



ICAO

*International Civil Aviation Organization***Sixth Meeting of the Asia/Pacific ATS Inter-Facility  
Data-Link Communication Implementation Task Force  
(APA TF/6) of APANPIRG**

Bangkok, Thailand, 24 – 26 March 2020

**Agenda Item 3:** Sharing of experience on AIDC implementation and update the implementation status

### **AIDC IMPLEMENTATION IN INDIA**

(Presented by Airports Authority of India)

#### **Summary**

This paper presents the status of AIDC implementation in India – both within India as well as with international ATSUs. The procedural and operational issues encountered during implementation are also summarized in the attachment.

## **1. INTRODUCTION**

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

1.2 India initiated AIDC trials with adjacent ATS Units of neighboring states in the subregion. India has four Flight Information Regions (FIRs), namely Chennai FIR, Mumbai FIR, Delhi FIR and Kolkata FIR and there are 13 adjacent International FIRs i.e. Lahore, Karachi, Muscat, Sanaa, Mogadishu, Seychelles, Mauritius, Maldives, Colombo, Jakarta, Kuala Lumpur, Yangon, Dhaka and Kathmandu.

1.3 This paper presents the status of AIDC implementation within India as well as with neighboring FIR and the operational issues encountered during implementation.

## **2. DISCUSSION**

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

2.2 Details of AIDC Implementation status in India and the Operational issues encountered are attached to this paper as Annexure -I and are summarized as below:

### **Implementation within India**

2.3 Trials have been carried out between various ATS units listed below and some of these ATS units are already exchanging live AIDC messages.

**Agenda Item 3**

14- 16/07/20

- I. **Delhi:** Ahmedabad, Varanasi, Nagpur
  - II. **Chennai:** Mumbai, Kolkata, Trivandrum, Mangalore, Trichy, Hyderabad, Bengaluru
  - III. **Kolkata:** Chennai, Nagpur, Varanasi, Guwahati
  - IV. **Mumbai:** Chennai, Ahmedabad, Nagpur
- 2.4 AIDC operations between Chennai and Mumbai have been put into regular operations.

**Implementation with Neighboring States**

- 2.5 The status on trails with following ATSU's of neighboring FIRs is as under:
- I. **Chennai & Kuala Lumpur (Malaysia)** – ABI, EST successful. CDN is done with voice confirmation. TOC/AOC will be implemented later. LOA signed.
  - II. **Chennai & Male (Maldives)** – Trails have been successful. LOA in process.
  - III. **Chennai & Colombo (Sri Lanka)** - Colombo in process to address the syntax errors in ABI. Thereafter trails will be conducted. LOA in progress.
  - IV. **Chennai & Yangon (Myanmar)** – Trials commenced in January 2018. Issues observed at Chennai end have been addressed by the OEM. Issues of incorrect reference number in Counter CDN from Yangon persists and response from Yangon is awaited.
  - V. **Mumbai & Male (Maldives)** – Operational. LOA signed.
  - VI. **Ahmedabad & Karachi (Pakistan)** – Automatic message exchange (e.g. ABI, EST) happens for most of the East bound flights between Karachi & Ahmedabad. But, AIDC coordination of most of the west bound flights not possible due to Karachi Automation system not generating auto ACP message in response of EST messages.
  - VII. **Kolkata & Yangon (Myanmar)** – Trials under process. Most of the message exchanges were successful.
- 2.6 India is keen to conduct operational trials between Mumbai-Muscat, Kolkata-Dhaka, Mumbai-Karachi (Pakistan), Delhi – Karachi (Pakistan), Delhi – Lahore (Pakistan), Chennai-Jakarta and Varanasi-Kathmandu **subject to readiness from the concerned states.**
- 2.7 The AFTN (AMSS) latency was one of the issues while implementing AIDC. AFTN (AMSS) system upgradation to IP based AMSS is underway at various stations which has shown promising results to address the latency issues for exchange AIDC data.
- 2.8 After implementation of IP based AMSS at Delhi, Ahmedabad, Nagpur, Mangalore, Trivandrum and Varanasi, AFTN latency issues have drastically reduced – as evidenced during AIDC trials.

