Go-Team mission on Air Traffic Services Inter-facility Data Communication (AIDC) to Jamaica under the ICAO Project RLA09801 Multiregional Civil Aviation Assistance Programme (MCAAP)

(Kingston, Jamaica, from 20 to 24 January 2020)

REPORT

EXECUTIVE SUMMARY

1. An Air Traffic Services Inter-facility Data Communication (AIDC) implementation mission was approved through the Project RLA/09/801 – Multi-Regional Civil Aviation Assistance Programme (MCAAP) to support Jamaica's AIDC implementation. This activity was requested by Jamaica during the Fourth NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/4), held in Miami, United States, from 21 to 24 August 2018.

2. During the Third Steering Committee Meeting of the MCAAP, an assistance mission for the implementation of the North America Interface control document (NAM/ICD) and Asia-Pacific Air Traffic Services Inter-facility Data Communication (AIDC/PAC) protocols for Jamaica was approved, in accordance with the terms of reference developed for this mission with the objective to identify improvements to NAM/ICD and AIDC services and recommendations on the Implementation activities/improvements.

3. The AIDC application exchanges information between Air Traffic Service Units (ATSUs) for support of critical Air Traffic Control (ATC) functions, such as notification of flights approaching a Flight Information Region (FIR) boundary, coordination of boundary conditions and transfer of control and communications authority (ICAO Annex 10).

4. The mission was carried out from 20 to 24 January 2020, with the participation of experts from Dominican Republic, United States and the Central American Air Navigation Services Corporation (COCESNA), with the remote support of Cuba and Trinidad and Tobago as observer of the process.

5. During the mission, presentations were made by the experts on the implementation of both protocols (NAM and PAC) and lessons learned, product of the experience developed by these States on the implementation and operation of both protocols.

6. There were 22 participants from operational areas of Jamaica, (list provided in Appendix A to this report).

GENERAL

ICAO Representatives:	Mayda Ávila Regional Officer, Communications, Navigation and Surveillance International Civil Aviation Organization, North American, Central American and Caribbean Regional Office mavila@icao.int
Place of Mission:	Civil Aviation Authority Kingston, Jamaica
Dates of Mission:	20 to 24 January 2020
Subjects Experts Matter that supported the Mission:	• Fernando Casso Radar Department Manager Instituto Dominicano de Aviación Civil (IDAC), Dominican Republic fernando.casso@idac.gov.do • Dan Eaves FAA/ATO Technical Analysis and Operational Requirements Group (AJV-S2) Mission Support Services Federal Aviation Administration, United States Dan.Eaves@FAA.gov • Jenny Lee AIM Manager AIM Corporación Centroamericana de Servicios de Navegación Aerea (COCESNA) jenny.lee@cocesna.org
Participants from States:	• From Dominican Republic: Luciano Rojas Almonte Luis Emilio Fuentes • From Trinidad and Tobago Norman Manley Kent Ramnarace Singh

Objectives of the Mission:	Assist Jamaica in the implementation of its AIDC services with adjacent ACCs, covering: • Scope and implementation of the North American Common Coordination Interface Control Document (NAM/ICD) and the AIDC protocol. • Configuration of Air Traffic Management (ATM) systems for the use of automated protocols • Participation with Jamaica for technical assistance and support for AIDC performance • Assistance for the development of operational procedures • Assistance for the development of functional tests • Validation of tests and operation of both automated protocols • Failure analysis • Development of Letters of Agreement for the use of protocols • Letter of Agreement
Summary of Activities:	• **21 January 2020:** Facilities review provided by Jamaica's staff. NAM/ICD and AIDC protocols information was discussed; benefits of protocols operations and factors to consider before planning NAM/ICD connection were also commented. • **22 January 2020:** Overview on technical aspects to consider, important operating factors. Facility visit that included telecommunications/flight, data/operation, and staff involved/proposed lab test. • **23 January 2020:** Session exercise Flight Plan Information and Recommendations on the implementation
Documents and Data Collected and Reviewed:	Documentation and presentation under the following link: https://www.icao.int/NACC/Pages/meetings-2020-mcaapjamaica.aspx

REPORT

General Information and Discussion

1. Benefits about NAM/ICD and AIDC/PAC Implementation

1.1 AIDC is a communications protocol that is used between control centres, where data of an aircraft that is going to enter another control centre is automatically sent to the receiving control centre and this responds in the same way.

