



International Civil Aviation Organization

**NINETEENTH MEETING OF THE COMMUNICATIONS/NAVIGATION
AND SURVEILLANCE SUB-GROUP (CNS SG/19) OF APANPIRG**

Bangkok, Thailand, 20 – 24 July 2015

Agenda Item 3: Aeronautical Fixed Service (AFS)

**ATS INTER-FACILITY DATA COMMUNICATION (AIDC) IMPLEMENTATION
IN INDIA & WITH ADJACENT ATS UNITS IN THE SUB-REGION
AND THE ISSUES THEREOF**

(Presented by India)

SUMMARY

This paper summarizes the present status of AIDC implementation in India & with adjacent ATSU units in the sub Region. The paper also tries to highlight the major issues involved in the implementation of AIDC.

Strategic Objectives:

A: Safety

C: Environmental Protection and Sustainable Development of Air Transport

Global Plan Initiatives:

GPI-17 Data link applications

GPI-22 Communication infrastructure

1. INTRODUCTION

1.1. ATS Inter-facility Data Communications (AIDC) is an effective tool to reduce manual intervention and ground-ground coordination errors between adjacent ATS Units.

1.2. India initiated AIDC operational trials after commissioning of automation systems at major ATS units in India. Trials within India have been successful. AIDC have been operationalized between some of the ATSU's and plans are underway to operationalize AIDC between other major ATSU's in a phased manner.

1.3. India has also initiated AIDC trials with adjacent ATS Units of neighboring states in the sub-region. Trials have been mostly successful.

2. DISCUSSION

3.

3.1 India is currently using APAC AIDC ICD version 3 in the automation systems installed at all the ATS units.

Implementation within India

3.2 Extensive trials have been carried out between dissimilar automations systems at major ATS units and the results have been quite encouraging.

3.3 Successful trials have been carried out between various ATS units listed below and some of these ATS units are already exchanging live AIDC messages. AIDC operations between Chennai and Mumbai have been put in regular operations.

- Delhi – Ahmedabad, Varanasi, Nagpur
- Chennai – Mumbai, Kolkata, Trivandrum, Mangalore, Trichy, Hyderabad, Bengaluru,
- Kolkata – Chennai, Nagpur, Varanasi, Guwahati
- Mumbai – Chennai, Ahmedabad, Nagpur

3.4 During trials several interoperability and operational issues were encountered between dissimilar ATS Automation Systems which have been resolved to some extent. Some of the pending technical issues may require support from the vendors.

Implementation with neighboring states

3.5 India is having boundaries with adjacent ATSUs of both intra and inter (MID/AFI) Region states and has plans to establish AIDC with Bangladesh, Myanmar, Thailand, Pakistan, Nepal, Seychelles, Malaysia, Indonesia, Sri Lanka, Kenya, Oman, Maldives, Mauritius and Somalia.

3.6 Successful trials have been carried out with adjacent ATSUs of neighboring states in the sub-region between :

- Chennai – Kuala Lumpur (Malaysia),
- Chennai – Male (Maldives)
- Ahmedabad – Karachi (Pakistan).
- Delhi – Karachi (Pakistan) (Successful one way)

3.7 Further AIDC trials are planned between Delhi – Lahore, Mumbai – Muscat, Kolkata – Dhaka and Varanasi – Kathmandu subject to readiness of adjacent ATSUs.

3.8 Teething issues were experienced during trials with Kuala Lumpur, Male and Karachi. Some of the issues are highlighted below for the benefits of all the states planning to carry out AIDC testing.

3.8.1 **Chennai – Kuala Lumpur:** AIDC messages ABI, EST, ACP, CDN, MIS, REJ, TOC, AOC, MAC were exchanged between Chennai Operational Segment and Kuala Lumpur simulator Segment.

3.8.1.1 Initially ABI messages sent from Chennai were rejected by Kuala Lumpur system citing CRC errors.

3.8.1.2 After detailed analysis at Chennai, it was observed that the rejection was due to incorrect calculation of checksum by the Kuala Lumpur system. Kuala Lumpur Automation system was replacing the alignment characters with space characters prior to CRC calculation leading to discrepancy in the CRC checksum. After sorting out the CRC errors by Kuala Lumpur, the AIDC messages exchange was successful.

3.8.1.3 Both the States now have to sign LoA to operationalize AIDC at the earliest.

3.8.2 **Ahmedabad – Karachi:** Trial operations commenced from 05.06.2014. Initially it was observed that messages were rejected due to CRC errors, route errors and mismatch in the coordination timing. Coordination protocol dialogue time out was observed.

3.8.2.1 After synchronizing Karachi AMSS/AFTN system time with India's AMSS/ AFTN system time, the AIDC messages could be successfully exchanged between the two systems. Further AIDC trials for limited hours are in progress between Karachi and Ahmedabad.

3.8.3 **Delhi – Karachi/Lahore: Trials commenced in September 2014.** Trials were successful one-way and all messages from Karachi/Lahore to Delhi were received successfully.

3.8.3.1 Messages from Delhi to Karachi like ABI, EST, LAM, LRM was rejected by Karachi system, showing error message no 61 cyclic redundancy check error (CRC).

3.8.3.2 While analyzing ABI messages, it was observed that Karachi and Lahore systems were generating extra spaces. Accordingly, adjustments are required at Karachi and Lahore end to avoid generation of unnecessary extra spaces so that messages may be received by Delhi system.

3.8.3.3 Both the states have to update the existing LoA to include AIDC operations.

3.8.4 **Chennai – Male:** AIDC messages ABI, EST, ACP, CDN, MIS, REJ, TOC, AOC, MAC were exchanged between Chennai and Male. Trials were conducted w.e.f 25th Nov 2014.

3.8.4.1 Trials were mostly successful barring some LRMs. For instance, at times reference ID in ODF 3 is not as per the ICD requirement. Similarly, Seconds field included in Lat/Long is received which is also not as per ICD.

3.8.4.2 Further trials are required and both the States have to sign LoA to move towards operationalizing AIDC.

3.9 The above results clearly indicate the success of AIDC trials both within India and with neighboring state ATSUs. Close bilateral cooperation is now required for expeditious implementation of AIDC.

3.10 In order to meet the intended objectives of early AIDC implementation, concerned states are required to review and sign the Bilateral Agreement/LoA/MoU in an expeditious manner.

3.11 It may also be noted that PAN Regional ICD for Asia/Pac has been promulgated in 2014 as an ICAO document. However, its implementation shall require synchronization of technology, refresh cycles and maintaining backward compatibility of the automation systems for smooth exchange of AIDC messages.

4. ACTIONS BY THE MEETING

3.1 The meeting is invited to:

- a) note the contents of this paper; and
- b) urge all states to share their plan with adjacent state ATSUs for an expeditious AIDC implementation in a time bound manner.