2.9 India is engaged towards entering into contract with M/s PCCW (CRV Service provider in APAC region) for CRV in Q3 2020 and Service readiness by Q4 2020 in line with CRV contract and service readiness by counterpart BBIS states. This would provide with a robust and reliable medium for AIDC data interchange between the adjoining FIRs of neighboring countries.

2.10 Effectiveness of AIDC between Chennai and Kuala Lumpur further needs to be enhanced as the available data on incidence of LHD between Chennai and Kuala Lumpur post implementation of AIDC between these two FIRs does not show any consistency in reduction of LHD.

### **3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matter as appropriate

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## AIDC Implementation Status in India as on 30.06.2020

AIDC Pairing Stations		AIDC Status: <i>Domestic/ International</i>	Implementati on Status: <i>Operational/ Under Test Trials/ Planned</i>	LOA Status: <i>Signed/ Under negotiation</i>	Effective date of: <i>Operations/ Test Trials/ PDC (for planned)</i>	Remarks: <i>Issues faced if any/ Mitigation</i>
ATSU-1	ATSU-2					
Mumbai	Chennai-UHS	<i>Domestic</i>	<i>Operational</i>	<i>Signed</i>		
Mumbai	Chennai-UML	<i>Domestic</i>	<i>Operational</i>	<i>Signed</i>		
Mumbai	Chennai-UBL	<i>Domestic</i>	<i>Operational</i>	<i>Signed</i>		
Mumbai	Chennai-UTV	<i>Domestic</i>	<i>Operational</i>	<i>Signed</i>		
Mumbai	Ahmadabad	<i>Domestic</i>	<i>Under Test Trials</i>	<i>Under negotiation</i>		User –Application issues
Mumbai	Nagpur	<i>Domestic</i>	<i>Under Test Trials</i>	<i>Under negotiation</i>		User –Application issues
Mumbai	Male	<i>International</i>	<i>Under Test Trials</i>	<i>Signed</i>		Operational. LOA to modified to make AIDC the primary mode of coordination.
Mumbai	Muscat	<i>International</i>	<i>Planned</i>	<i>Under negotiation</i>	15-03-2018	<ol style="list-style-type: none"> <li>1. Tests partially successful.</li> <li>2. Required adaptation changes made at Mumbai.</li> <li>3. No confirmation form Muscat of having made the changes.</li> </ol>
Mumbai	Seychelles	<i>International</i>	-	-	-	ATSU-2 not equipped with suitable system
Mumbai	Mogadishu	<i>International</i>	-	-	-	ATSU-2 not equipped with suitable system
Mumbai	Sana	<i>International</i>	-	-	-	ATSU-2 not equipped with suitable system
Mumbai	Karachi	<i>International</i>	<i>Under Test Trials</i>	<i>Under negotiation</i>		No response to several requests for trials FROM KARACHI.
Chennai	Mumbai	<i>Domestic</i>	<i>Operational</i>	<i>Signed</i>	01-08-2017	<ol style="list-style-type: none"> <li>1. Over continental airspace AIDC <b>without</b> voice confirmation.</li> <li>2. Over Oceanic airspace AIDC <b>with</b> voice confirmation.</li> </ol>