1.2 The AIDC/PAC protocol uses different messages that are sent in each of the AIDC phases.

1.3 It is necessary that before initiating dialogues on AIDC coordination, both ACCs understand the concept of the AIDC, its advantages and disadvantages. Because of this Jamaica has to identify what protocol will be used with the different FIRs where the State has coordination.

1.4 A communications and data interchange infrastructure significantly reduces the need for verbal coordination between ATSUs.

1.5 Automated Data Exchange (ADE) can provide the means by which data exchange can be harmonized between ATSUs, providing air traffic service in, and adjacent to, the North American, Central American and Caribbean States.

1.6 The increasing traffic demands between Flight Information Regions (FIRs) prompt the need to improve efficiency, safety and accuracy for the ATC providers. Developing a harmonized process and defining protocols for exchange of data between multiple States/Territories/International Organizations within and across regions is critical to achieving this derived objective.

1.7 As Air Traffic Service (ATS) providers develop their automation systems, consideration should be given to meeting the capabilities identified within other regional interfaces such as United States - Dominican Republic, United States and Cuba, Cuba and Mexico, Cuba and COCESNA and Mexico and COCESNA, as described in the North American Common Coordination Interface Control Document (NAM ICD) which serves to meet the automation interface requirements of the region (https://www.icao.int/NACC/Documents/Meetings/2020/MCAAPJAMAICA/4-NAM-ICD.pdf).

1.8 Both NAM and traditional AIDC implementation has proven highly successful in North America and the Caribbean. Automation gains have been realized, providing significant safety and efficiency. A recent estimation showed a fifty per cent workload reduction for controllers working in the sectors recently converted to automation at Miami Air Route Traffic Control Centre. Benefits noted in their respective environments include:

a) Reduced workload for controllers;
b) reduction of readback/hearback errors during coordination;
c) reduced “controller to controller” coordination errors and language barrier issues; and
d) increased support for performance-based navigation initiatives and emerging technologies with automation.

1.9 Flight plan data system interfaces provide interoperability among automated systems harmonized to a common standard.

1.10 Canada, Mexico and United States drafted the NAM ICD through a 1998 trilateral agreement based on ICAO Doc 4444 and AIDC messaging. The described functionality is adept at supporting radar and mixed domestic transition environments.

1.11 The traditional AIDC message set is more attuned to oceanic operations where more controller interaction is required to maintain time, distance and altitude separation standards.

1.12 In most NAM interoperability environments, radar is the operational norm and non-radar the exception, where in traditional AIDC non-radar is more the standard and radar is the exception.

1.13 NAM ICD interfaces have increased throughout the region and now includes Cuba, Dominican Republic and COCESNA.

1.14 To pursue the feasibility of implementing a similar Class I interface between Kingston ACC and Havana ACC as currently exists in other NACC States is a good target for success.

1.15 The Automated data exchange (ADE) between NACC States to include Canada, Cuba, Dominican Republic, Mexico and United States serves as operational proof that the NAM ICD can be used as a successful model for implementation.

1.16 Cuba, Dominican Republic, United States and COCESNA are sources of interface subject-matter expertise and can be used to provide advice and regional assistance in interface specifics.

1.17 These resources can be used not only in current but future expansion of ADE capabilities.

1.18 AIDC/PAC is working in Central American States between COCESNA according with their ACC operation and coordination with Colombia, Ecuador, Panama and also with COCESNA; and approach (APP) coordination with El Salvador, Guatemala and Nicaragua.

1.19 The establishment of AIDC communication AIDC/PAC between Belize, Costa Rica and COCESNA is in process.

AIDC/Operation

1.20 AIDC/PAC works under specific coordination phase:

a) REPORTING PHASE (1)
It is the phase in which the system automatically sends a dialog notifying the adjacent unit that a flight is near to enter its area. Any change may be broadcast to an ATSU from the current ATSU prior coordination.

b) COORDINATION PHASE (2)
It is sent to coordinate an aircraft between two ATSU´s. The AIDC contains the time to a coordination point, the flight level, transponder code, and the rest part of the flight plan. During this phase, control centres may request a different level change than the one initially authorized.

c) TRANSFER PHASE (3)
During the transfer phase a control centre sends control transfer and the receiving control centre accepts the transfer.

