rejection Messages (LRM).</li> <li>b) Interface management (IRQ, IRS, TRQ, TRS, ASM). When implemented between two ATSU's, the messages which make up the interface management message set are selected by bilateral agreement based on operational need.</li> </ul>
<p><b>Logical Acknowledgement Message (LAM)</b> The Logical Acknowledgement Message (LAM) signifies that a message was received correctly. During Class 1, each system must determine if a message was rejected or lost, or if the interface failed by timing-out receipt of an LAM for each message sent. During the Class 2 phase, the Logical Rejection Message (LRM) provides the reason a message was rejected.</p>		
<u>Third Phase</u>	<p>The third phase of the automation is Class 3 which adds the following capabilities:</p> <ul style="list-style-type: none"> <li>a) Radar Handoff</li> <li>b) Radar Pointout</li> </ul>	
<u>Phases</u>	<u>AIDC</u>	<u>Additional Information</u>
<b>First/Second and Third Phase</b>	<b>Implemented at the same time</b>	

ASIA/PAC AIDC Messages

Core	Opt	Message Class	Message
X		Notification	ABI (Advance Boundary Information)
X		Coordination	CPL (Current Flight Plan)
X			EST (Coordination Estimate)
X			MAC (Coordination Cancellation)
	X		PAC (Preactivation)
X			CDN (Coordination)
X			ACP (Acceptance)
X			REJ (Rejection)
	X		TRU (Track Update)
X		Transfer of Control	TOC (Transfer of Control)
X			AOC (Assumption of Control)
X		General Information	EMG (Emergency)
X			MIS (Miscellaneous)
	X		TDM (Track Definition Message)
X		Application Management	LAM (Logical Acknowledgement)
X			LRM (Logical Rejection Message)
	X		ASM (Application Status Monitor)
	X		FAN (FANS Application Message)
	X		FCN (FANS Completion Notification)
	X	Surveillance Data Transfer	ADS (Surveillance ADS-C)