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ATSU-1	ATSU-2					
Chennai	Kuala Lumpur (Malaysia)	International	Operational	LOA signed	15-05-2017	<ul style="list-style-type: none"> <li>ABI and EST messages without voice confirmation. CDN is done with voice confirmation. TOC/AOC to be implemented.</li> </ul>
Chennai	Colombo (Sri Lanka)	International	Under testing	--	PDC will be planned after Colombo addresses the issues	Colombo to address following issues: <ul style="list-style-type: none"> <li>Syntax errors in ABI.</li> </ul>
Chennai	Male (Maldives)	International	Test Trials successful	Signed for Trial operations	September, 2017	<ul style="list-style-type: none"> <li>Operationalization under process</li> </ul>
Chennai	Jakarta (Indonesia)	International	--	--	--	AIDC Functionality Status at Jakarta not known.
Chennai	Yangoon (Myanmar)	International	Under testing	--	Testing commenced from January, 2018	<ul style="list-style-type: none"> <li>Incorrect reference number in Counter CDN by both systems.</li> <li>Issue observed at Chennai end have been addressed by the OEM.</li> <li>Issue projected to Yangon and awaiting response.</li> </ul>
Chennai	Nagpur	Domestic	Initially testing done with all the Four ATC units which has INDRA Automation system. The issues identified during the testing (shown in Remarks column) could not be resolved by the stations since there was no OEM support. Hence the AIDC testing had to be stopped with these stations.			<ul style="list-style-type: none"> <li>The ICAO route truncation indicator is not supported by Aircon2100 system.</li> <li>Even after sending a rejection or counter coordination message by Chennai, the sending station continues to send the CDN message.</li> </ul>
Chennai	Trivandrum (India)	Domestic				
Chennai	Mangalore (India)	Domestic				
Chennai	Trichy	Domestic				

## ANNEXURE-I

AIDC Pairing Stations		AIDC Status: <i>Domestic/ International</i>	Implementati on Status: <i>Operational/ Under Test Trials/ Planned</i>	LOA Status: <i>Signed/ Under negotiation</i>	Effective date of: <i>Operations/ Test Trials/ PDC (for planned)</i>	Remarks: <i>Issues faced if any/ Mitigation</i>
ATSU-1	ATSU-2					<ul style="list-style-type: none"> <li>Airspace configuration issue faced during vertical consolidation of LML/UML and LTV/UTV..</li> </ul>
Chennai	Hyderabad	<i>Domestic</i>	Initially testing done with the two ATC units which has SELEX Automation system. The issues identified during the testing (shown in Remarks column) could not be resolved by the Chennai since there was no OEM support. Hence the AIDC testing had to be stopped with these stations.			The SSR Codes received through AIDC
Chennai	Bengaluru	<i>Domestic</i>	Under Trials	Signed	Q1 2020	<ol style="list-style-type: none"> <li>Limited trials have been conducted from 18.02.2020 to 20.02.2020.</li> <li>COP adaptation because of Airspace restructuring (LBL) has been carried out.</li> <li>Latency issues has been observed which causes time out of messages.</li> <li>ABI messages originated by VOMMAIDC is using route truncation which is deleting the allocated STAR at VOBL.</li> <li>It has been decided to continue trials with disabling ABI from 24.02.2020</li> </ol>

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ATSU-1	ATSU-2					
Chennai	Kolkata	Domestic	Trial Operations	Signed	November, 2019	<ol style="list-style-type: none"> <li>1. The ICAO route truncation indicator is not supported by INDRA system.</li> <li>2. 80% of the time AIDC message exchanges are successful.</li> <li>3. 20% failure is due to timeout.</li> </ol>
Kolkata	Chennai					
Kolkata	Nagpur	Domestic	Under Test Trial	Under negotiation	Not determined	In earlier trials ABI, EST, ACP, TOC, AOC were successful. Route Truncation not supported. AMSS needs to be upgraded. Trial has been suspended.
Kolkata	Varanasi	Domestic	Under Test Trial	Signed	07-03-2018	ABI, EST successful, ACP not sent due to some software glitch. AMSS needs to be upgraded. Trial has been suspended.
Kolkata	Guwahati	Domestic	Under Test Trial	Under negotiation	Not determined	In earlier tests ABI, EST, ACP were successful. AMSS needs to be upgraded. Trial has been suspended.
Kolkata	Yangon	International	Under Test Trial	Not signed	Q4 2018	Most of the message exchanges were successful.
Kolkata	Dhaka	International		Not signed	Not determined	No AIDC capable system at Dhaka.
Kolkata	Kathmandu	International		Not signed	Not determined	No AIDC capable system at Kathmandu.
Hyderabad	Bengaluru	Domestic	Under Trial	Signed	Q1 2020	<ol style="list-style-type: none"> <li>1. OEM has updated the FDPS on 05.02.2020</li> <li>2. Limited trials have been conducted from 18.02.2020 to 20.02.2020.</li> <li>3. COP adaptation because of Airspace restructuring (LBL) has been carried out.</li> </ol>
Bengaluru	Hyderabad	Domestic				