1.21 One significant difference between AIDC/PAC and NAM/ICD is that AIDC/PAC has to implement all phases at the same time. NAM/ICD could be doing phase by phase according to the ANSP agreements.

Phases	NAM	Additional Information
First phase	NAM ICD automation is Class 1 which exchanges active flight plans using a CPL message	
Second phase	The second phase of the automation is Class 2 which adds the following capabilities: a) Exchange of Filed Flight Plan (FPL) and Estimate (EST) messages. b) Modification of a CPL or of a FPL that was activated by an EST message (MOD). c) Modification of FPL messages (CHG).	**Flight Data Coordination** A Class 2 interface adds the following capabilities to a Class 1 interface: a) Modification of a CPL or FPL that was activated by an EST message (MOD). b) Exchange of Filed Flight Plan (FPL) and Estimate (EST) messages. c) Cancellation of a previously sent FPL or CPL (CNL). d) Modification of FPLs (CHG). e) General Information (MIS) capability.
		Interface Management Class 2 Interface Management adds the following capabilities: a) Logical Rejection Messages (LRM). b) Interface management (IRQ, IRS, TRQ, TRS, ASM). When implemented between two ATSUs, the messages which make up the interface management message set are selected by bilateral agreement based on operational need.
Logical Acknowledgement Message (LAM) 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.		
Third Phase	The third phase of the automation is Class 3 which adds the following capabilities: a) Radar Handoff b) Radar Pointout	
Phases	**AIDC**	**Additional Information**
First/Second and Third Phase	**Implemented at the same time**	

Transition from Manual Coordination to Automatic Coordination

1.22 One of the most pervasive issues facing the Jamaican facilities is the transitioning from a manual facility to an automated ATC service improving system capability and customer service:

a) The complexity of the project is reduced due to an existing interface with Havana of the same type.
b) Additionally, selling the capabilities of ADE as positive controller benefits serves to increase acceptance of the transition to operational use.

2. Planning the Project

2.1 Define an operative concept:

a) Purpose; definition of the objectives operations and the benefits to be obtained.
b) Operational environment; set of circumstances that define the need or not to perform an implementation.
c) ATM functions; count with the resources of all kind, necessary to provide the service.
d) Infrastructure; having the necessary infrastructure to implement it.

2.2 Identify benefits

a) Efficiency;
b) safety
c) capacity;
d) environmental;
e) cost reductions;
f) access; and
g) other metrics (e.g. predictability, flexibility, usefulness).

2.2.1 According with that identification, Jamaica will be able to evaluate the positive impact of NAM/ICD and AIDC/PAC implementation.

2.3 Risk management

a) provides a systematic approach to examine the key components of risk and produce a risk assessment;
b) informs the effective allocation of limited resources;
c) provides basis for prioritizing mitigation strategy alternatives; assesses safety-security environment focusing on keeping vulnerabilities at an acceptable level; establishes a common frame of reference for analysing aviation security, communicating issues, and determining priorities; and
d) provides the basis for compliance with ICAO Annexes.

2.4 Pre – implementation Requirements

a) Need for a better definition of the requirements of the Air Traffic Control centres.
b) Need to improve the training of personnel responsible for the integration, configuration and operation of automated channels.
c) Weaknesses in the integration and connection between ATC control centres of different suppliers.
d) Delivery of AIDC and NAM/ICD messages through aeronautical fixed telecommunication network (AFTN) and Aeronautical message handling system (AMHS) Systems.

2.5 Post – implementation Activities

a) Maintenance of the ATC Systems database.
b) Need to extend the training programme to the personnel responsible for maintenance.
c) Communications infrastructure and maintenance of the systems.
d) Need to strengthen, evaluate and implement a procedure for continuous improvement.
e) Operational control procedures.
f) Negative impact that errors in the information of the flight plans produce.
g) Automation and the operational risk added to it.

