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**AGENDA ITEM 3 : AVIATION SAFETY AND
AIR NAVIGATION**

**CENTRAL AIR TRAFFIC FLOW MANAGEMENT
IMPLEMENTATION IN INDIA**

(Presented by India)

INFORMATION PAPER

SUMMARY

This paper presents progress of the implementation of Central Air Traffic Flow Management System (C-ATFM) in India. The C-ATFM is being implemented in a phase wise manner across the nation. As part of the implementation process, three operational trials have been conducted in close collaboration with all stakeholders. The paper describes the operational trials, main conclusions and the preparations undertaken for commencing regular operations.

C-ATFM IMPLEMENTATION IN INDIA

1. INTRODUCTION

1.1 Airport Authority of India (AAI), the Air Navigation Service Provider, is implementing Central ATFM (C- ATFM) system covering entire Indian airspace.

1.2 The C-ATFM system is primarily meant to address the balancing of capacity against the demand to achieve optimum utilization of the major resources viz., Airport, Airspace and aircraft at every Indian airport where there is a capacity constraint.

1.3 The C-ATFM system network architecture consists of a Central Command and control Center (CCC) and Flow Management Positions (FMP). The main and fallback CCC have been established at Delhi. The C-ATFM system will be supported by 12 FMPs initially and the will be increased gradually to 36 FMPs by October 2017 at various ACCs, APP centers and Towers across the country.

1.4 The CCC will be the nodal center for ATFM implementation in India and will communicate with FMPs for ATFM measures implementation as and when necessary.

2. DISCUSSION

Phase I Implementation

2.1 To begin with, a baseline C-ATFM system, including the CCC and FMPs at six major metro airports has been established with all requisite external interfaces. AAI system experts have updated the ATFM database with airspace data, air routes, flight schedules, airport data and RPL files.

2.2 AAI has conducted several interactive seminars, meetings and presentations to create awareness of the C-ATFM concepts across the nation. Representatives from the stakeholders such as DGCA, Airlines, Airport Operators, Military Officers, GA operators have participated in these sessions. Following the training, participating airlines have been given access to the C-ATFM system through secure password login. The airlines are collaborating with AAI system managers to update their respective schedules and other data.

2.3 Operational trials of “National Airspace Management “under the Flexible Use of Airspace (FUA) implementation roadmap were conducted in February 2017. The National Airspace Management cell (AMC) will be functioning along with CCC which will greatly facilitate collaboration and efficient use of airspace resources.

2.4 AAI has commenced regular operations for Phase I involving the six metros by end of April 2017. To this effect, AAI has promulgated AIP Supplement 25 of 2017.

2.5 AAI and the stakeholders have come together to formulate a draft document describing common business rules for exchanging relevant information at appropriate time. The draft is being discussed with all stakeholders before final adoption.

Operational Trials

2.6 AAI conducted three trial operations of Central Air Traffic Flow Management (C-ATFM) system from January to March 2017. . The first trial took place from 16th to 26th January, 2017 and was planned to address the air traffic congestion due to the airspace closure at Delhi for the India Republic Day celebrations. The second trial operation was conducted from 12th to 18th February, 2017, to cater to the airspace closure for the Aero India show at Bengaluru airport. The third trial operation was conducted from 20th to 25th March, 2017 for handling the air traffic congestion simultaneously both for post -runway closure at Bengaluru airport and non-availability of main runway (09/27) at Mumbai airport.

2.7 CCC along with six (6) major metro airports i.e. Delhi, Mumbai, Chennai, Kolkata, Bengaluru and Hyderabad participated in the trial operation and Flow management Positions (FMPs) at these airports were activated. The C-ATFM system was populated with airline schedule and operational flight data from AAI's ATC automation system. Strategic and pre-tactical demand predictions were provided by the system to determine periods of excess demand compared to the available capacity.

2.8 ATFM Daily Plan (ADP) was published daily at 1330 UTC, based on strategic and pre-tactical demand predictions provided by the C-ATFM system determining periods of excess demand compared to the available capacity. ADP also included inoperability & expected ATFM measures.

2.9 The C-ATFM system provided capabilities to model and implement Traffic Management Initiatives (TMIs) to smoothen the demand with the available capacity via Ground Delay and Ground Stop Programs. CTOTs generated by the system were shared through e-mail, with FMPs and aircraft operators as an integral part of the CDM process.

2.10 CCC conducted daily post operational meetings to help AAI and stakeholders to evaluate system performance and lessons learnt.

Major Issues

2.11 Major issues faced during the trial operation were:

- Frequent updating in the system to get the desired flight data (e.g. removing Flight schedule, frequent modification of RPL edition, cancelling duplicate FPL, incorporating last minute changes of FPL etc.)
- Lack of information flow from external/internal stakeholders to CCC e.g. updated Flight schedule / RPL amendments etc.
- Lack of awareness about ATFM amongst stakeholders.
- Lack of discipline among the Airline operators in filing FPL, Changes, Delay, Cancellation etc. messages through AFTN network as per ICAO standard.

Major Benefits

2.12 However, major benefits were:

- Understanding of ATFM operational working and building confidence among the stakeholders
- Experience of issuance of CTOTs in pre-closure, post-closure period and issuance of CTOTs for two airports simultaneously & study the effect.
- Understanding of ATFM system behavior and short comings in various circumstances.
- Improved rate of CTOT compliance.

2.13 Based on the experiences gained from the operational trials and the overall implementation process, some critical prerequisites for the implementation of ATFM have been identified by all the stakeholders. They are as follows;

A. Procedures for collecting accurate Flight Plan information in advance – The existing flight plan system is oriented towards providing current flight plan information for the purpose of Air

Traffic Control. However, in order to accurately predict demand and capacity scenario, the ATFM system should be able to collect the flight plans from various sources in advance. The C-ATFM system makes use of flight schedules, RPL and Flight Plans for creating future demand scenario. As has been experienced in India, the process of collating all relevant flight information is difficult and hence should be planned in advance before the implementation of ATFM.

B. Coordination with Military ATC – There are several aerodromes in India, where ATC is provided by Military to the civil flights. Since these airports are primarily meant for military aircraft, any additional restrictions to civil flights in terms of ground delay due to ATFM measures, has the potential to cause difficulties for the military ATC. A continuous coordination with military and repeated training sessions to military ATC should be planned in advance.

C. Coordination with MET – Predicted weather at local aerodromes is an important aspect to be considered for predicting the capacity. The Flow Mangers at the local airports should be sensitized to coordinate with local MET offices to ascertain the impacts of weather on airport capacity and convey the same to CCC for meaningful interventions.

D. Agreeing to Common Business Rules –Participation of stakeholders in exchange of information is key to the success of ATFM. It is necessary to formulate initial set of ground rules for such interactions amongst the stakeholders. The agreed rules of engagement and participation should have the concurrence of the top management of the stakeholders. In order to successfully implement ATFM, formulation of such business rules should begin sufficiently in advance.

E. Procedures to deal with ATFM system outages- Any unplanned outage of the ATFM system during the period of an ATFM measures creates uncertainties in the entire aviation. Unambiguous procedures should be established in coordination with all stakeholders to deal with such situations, along with a clear chain of command.

2.14 For efficient functioning of ATFM system, the ecosystem of civil aviation needs to be prepared. The timely availability of information to the ATFM system is the collective responsibility of all participating stakeholders. At the same time, the ATFM system should be developed in a robust, transparent and collaborative manner. The experiences of the implementation process have also indicated that a close coordination with the top management of all participating stakeholders is essential for successful “buy-in” of the ATFM concept.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to note the information contained in this Paper.