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WORKING PAPER

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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

FLIGHT PLANNING QUALITY IMPROVEMENT INITIATIVE IN THE NORTH AMERICAN, CENTRAL AMERICAN AND CARIBBEAN REGION

(Presented by the United States)

EXECUTIVE SUMMARY

This paper presents information regarding the need to improve the quality of flight plan data being submitted into the ATC flight data systems and relayed through the en route, oceanic and terminal Air Traffic Service (ATS) Inter-facility Data Communications (AIDC) systems in support of flight in domestic and international airspace. This paper recounts the success of the quality improvement program implemented and executed by Miami Air Route Traffic Control Center (ARTCC) to the benefit of the facility and the North American, Central American and Caribbean (NACC) Region.

Action:	Suggested actions are presented in Section 4.
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency
References:	• NACC/WG meetings

1. Introduction

1.1 A communications and data interchange infrastructure significantly reduces the need for verbal coordination between Air Traffic Service Units (ATSUs). ATS Interfacility Data Communications (AIDC), or similar automation, can provide the means by which automated data exchange (ADE) can be harmonized between ATSUs providing air traffic service in, and adjacent to Flight Information Regions (FIR). The impetus of the automation requirement stems from the increasing traffic levels transiting between FIRs in many regions upgrading systems. Within these efforts the data, which travels through the interfaced systems, are often thought of in an ancillary manner since error checks are built into the processing of integrated systems. Data integrity issues may be very far removed from the controller display and the cockpit, but these end users are dependent on the accuracy of this critical information.

1.2 The increasing traffic demand between FIRs drives the need to improve efficiency and maintain the accuracy for the ATC providers. Developing a harmonized process and defining protocols for exchanging data between multiple States/Territories/International Organizations within and across regions is critical to achieving efficiency through automation. The Interface Control Document for Data Communications between ATS Units in the North American, Central American and Caribbean Region originally was developed to provide operational interfaces between the United States, Canada and Mexico, and is titled the North American Common Coordination (NAM) Interface Control Document (ICD). Both the NAM ICD and the Air Traffic Service Interfacility Data Communications (AIDC) ICD is used in the NACC Region.

1.3 The U.S. and NAM ICD member states have realized automation gains that provide significant safety and efficiency benefits. An example of extending automation capability in the NACC region is the Miami Air Route Traffic Control Center (ARTCC) 2011 automation interface with the Havana Area Control Center (ACC) where it was estimated that a fifty per cent (50%) reduction in workload had been achieved for controllers working the border sectors at the Miami Center. While the implementation of the automated data exchange capability provides significant benefits to the controller, there is one area of concern that potentially touches many regions. This issue depends on the quality of the flight plans being filed and the continuity of the data, which follows a flight through international ATC systems. For the United States, this issue only manifests itself in the FIRs adjacent to or fed by the Caribbean, Central America and South America areas. Flight plans received before the interface was automated were processed manually. The flight plans are received by automation systems are much less forgiving of format, syntax, and errors, which could be absorbed within a manual interface. Many errors in filed flight plans, which may have gone undetected for years within a manual system, are now problematic within automation. When filed information is in conflict from different flight plan versions, it requires manual intervention and correction else, it erodes the benefits of automation. Additionally, multiple flight plans received for the same flight must be manually parsed and edited to ensure the correct data is being entered for internal system use and forwarded by the computer system for downstream facilities. Conflicting information between those flight plans filed at the departure airports and those filed by the airlines or commercial filers are often seen. Miami ARTCC has been dealing with these types of flight plan issues for years but they are new to the Havana ACC automation, which has to process conflicting data and parse out flight plan errors.

2 Discussion

2.1 In early NACC/WG meetings, an ad hoc working group met to discuss the topic of “Actions to Avoid Errors, Missing and Duplication of Flight Plans”. From this discussion came a conclusion that implemented an FPL Working Group to collect data from NAM/CAR States/Territories and implement standardized actions to avoid errors, missing and duplication of flight plans. Flight plan errors and duplication/retransmission of flight plans are interconnected problems as multiple flight plans with conflicting information about the same flight can degrade processing efficiency and safety of flight. To solve the issues described in this working paper a collaborative approach to identify the causes, which are behind the proliferation of errors must occur. We can identify the specific deficiencies associated with the flight plans but will need the help of ICAO, the ANSPs, and the local filing authorities to improve the quality of flight plans being routed through the international flying environment. The hope is individual facility successes will serve as a beginning of a collaborative environment to identify the issues and work toward resolution

2.2 Problem Analysis and Resolution of Automated Data Exchange Flight Plan Disparities at Miami ARTCC

2.2.1 Miami ARTCC Best Practices and Lessons Learned.

2.2.1.1 Issues with flight plan errors and the workload on the workforce has been an ongoing issue for many years. The FAA, IATA, ICAO and other organizations have circulated documents and guidelines to help resolve the problem, but have seen little improvement. The Miami ARTCC team was tasked with developing a systemic, effective approach of addressing these issues. Miami hopes their experiences can help others dealing with these issues quickly and effectively in an effort to improve the system.

2.2.1.2 Background: ADE between Miami ARTCC (ZMA) and Havana Area Control Center became operational in 2011. ADE allowed for reduced manual coordination and verbal verification of flight plans between the two facilities. This capability was a benefit and was intended to be a reduction in controller workload.

2.2.1.3 Due to differences in filed flight plans by users, third party filers, duplicity and inaccuracy between active and proposed flight plans; a temporary check system was established. The system was to compare proposed flight plan (FPL) to ADE Active Flight Plan (CPL). This created an increase in controller workload. Discrepancies ranged from as simple as verifying a filed arrival; to as complex and lengthy as a Full Route Clearance (FRC) from departure point to destinations in Europe. This issue has unresolved for 7 years, and most controllers accepted this practice as a by-product of ADE without a permanent solution.