2.6 Problems that affected AIDC Implementation

a) Lack of clear system requirements.
b) System protocol documentation, since providers had different interpretations.
c) Unclear semantics and lack of real technical/operational requirements by the States.
d) Incorrect database configuration.
e) Lack of properly-trained personnel to fulfil system analyst functions.
f) Lack of standardisation.

2.7 Santo Domingo interface could be a template for the Kingston-Havana facilities and extends to the automation capabilities within the Caribbean.

2.8 As with the other regional interfaces extensive work will be required for Kingston which will include:

a) Airspace and system parameter adaptation.
b) ATC procedure coordination, Letter of Agreement tailoring.
c) Communications interoperability analysis and testing.
d) Protocol testing and troubleshooting.
e) Extensive non-operational and operational testing.

2.9 Training to be conducted for Kingston will consist of not only their new system but automation transition activities in the new interface.

2.10 Previous regional efforts required extensive cooperative work in support of system implementation issues, demanding resolution/reconciliation of flight planning quality control.

3. Planning Activities Includes Collaboration

3.1 Project Planning should include the following collaborative activities between Cuba and Jamica, particularly between Norman Manley International Airport (MJKP) and Cuban José Martí International Airport (MUAH):

1. Automated Data Exchange (ADE) Project Definition /Planning
    a. New ATC System Implementation for both facilities – Cuba's RADCON M and Jamaica's TOPSKY ADE build on the existing infrastructure capabilities and replicate them in the Kingston environment.

    b. Allocating equipment and personnel resources required
        i. Absence of resources forces undercuts momentum and delays progress until resources can be allocated
        ii. Technical Strategy - Class I (CPL-LAM) / II NAM functionality
        –Taking advantage of scalability allows matching the capability evolution of adjacent FIRS and implementing automation capabilities of Class II and II.

2. Managing schedule activities and issues
    a. Adaptation/Non-operational testing
    b. Analysis of NAM/ICD requirements and lower level definitions
    c. Reconciling System to System issues
    d. Integrating ADE routes, fixes, airspace, and times.

3. Operational testing and cutover

3.2 Project Insight in Planning.

1. Several critical planning activities must be addressed during the Project Planning Phase of ADE.

2. Analysis must provide a realistic look at the required/available resources for preparing for ADE.

    a. As stated before, If the adaptation/non-operational testing can be run in parallel with system implementation training development allowing significant time to be saved.
    b. Manual analysis of routes: fixes to optimize ADE can be a parallel task.
    c. Outlining a schedule to address solving the issues discovered in testing and developing a realistic timetable for reconciliation of the problems is crucial. These will need to be explored for this strategy.

3.3 If the bilateral resources are not available to perform parallel activities then the implementation timeline will be extended until the time can be devoted to the effort.

    a. Additionally, optimize ADE basic implementation with a reduced message set messages may be an option.
    b. A Class 1 reduced set consisting of CPL-LAM interface messages provides implementation flexibility with the advantages of ADE.
    c. Class I interface will require less training.
    d. The NAM Classes also allow controllers to get used to the functionality in a phased manner and the maintainers to gain expertise needed to progress to the increased capability Classes.

3.3.1 AIDC/PAC implementation will require more time for planning and more staff training. Jamaica will be careful about this implementation trying to address in a extend period of time its implementation to be sure about to development a good plan.

3.4 **Project Planning - More Lessons Learned**

a) Within United States both NAM and AIDC interfaces have been used in reduced message set configurations. Mexico and COCESNA also operationally support both protocols.

b) Attempting implementation of overly complex functionality can cause issues which may delay the project or prevent an interface from being implemented. The stepping stone process is a proven winner.

c) The telecommunication infrastructure supporting automated data exchange interface is expected to approximate the traffic load of other regional ADE configurations

d) Analysis of the current telecommunication and loading added by ADE requirements will need to be evaluated and validated.

e) It was necessary to increase the MEVA III telecommunication network bandwidth for the KMIA – MUFHADE capability.

