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)
Mexico City, Mexico, from 25 to 28 February 2020

Agenda Item 3:   NAM/CAR Pending AIDC Implementation Process

THE UNITED STATES AUTOMATED DATA EXCHANGE INTERFACE AND CROSS BORDER HAND OFF WITHIN THE NORTH AMERICAN, CENTRAL AMERICAN AND CARIBBEAN (NACC) REGION – 2020 UPDATE

(Presented by the United States)

EXECUTIVE SUMMARY	
This Working paper and accompanying presentation overviews the current Automated Data Exchange activities of the United States with primary focus on the NACC Region. A preview of the changes to the North American Interface Control Document (NAM/IDC) to support the Handoff functionality, currently underway, will be provided. Identification of issues and suggested up-front activities is intended to assist States in their formulation individual planning strategies for integrating automated data.	
Action:	Suggested actions are presented in Section 4.
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency
References:	• ICAO Doc 4444 • NAM/ICD Version E/F

1.   Introduction

1.1   Automated Data Exchange (ADE) provides the means by which interoperability can be harmonized between ATSUs, providing air traffic service in, and adjacent to, the North American, Central American and Caribbean region. Air Traffic Service (ATS) providers in most regions have identified the requirement to exchange flight plan and radar data information between adjacent air traffic control service (ATC) facilities utilizing automated data exchange. The increasing traffic demands between FIRs prompt the need to improve efficiency, safety and accuracy for the ATC providers. A communications and data interchange infrastructure significantly reduces the need for verbal coordination between Air Traffic Service Units (ATSUs). A secondary benefit but equally important is the coordination of complex flight data between adjacent ATSUs in today's flying environment. ADE encompasses North American Common Interface Control Document (NAM ICD) and can include ATS Interfacility Data Communications (AIDC), or similar automation protocol under the AIDC functional umbrella. 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. As ATS providers develop their automation systems, consideration should be given to meeting the capabilities identified within an Interface Control Document (ICD), which serves to meet the requirements of the region. The attached briefing provides an update to the ADE interface activities of the United States and regional partners to highlight the efforts within the region in improving the quality of the ATC infrastructure. It also provides some lessons learned as results and decisions, which came out of technical interface meetings, were captured in the US- Canada Boundary Agreement attachment to the NAM ICD.

2.   Discussion

2.1   Interoperability among automated systems is provided by the flight plan data interface, allowing data exchange between ATSUs harmonized to a common standard. Traffic flow environments in the North American, Caribbean, Central American and South American corridors require individual state and regional attention to keep pace with the growing demand. Both the NAM and traditional AIDC protocols support the notification, coordination and the transfer of communications and control functions to different degrees which is essential between Air Traffic Service Units (ATSU). The NAM ICD has included automated radar handoff messaging definitions within the document since its inception and is providing the voiceless transfer of control delivering on the near term objective of cross-border automation evolution. The over 2 million aircraft handled annually between the US and Canada will be served well by the increased automation implementation of NAM ICD Handoff. The capability will also allow the automation to be used between NACC systems increasing efficiency between automation partners.

2.2   The benefits to our customers' safety and efficiency interests extend beyond the borders of the regional airspace system. Operational efficiencies gained in our collective airspace can be continuous, providing great benefits to aircraft as they travel into other regions and to service providers. The implementation of the cross border handoff capability between US and Canada is underway with the current communications infrastructure development and associated systems messages scheduled for 2020 with handoff functionality being fielded in 2021-22. Traditional benefits noted in the target environments from automation include:

- Reduced workload for controllers;
- Reduction of read back/hear back errors during coordination;
- Reduced "controller to controller" coordination errors; and language barrier issues
- Increased in support for performance based navigation initiatives and emerging technologies with automation;
- Integration of automated Handoff and Data Communication into voiceless transfer of control at US – Canada border.
- A protocol which continues to support 5 miles separation between aircraft

2.3   Automated Radar/Surveillance Handoff provides facilities which implement "voiceless" transfer of control capabilities across Flight Information (FIR) between NACC member state boundaries. The FAA is planning for automation interconnectivity and believes the NAM ICD to be the primary standard to support surveillance operations and mixed radar-non-radar international environments, like those found in North America, Caribbean and Central America. This has been proven in operational implementation of AIDC functionality in over 20 operational interfaces in the NACC Region. The project consists of two phases for the US. The first phase currently under development and test is the communication platform, which allows connectivity across the US-Canadian border. The communication network will allow secure direct Center-to-Center data exchange without going through the AFTN network. The current suite of messages supporting NAM ICD Class 2 connectivity will be moved onto the new network along with new system management messages. Once operational testing is completed cross border site pairs will transition to the new network. During this period the handoff software is being developed and after technical center testing will begin key site testing and the will be deployed to the US Canadian Border sites. Cross border, testing will be scheduled and completed with each site pair. Some ARTCCs have more complex interfaces than other ones. For example, Boston ARTCC interfaces with three Canadian Area Control Centers

3.   Conclusion

3.1   Our customers' safety and efficiency interests extend beyond the borders of our airspace system. Operational efficiencies gained in shared borders yield benefits as aircraft travel into other regions and service providers. As our aircraft operators invest in aircraft technology, they expect it to be compatible with systems and procedures used by other air navigation service providers (ANSP). Ideally, they would prefer to use the technology for the same safety and efficiency gains achieved here in North America and adjacent regions, serving as stepping stones to greater automation productivity. Standardization of automated data exchange technologies such as AIDC and NAM ICD, and procedures critical to cross-border, regional and multi-regional interoperability. This, in turn, drives the seamless operation of regional and global systems. Such technical and operational alignment can take many forms, depending on the target technology or procedure. The overarching international goal of future automation interface activities is to achieve harmonization of systems and procedures to ensure interoperability across international boundaries. Such harmonization supports safety objectives through standardization and promotes economic efficiencies. A harmonized system cannot be built without partnerships with our international counterparts.

4.   Suggested actions

4.1   The meeting is invited to:

   a) Encourage individual NACC States to utilize the current interface information for NAM ICD implementation, culminating with Class 3 Handoff within this working paper and associated presentation and to gather the necessary information, evaluate the operational/technical requirements and formulate the interface strategies for successful implementation and enhancement of Automated Data Exchange.

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