2.2.1.4 Recent developments in technology coupled with increased traffic volume brought on the possibilities for more facilities from other nations to adopt an ADE system.
Analysis included asking, “How does that affect the workload?” Six different sectors in three different areas of specialization at ZMA dealt with ADE and filing issues for around 500 to 900 flights operations a day, depending on the time of year. Adding ADE workload from surrounding facilities to already busy sectors at ZMA would not be possible with these flaws in the system. Automation evaluations of the system revealed that the ADE automation was working well and as designed. The bulk of the inaccuracies were filer/user related. The goal was to implement a systemic way to address this issue and eventually eliminate the behaviours that were causing the issues.

2.2.2 Common Practices that were not effective:

2.2.2.1 Advise the flight crew: For many years when a controller recognized a bad route, a duplicate flight plan, or some other discrepancy. We fixed it and advised the flight crew of the error. Unfortunately, this was not effective as the next day or week it was a different crew, or a new crew. Seldom did we see any improvement. We had no way to follow up to see if the information got to the correct source or if any steps were taken to correct the issues.

2.2.2.2 Contact Dispatch: This method seemed to be a little more effective but was also subject to different personnel on different days, weeks, or months and eventually the issues re-occurred.

2.2.3 What practices worked well for Miami? Those are listed as follows:

2.2.3.1 The facility established a team that put in hundreds of person-hours collecting, sorting, and documenting data. Collection boxes and log sheets were installed at every sector that worked with ADE. The information was collected daily. The ZMA airspace department captured several weeks of data from the operation and recorded discrepancies. The data was then analysed for accuracy and validity. The data showed that the facility was receiving hundreds of discrepancies per week. Once we had users divided the data, each carrier was approached individually and advised of the issues. The data was grouped into categories to see the trends and where they could be fixed. The team divided the findings into four main categories: NO FPL, Duplicate FPLs, No FPL at HAV, and other.

2.2.4 The Process

2.2.4.1 The data was then grouped by airline and then by country. Once it was sorted, the staff was able to identify what airlines and which departure points were causing the issues. The data identified that the largest carriers with the most flights were having the most errors. The staff began to communicate with each user identifying the impact of the incorrect filing practices, the adverse impact to the Miami system, and the workload it was causing to the controller work force.
Since speaking to pilots and dispatchers was not effective in the past, the issues were elevated. Operations managers and above were contacted for each carrier. Some of the carrier's representatives came to the facility for face-to-face meetings. Some representatives went to the district office, and some invited airspace office personnel to their offices to discuss how the problems could be remedied. A three-step approach was used with each user individually; Educate, Improve, and Monitor/Report were the solutions used.

2.2.5 Educate

2.2.5.1 Users were provided with references to FAA/ICAO documents on proper filing practices. We provided them with compelling data from our analysis on how flight plans were being filed incorrectly and how to correct it. In some cases, it was a few emails and calls and in some cases it was excel spread sheets, Power Point presentations and numerous emails and telephone conversations.

2.2.6 Improve

2.2.6.1 To improve the outcome, relations and communications with the users had to be improved. The team became first name basis with the Operations managers of the air carriers. We communicated a one-week grace period to develop their plan for improvement. If the desired improvements were not seen, contact was made daily. Some progress was as simple as No FPL caused by a misspelled ERAM address, or a transposed call sign identifier. These issues were resolved within a day or a few hours. Duplicate flight plan problems get more complicated as some companies have contractual issues with third party filers in different countries and with different systems and ways of amending flight plans. Some carriers had to send representatives to other countries they operated from to resolve the problem in person. Some airlines were not as cooperative, so help was requested the issue elevated to FAA international/IATA/ICAO, Embassy representatives and the FAA Flight Standards Office. The facility stayed persistent until the desired results were achieved.

2.2.7 Monitor/Report

2.2.7.1 “The initiative has given Miami ARTCC great results. The facility went from evaluating hundreds of discrepancies in a month to about 20 per month.” This much smaller number makes the task more manageable to monitor and address any repeat offenders or systemic non-compliant users. Having the right contacts with the users, can allow reaching the right person quickly to address any issues. The workforce is seeing results from the reported discrepancies within hours or a couple of days. These results have boosted system confidence and the ability to get things fixed. Many controllers are willing to report discrepancies as they are seeing quick and effective results. Operations are still monitored in certain areas where discrepancies have been seen in the past, and reported discrepancies are still investigated.

3. Conclusion

3.1 The fidelity and accuracy of the flight plans is to the level where the controller no longer has to compare every single FPL to CPL strip. The workload and heads down time has been reduced for the manual controller and allows them to be more engaged at assisting the radar controller. One specialist a couple of hours a week now monitors what was once a full time mission for the entire office for hundreds of person-hours per week. Miami ARTCC will continue to monitor and help improve the system where possible.

3.2 Please note the information presented in this paper seeks to provide examples to support ATSUs in their continuing efforts to pursue quality improvement initiatives to optimize data being processed within their ATC systems. As automated systems receive process and transmit data to/from adjacent ADE systems, accuracy and correctness of that data must be of prime importance to support safety of flight.

4. Suggested action

4.1 The NACC AIDC/AIM Meeting is invited to:

a) note the content of this paper;
b) consider implementing a quality control system exercise similar to the one Miami ARTCC has conducted;
c) critically examine systems which utilize flight data inputs from both AFTN sources and ATC interfaces;
d) analyse the flight data inputs of their own ATC systems and determine if the systems are accepting flight plans that pass format checks but contain errors, have missing or incomplete data;
e) there is multiple flight plans on the same aircraft, and
f) work in a collaborative manner with data providers, filers, processers and ATS units to optimize the international flight data product.

— END —