3.4 A potential 'show stopper' transitional issue for ADE implementation involves the quality and filing practices of flight plans in the CAR Region and adjacent regions:

a. This issue has been noted in past NACC meetings and is Task Force issue.
b. Automated systems require higher quality data than manual ones.
c. Data are received by systems which are less forgiving of errors in format and data integrity.

3.6 These errors can lead to manual intervention and result in an overwhelming amount of additional work for controllers taking them away from their primary tasks.

3.7 Errors and multiple filed flight plans which may have been absorbed for years within a manual system are now problematic to the automation.

3.8 Additionally, multiple flight plans received for the same flight are being received and must be manually parsed to ensure that the correct data is being forwarded by the computer system for upstream facilities.

3.9 Conflicting information between those filed at the departure airports and those filed by the airlines are often seen. Miami Air Route Traffic Control Centre (ARTCC) has been dealing with these types of flight plan issues for years but they were new to the Havana ACC automation which had to deal with conflicting data and identify and correct flight plan errors.

3.10 The solution must be a collaborative effort aimed at reducing the number of flight plans in error and reducing instances of multiple flight plans for the same flight. The issue is a significant one with not only potential safety of flight implications, but threatens the success of automation.

3.11 It is important to have a permanent Team for all automatic protocols implementation process. Changes in the staff delays the implementation process.

4. Impact of flight plan errors and aviation in general

4.1 Flight plan information is the primary information based on which automation work.

4.2 Flight plan information errors cause a negative impact on automation and may result in decreased safety.

4.3 In response to flight plan error measurements, the following errors have been identified:

a. Bad originator databases: such as AMHS database addressing and ATC database configuration.
b. Deficient procedures.
c. Human errors.
d. System issues as lack of 2012 Flight plan (FPL) format validation.

4.4 Integrate a process in which Jamaica could ensure flight plan information before processing it into their ATC.

5. Test session

5.1 During the third day of the meeting, a Test Session was coordinated with Cuba, taking advantage of the fact that Jamaica staff works in the simulator, according with the test plan proposed by Cuba and, at the same time, having the support from the different experts. The following are some important issues found in that test:

5.2 In the preparation of the test, there were communication problems between the different positions of the system, which were corrected by personnel from Dominican Republic. The day before, the technicians from Jamaica had commented that the positions had been disconnected because of the removal of a switch. It is recommended that the Jamaica personnel review and document the network configuration of the lab system, so that can be faster restored in the future.

5.3 There were also problems with the configuration. According to the personnel from Jamaica, it had been modified due to a training session. The configuration was later restored. It is recommended that for any configuration change; a new project be copied from the main project with a new name, in order to preserve the latest working configuration. This also has to be documented.

5.4 For the test with Cuba, the configuration was reviewed, and only the NAM ICD Class 1 messages were left active.

5.5 During the test there were several events worth noting:

a. The system does not identify certain errors in flight plans. Specifically, it was observed that the system does not review the coherence between fields 10 and 18.
b. A modified message (MOD) was sent, which corresponds to a Class 2 message. In the configuration, this message was explicitly deactivated, so that it should not have been generated. The differences in classes (messages) that must be managed are not clearly configured in the ATC system.
c. Although there were Current Flight Plans (CPLs) with errors sent purposely to the Havana FIR for the testing of Logical Rejection Messages (LRMs) from them, no responses were obtained. It was verified that the messages were actually being sent to Cuba, so it is assumed that the problem is on their side. Cuba will review this case.
d. Initially, the AMHS system was not routing messages correctly to Cuba. This was identified and corrected by personnel from Jamaica, with assistance from the Go Team members.

5.6 It is necessary to relay in the observations from 1 and 2 above items to the system provider, in order to correct these anomalies in the system.

5.7 It is necessary to follow up on Cuba regarding the LRMs.

5.8 It is necessary to document any changes done to the AMHS system, to have a record of whom, when and why it is being modified.

6. Recommendation

6.1 About TopSky (THALES) Air Traffic System:

a. During the test session conducted between Cuba and Jamaica, the experts identified the following weaknesses in the System:

    1. Lack of Flight Plan Format data validation.
    2. It is necessary to integrate the last information on fix point, airways, procedures, all database information, and to establish a procedure to assure its correct update of database information.
    3. The SME recommended that Jamaica must request their ATC Service provider an ATC software update to assure the proper functioning of the protocols. Jamaica can base this on the work that THALES carried out with the ATC of Dominican Republic.