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**APPENDIX/APÉNDICE B**

**NAM/CAR AIDC REGIONAL IMPLEMENTATION PLAN**

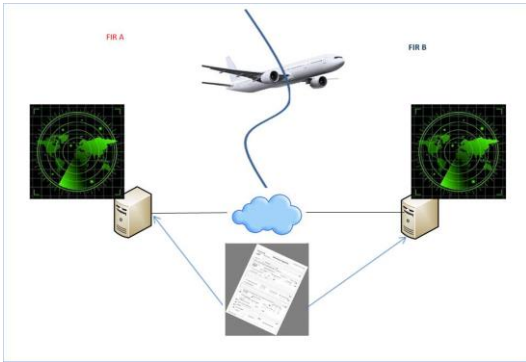
State/Organization	System	Point of contact	Network Bandwidth	Comments	Milestones/Obstacles
Bahamas	INDRA AIRCON 2100*	-	-	-	-
Belize	INDRA AIRCON 2100	Gilberto Torres	AMHS: 64 Kbps	Has class 2 and 3	December – meeting in cocesna January – Training
Canada	CAATS GAATS+ (Gander Oceanic)	Troy Wilton Manager, ATM and ACC Automation (613) 248 6915 wiltont@navcanada.ca	-	-	-
COCESNA	INDRA Aircon 2100 Renovado	Luis Manuel Coello (luis.coello@cocesna.org) Jenny Lee (jenny.lee@cocesna.org)	N/A (the current AFTN circuit speed is 1.2 kbps internally and 9.6 kbps the internationals).  COCESNA planned to change her AFTN network for a new AMHS network in September 2016	-	Class 2 next year waiting for Cuba Update of system – waiting for Cuba
Costa Rica	No - FDP Server must upgrade – Q1 2017	Warren Quirós navegacionaerea.cns@dgac.go.cr +50622314924	AMHS: 64 Kbps	Has class 2 and 3	December – meeting in cocesna January – Training
Cuba	yes - Oracle Version 9 modified by LITA-CUBA	Joao Vázquez Estrada,email: joao.vazquez@aeronav.avianet.cu	AMHS: 64 Kbps*	We received many mistakes from the users in the FPL, in almost all fields. We have detected changes in the FPL forwarded by ACC's or ANSP offices related to FPL's presented by operators	Class 2. Work in progress
Curacao	-	Jacques Lasten, ATS Manager, DC- ANSP, j.lasten@dc-ansp.org	AMHS: 64 Kbps	-	-
Dominican Republic	Yes TopSky-ATC, Thales ATM	Julio Cesar Mejia A. Enc. ATM, jmejia@idac.gov.do, 809 274-4322. Ext. 2103 + Fernando Casso, fernando.casso@idac.gov.do	AMHS: 64 Kbps	-	Signing of phase change agreement - october 2017 Installation of test bed and update operation - September 2018
El Salvador	INDRA Aircon 2100 Renovado	Danilo Ramirez danilo.ramirez@cempa.gob.sv	AMHS: 64 Kbps	-	-
Guatemala	INDRA Aircon 2100 Renovado	Sergio Raul Enrique senniquez@gmail.com David Ascoli davidascoli@gmail.com	AMHS: 64 Kbps	-	-
Haiti	-	Nadia Leopold nleopold@hotmail.com	-	-	-
Jamaica	Thales Topsy In installation	Carl Gaynair – Carl.gaynair@jcaa.gov.jm	64k	85% implementation	Training. Verify if NAM is implemented and how. If classes are as should be. Thales Australia
Mexico	Yes- FDP=Topsy, Producer= THALES ATM, INFO= Four Control Centres, all Mexico covered	Oscar Vargas Antonio ovargasa@sct.gob.mx	19200 bps	Mexico already counts with the implementation of CPL/LAM information exchange between: MZT ≤ ≥ LAX, MZT ≤ ≥ ABQ, MTY ≤ ≥ABQ, MTY ≤ ≥HOU, MID ≤ ≥ HOU, MID ≤ ≥ HAB	Class 2 not planned in near future
Nicaragua	INDRA Aircon 2100 Renovado	Jorge Saballos jsaballos@eaai.com.ni	AMHS: 64 Kbps	Has class 2 and 3	December – meeting in cocesna January – Training
Trinidad and Tobago	SELEX ATM System	Veronica Ramdath vramdath@caa.gov.tt	64k	-	Approval phase for upgrade Upgrade will be next year. Continue testing phase afterwards.
United States	Yes - Host Automation / En Route Automation Modernization(ERAM) systems. Lockheed- Martin (LMCO) is the prime contractor for the Host/ERAM system. Ocean21 provides its own FDP processing in the oceanic environment. LMCO is also the contractor for Ocean21.	Dan Eaves, Federal Aviation Administration Air Traffic Control Specialist, Dan.Eaves@FAA.gov, 202-385-8492	US- Mexico: NADIN/AFTN 64 kbps X25 US- Cuba : MEVA III 19.2 kbps connection to NADIN	The domestic FDP is integrated into The Host Automation / En Route Automation Modernization (ERAM) systems. The flight data function of The San Juan Combined Center / Radar Approach Control (CERAP) is integrated into The Miami Air Route Traffic Control Center (ARTCC) Host/ERAM.	Working Class 3 2020 estimated.

## APPENDIX C

### Factors to Consider before Performing a NAM/AIDC Connection

#### 1. Technical / Operational Agreement among States wishing to connect:

- a) Study of the flows of incoming and outgoing FIRs aircraft.
- b) Coordination fixed points and required times to perform coordination in the corresponding databases.
- c) Changes in the airspace definition, aeronautical publication required.
- d) Tests protocol
- e) Database updates and configuration.
- f) Operating Procedures.
- g) Technical Procedures
- h) Training
- i) Testing, validation and commissioning



- J) Same situational awareness (Flight plan information, configuration of air control center information, radar data, and others). )
- K) Agreed operational procedures.
- L) Backup systems implemented.

#### 2. Technical Aspects to consider:

- a) Aeronautical Messaging System (AFTN/AMHS).
- b) Structure of the ATC System Database
  - ✓ Type of software (Database)
  - ✓ Structure of the database.
  - ✓ Required operating information.
  - ✓ Maintenance and upgrade procedures

### 3. Technical Aspects to consider:

- a) Need to Share Radar Data
  - ✓ Implementation of a new communication channel to provide the radar data information.
  - ✓ Integration of radar data in ATC Systems.
    - Validation of radar data
    - Tests
    - Integration of the radar in the control center
    - Operating radar
- b) Mechanisms to support operational procedures
- c) Alternative Communication Mechanism

### 4. Important Operating Factors

- Experience of operational staff in the development of flows.
- Continuous ascents and descents air traffic operations.
- Coordination points to be implemented in procedures.
- Levels of coordination (when applicable).
- Coordination messages.
- Negotiation Messages.
- Transfer messages.
- Procedures in case of lack of automation.
- Modification of the letter agreement between two flight regions.

*It is important to indicate that the AIDC functionality can vary its operation according to the System provider. In that sense, it is recommended:*

- a) Integrate the ICD (Interface Control Documents) with the NAM and PAC parts of the requirements of the new ATC System.
- b) Validate the correct procedure of automated messages within the ATS system.
- c) That integration with the adjacent FIR is a contractual requirement of the project.