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ATSU-1	ATSU-2					
						<p>4. Further trials will be carried out after 24.02.2020 and if found satisfactory, AIDC can be implemented by end of March 2020.</p> <p>5. Vendor support is also available to resolve the issues if found any..</p>
Bengaluru	Chennai	Domestic	Under Trials	Signed	Q1 2020	<p>1. OEM has updated the FDPS on 05.02.2020</p> <p>2. Limited trials have been conducted from 18.02.2020 to 20.02.2020.</p> <p>3. COP adaptation because of Airspace restructuring (LBL) has been carried out.</p> <p>4. Latency issues has been observed which causes time out of messages.</p> <p>5. ABI messages originated by VOMMAIDC is using route truncation which is deleting the allocated STAR at VOBL.</p> <p>6. It has been decided to continue trials with disabling ABI from 24.02.2020</p>
Bengaluru	Mangalore	Domestic	Under Trials.	Signed	Q1 2020	<p>1. OEM has updated the FDPS on 05.02.2020</p> <p>2. Limited trials have been conducted from 18.02.2020 COP adaptation because of Airspace restructuring (LBL) has been carried out.</p>

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ATSU-1	ATSU-2					
						<p>3. VOMLAIDC is rejecting the LAM send for ACP messages sometimes with LRM stating WRONG MSG SEQUENCE.</p> <p>4. Further trials will be carried out after 24.02.2020 and if found satisfactory, AIDC can be implemented with limited dataset for at least EST exchange and further coordination, if required over voice.to 20.02.2020.</p>
Delhi	Ahmedabad	<i>Domestic</i>	<i>Under Test Trials</i>	<i>LoA Signed</i>	Q2 2020	<p>1. Automatic AIDC messages exchanged between VAAH &amp; VIDP.</p> <p>2. Receiving LRM from Delhi in response TOC and AOC.</p>
Ahmedabad	Delhi					
Ahmedabad	Mumbai	<i>Domestic</i>	<i>Under Test Trials</i>	<i>Under negotiation</i>	Q4 2018	<p>1. HMI compatibility issue.</p> <p>2. Detail analysis of AIDC test is required by the software vendor.</p>
Ahmedabad	Nagpur	<i>Domestic</i>	<i>Under Test Trials</i>	<i>Under negotiation</i>	Automatic AIDC messages exchanged between VAAH & VANP	<p>1. Automatic AIDC messages exchanged between VAAH &amp; VANP.</p> <p>2. Full header is not being transmitted from Nagpur Automation system in case of AIDC Dupe messages. This results failure of some AIDC process.</p>
Ahmedabad	Karachi (OPKC)	<i>International</i>	<i>Under Test Trials</i>	<i>Signed</i>	Automatic AIDC messages	<p>1. Automatic message exchange (e.g. ABI, EST) happens for most of the East bound flights between Karachi &amp;</p>

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ATSU-1	ATSU-2					
					exchanged between VAAH & OPKC	Ahmedabad. But, AIDC coordination of most of the west bound flights not possible due to Karachi Automation system not generating auto ACP message in response of EST messages. This results failure of AIDC process. 2. Active participation of Karachi ACC required for effective AIDC coordination process.
Nagpur	Delhi	Domestic	Not Operational	Signed	Yet to be tested.	1. Some of the messages missed or timed out under verification/testing. HMI Issues - A sector duplication is required for performing the AIDC by other controller due traffic. 2. AFTN (AMSS) to be upgraded to support unimpeded AIDC message handling. In house solution for sector duplication (additional SDD for same sector) is available and yet to be tested.
Nagpur	Varanasi	Domestic	Under Test Trials	Under Negotiation	Automatic AIDC messages exchanged between VEBN & VANP.	Same as above.
Nagpur	Kolkata	Domestic	Under Test Trials	Under Negotiation	Testing suspended by Kolkata.	Same as above.