6.2 About training:

a. Implementation of the automated protocols requires specific training for the technical area, operational air and for the personnel that manages the flight plan information.

b. In that sense, it is necessary that Jamaica ensures that the following training is available to the staff:

    1. TopSky ATC database management addressed to the personal in charge of the ATC System update and maintenance.

2. Management of the Flight Format Plan (Version 2012): controllers that will be working with automated protocols must understand very well all fields of FPL information.
3. Training on NAM/ICD coordination has to be provided to all controllers before NAM/ICD operation. This training must integrate theory and practical sessions (exercises in the simulator).
4. Before providing practical training to Jamaica staff, a procedure has to be developed due to the fact that this information must be part of the training.
5. Different training has to be provided for the AIDC/PAC implementation, because this protocol requires more coordination messages.

6.3 On Technical activities:

a. Surveillance information must have to be available in all Jamaica FIR.
b. AMHS database has to be updated with the last Acceptable Mean of Compliance (AMC) information and to count with a procedure to ensure its update every 28 days, in accordance with the AMC database update files.
c. Correct management of NAM/ICD and AIDC/PAC messages; they have to be verified between AMHS and ATC systems.
d. Correct connection between Jamaica and their adjacent FIRs; it has to be tested and to ensure their operation.
e. Procedures and documentation have to be provided to all technical staff to ensure correct management.

6.4 On Test and NAM/ICD and AIDC implementation:

a. Coordination with the different FIRs to be concluded before putting any connection in operation.
b. Letters of agreement to be updated.
c. Procedure of coordination to be agreed between both FIR and a mechanism established to update this information into the ATC database.
d. An operational procedure has to be developed and put into operation.
e. Communication between both ANSP has to be proved; their correct operation to be certified.
f. Contingency procedure to be implemented.
g. Responsibilities and rights of each State have to be integrated into the Letter of Agreement.

6.5 Finally, the ICAO NACC Regional Office recommended Jamaica to take advantage of the NACC resources such as Meetings, workshops, or any activities that improve Jamaica's personnel knowledge, for example:

a. Third NAM/CAR Air Traffic Services Inter-facility Data Communication (AIDC) and North American Interface Control Document (NAM/IDC) Implementation Follow-up Meeting (AIDC/NAM/ICD/3) to be held in Mexico City, Mexico, from 25 to 28 February 2020.
b. Workshop to Reduce Flight Plan Errors in the NAM/CAR Regions Mexico City, Mexico, to be held from 30 March to 3 April 2020.

6.6 Jamaica as part of MCAAP Project could ask for specific missions to support NAM/ICD and AIDC/PAC implementation such as a SME mission to support Jamaica on testing, database configuration or training.

6.7 Finally, the ICAO NACC Regional Office will directly coordinate and in accordance with the request of Jamaica provide the support that the State needs for the development of the work plan proposed by Jamaica and established in **Appendix B** to this report.

7. Conclusions

7.1 It is essential for Jamaica to streamline the implementation of automated protocols, because the FIRs adjacent to its operations are all automated and Jamaica is the only State that still performs manual coordination.

7.2 The implementation and commissioning of automated protocols requires the creation of a multidisciplinary group that integrates the Air traffic management (ATM)/Communications, Navigation and Surveillance (CNS) and Aeronautical information management (AIM) areas, in order to control the entire chain of operation of the protocols.

7.3 For this to happen, Jamaica must support from the top management the execution of the activities necessary to carry out the implementation, this requires:

a. Creation of a multidisciplinary group dedicated to this activity.
b. Provision of the necessary resources for training, testing and commissioning protocols.
c. Finally, integration of a follow-up group, improvement of the implementations that ensures the follow-up failure analysis and improvement of the operation of the automation of Jamaica with all its adjacent FIRs.

— — — — — — — — — — —

APPENDIX A

Name	Job title	State/Organization/ Company/
1. CASSO, Fernando (Go Team)	Radar systems division manager	Instituto Dominicano de Aviación Civil/Dominican Republic
2. EAVES Dan (Go Team)	Technical Analysis and Operational Requirements Group	Federal Aviation Administration (FAA)/United States
3. AVILA, Mayda (Go Team)	Regional Officer, Communications, Navigation and Surveillance	International Civil Aviation Organization (ICAO)
4. LEE, Jenny (Go Team)	Chief AIM	COCESNA
5. FRANCIS, Yannick	Radar Specialist	Jamaica Civil Aviation Authority
6. MALCOLM, Courtney	Unit Manager, KATCC	Jamaica Civil Aviation Authority
7. SUTTON, Garnett	ATC Supervisor	Jamaica Civil Aviation Authority
8. MATHESON, Claudia	Flight Data Processor	Jamaica Civil Aviation Authority
9. TAYLOR, Fabian	Chief CNS Engineer	Jamaica Civil Aviation Authority
10. GABBIDON, Nicoli	Safety and Compliance Officer	Jamaica Civil Aviation Authority
11. GREEN, Karen		Jamaica Civil Aviation Authority
12. WRIGHT, Charles	Radar Specialist	Jamaica Civil Aviation Authority
13. MILLER, Kevin	AD ARO Specialist	Jamaica Civil Aviation Authority
14. CHAMBERS, Suzilee	ANS Training Manager	Jamaica Civil Aviation Authority
15. LEDFORD, Deano	Air Traffic Flow Manager	Jamaica Civil Aviation Authority

Name	Job title	State/Organization/ Company/
16. SPENCE, Peter		AEROTEL Jamaica
17. CHRISTIE, Grantley		AEROTEL Jamaica
18. POWIS, Robi-Ann		AEROTEL Jamaica
19. WILLIAMS, Patrice		JAMAICA CIVIL AVIATION AUTHORITY
20. MIGNOTT, Dwight	Supervisor	Jamaica Civil Aviation Authority
21. FORRESTER, Michael	Supervisor	Jamaica Civil Aviation Authority
22. PINK, Brittany	Flight Data Processor	Jamaica Civil Aviation Authority
23. BROWN, Ashleigh	Flight Data Processor	Jamaica Civil Aviation Authority
24. HAMILTON, Jamar	Flight Data Processor	Jamaica Civil Aviation Authority
25. GILLESPIE, Kimberley	Flight Data Processor	Jamaica Civil Aviation Authority
26. EDWARDS, Venice	Approach Controller	Jamaica Civil Aviation Authority
27. ALMONTE, Luciano Rojas	Observer	Dominican Republic
28. FUENTES, Luis Emilio	Observer	Dominican Republic
29. SINGH, Romnarice Kent	Observer	Trinidad and Tobago
30. RAMKISSOON, Andrew	Observer	Trinidad and Tobago

— — — — — — — — — — —

APPENDIX B

Action Plan for NAM/ICD and AIDC Protocols Implementation

Nos.	ACTIVITIES	OWNER	TIMELINE	REMARKS
1	**Control of pre-implementation State organization**			
	a. Identify areas to be involved in the implementation (ATC, CNS, AIM and others)	POC	Feb 1, 2018	Completed
	b. Create a multidisciplinary Team-Group responsible for implementation.	DDGANS	Feb 1, 2018	Completed
	c. Identify responsibilities for the different Team-Group Members.	DDGANS	Feb 20, 2018	Completed
2	**Actual environments Status**			
	a. ATC facilities and capacity to manage NAM/ICD and AIDC protocols (Version, messages format, core messages and optional messages)	CNS	Jan 31, 2019	System is compatible to use NAM/APAC
	b. Control version for ATC and AMHS software	CNS/Thales	TBD	Latest version required
	c. AMHS addressing verification (according to the last version of AMC files)	AEROTEL	Upon request	MKJKZAZX for AIDC testing
	d. ATC database verification			
	e. Flight plan format verification	CNS	TBD	
		AIM	TBD	FPL 2012 format
	f. FIR´s flight operations	Unit Mgr.	Mar 2020	Operational LOAs