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ATSU-1	ATSU-2					
Nagpur	Chennai	Domestic	Under Test Trials	Under Negotiation	Initially testing done but messages timed out	<ol style="list-style-type: none"> <li>1. Same as above</li> <li>2. Latency problem observed.</li> <li>3. User –Application issues.</li> <li>4. coordination msg issues.</li> </ol>
Nagpur	Mumbai	Domestic	Under Test Trials	Under Negotiation	Not yet started	Same as above.
Nagpur	Ahmedabad	Domestic	Under Test Trials	Under Negotiation	Automatic AIDC messages exchanged between VAAH & VANP	<ol style="list-style-type: none"> <li>1. Occasionally msgs timed out.</li> <li>2. Automatic AIDC messages exchanged between VAAH &amp; VANP.</li> <li>3. Full header is not being transmitted from Nagpur Automation system in case of AIDC Dupe messages. This results failure of some AIDC process.</li> </ol>
Varanasi	Delhi	Domestic	Under Test Trials	Signed	06-03-2018	<ol style="list-style-type: none"> <li>1. It was observed that the AIDC Messages from Varanasi are not received at all. The problem may be in the Varanasi end of AMSS or Line issues.</li> <li>2. ABI messages not generated for some flights.</li> <li>3. For some AIDC messages no response (LAM or LRM) received.</li> </ol>
Varanasi	Kolkata	Domestic	Under Test Trials	Signed	07/03/2018	Due to Automation software issue at Kolkata end AIDC test trial was not successful.

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ATSU-1	ATSU-2					
Varanasi	Nagpur	Domestic	Under Test Trials	Signed	08/03/2018	AIDC test trial with Nagpur was found to be successful to a large extent. Sometimes it was not successful as few messages via AFTN were missing due to inherent problem of TCP/IP server.
Trivandrum	Male	International	Test Trials conducted in October 2017	LOA for trials signed	Not decided	Male ACC has been successfully receiving AIDC messages from Chennai, Trivandrum and Mumbai. But, Male has identified some issues in generating EST messages for flights departing from Male—only ABI messages are generated automatically.
Trivandrum	Chennai	Domestic	Trials conducted 2012 - 2015	Not signed	Not decided	<ol style="list-style-type: none"> <li>1. Due to dynamic sectorization of UTV between Chennai and Trivandrum, no AIDC coordination is possible for overflying aircraft. But AIDC coordination is possible for aircraft departing/ arriving from/to destinations within the lateral limits of UTV.</li> <li>2. AIDC coordination not possible for level changes after the initial coordination. NOTIFIED (ABI), INITIAL COORDINATION (EST, CPL), TRANSFER OF CONTROL (TOC, AOC) is possible.</li> </ol>

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ATSU-1	ATSU-2					
Trivandrum	Cochin	Domestic	Trials conducted 2012 - 2017	Not signed	Not decided	AIDC coordination not possible for level changes after the initial coordination. NOTIFIED (ABI), INITIAL COORDINATION (EST, CPL), TRASNFER OF CONTROL (TOC, AOC) is possible.
Trivandrum	Mangalore	Domestic	Trials successful	Not signed	Not decided	AIDC coordination not possible for Level changes after the initial coordination. NOTIFIED (ABI), INIITIAL COORDINATION (EST, CPL), TRASNFER OF CONTROL (TOC, AOC) is possible.