Action Plan for NAM/ICD and AIDC Protocols Implementation

Nos.	ACTIVITIES	OWNER	TIMELINE	REMARKS
	g. Operations with others FIR´s	Unit Mgr.	Mar 2020	Operational LOAs
	h. Status of letter of agreements with adjacent FIRs	Unit Mgr.	Mar 2020	Samples received from most States that are being reviewed
3	**Define Operational Concept**			
	a. Purpose, definition of the objectives and operational benefits	Unit Mgr.	Completed	Contained in FSD Document which will be submitted for approval
	b. Operational environment; Set of circumstances that define the need or not to perform an implementation.	Unit Mgr.	Completed	Contained in FSD Document which will be submitted for approval
	c. ATM functions; Have the resources of all kinds necessary to provide the service.			Most resources are in place, however training and TopSky update are required
	d. Infrastructure; Is the necessary infrastructure available to implement AIDC.	Unit Mgr.	TBD	TopSky ATM is interoperable with other systems
	e. Identify metrics, how is the State going to measure the success NAM/ICD and AIDC implementation.	Tech Team	Ongoing	Success ratio = total CPL: total LAM
		Unit Mgr.	Developed	
4	**NAM/ICD or AIDC Implementation**			
	a. The State must define the communication protocol to be used (AIDC or NAM/ICD).	Tech Team	Completed	NAM with Cuba and COCESNA APAC with Colombia, Curacao and Panama
	b. Technical Requirements (Communications,			Already in place

Action Plan for NAM/ICD and AIDC Protocols Implementation

Nos.	ACTIVITIES	OWNER	TIMELINE	REMARKS
	surveillance information, aeronautical information, FPL and others)	Tech Team	Completed	
	c. Operational Requirements (Procedures, letter of agreement, coordination and others)	Unit Mgr.	Work in progress	Samples received from most States that are being modified to meet our specific requirements
	d. Other according with the operations.	Tech Team		
5	**Coordination between both States**			
	a. Establish protocol to implement	Tech Team	Completed	First NAM with Cuba; then APAC with Panama; Colombia; NAM COCESNA; Curacao
	b. Coordinating criteria for implementation	Tech Team	Ongoing	Parameters being finalized
	c. Share technical and operational information	Tech Team	Ongoing	Discussions continues with Cuba and Panama
	d. Establish a framework for implementation	Tech Team	Ongoing	First NAM with Cuba; then APAC with Panama; Colombia; NAM COCESNA; Curacao
	e. Establish testing framework	Tech Team	Ongoing	Framework established and tests are ongoing with Cuba

Action Plan for NAM/ICD and AIDC Protocols Implementation

Nos.	ACTIVITIES	OWNER	TIMELINE	REMARKS
6	**NAM/ICD and AIDC Performance monitoring and validation**			
	a. NAM/ICD and AIDC Performance Criteria	Tech Team	TBD after TopSky update	Messages are transmitted and received in a timely manner between ATM systems
	b. Performance Monitoring	Tech Team	March 1, 2020	Log to be created and maintained
	c. AIDC Validation	Tech Team	TBD after TopSky update	Safety assessment, confirm interoperability and establish LOA
7	**Training**			
	a. Identifying training needs	Training Mgr.	April 15, 2020	
	b. Training scope and Objectives	Training Mgr.	April 30, 2020	Training will commence after performance, monitoring and validation of the system
	c. Training Procedure	Training Mgr.	April 30, 2020	
	d. Training measure and validation	Training Mgr.	April 30, 2020	

Action Plan for NAM/ICD and AIDC Protocols Implementation

Nos.	ACTIVITIES	OWNER	TIMELINE	REMARKS
8	**Activities prior implementation**			
	a. AIP publications	DAIM	TBD	NOTAM to be promulgated until AIP cycle
	b. Update letter of agreements	Unit Manager	TBD	Negotiations ongoing and will be implemented prior to going online with each State
	c. Establish technical and operative procedures	Unit Manager	Completed	Developed
	d. Establish action plan for contingency	Unit Manager	Determined	Revert to current agreements as per operational LOA
	e. Establish a Team to improve NAM and AIDC implementation	DDGANS		Current team will continue to monitor

— END —