POST OPERATIONS ANALYSIS REPORT

March, 2020

CENTRAL COMMAND CENTER, C-ATFM, DELHI

Contents

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CCC-CATFM/2020/04/06

Monthly Post Operations Analysis

A. Introduction

Analysis Period   1st – 31st Mar'20

Back Ground   ATFM operations commenced in India w.e.f. 27/04/2017 vide AIP supplement 25/2017, to resolve Demand Capacity imbalance at six (06) major Airports in phase-I i.e. Delhi, Mumbai, Bengaluru, Kolkata, Chennai & Hyderabad. At present, ATFM measures are applied to Domestic arrivals only at constrained Airports.
During the above mentioned period, ATFM measures were applied three (3) times for Bengaluru, three (3) times for Mumbai and nine (9) times for Delhi Airport due to the following reasons as illustrated in the bar chart below:–

Figure 1: ATFM Measures- Mar'20

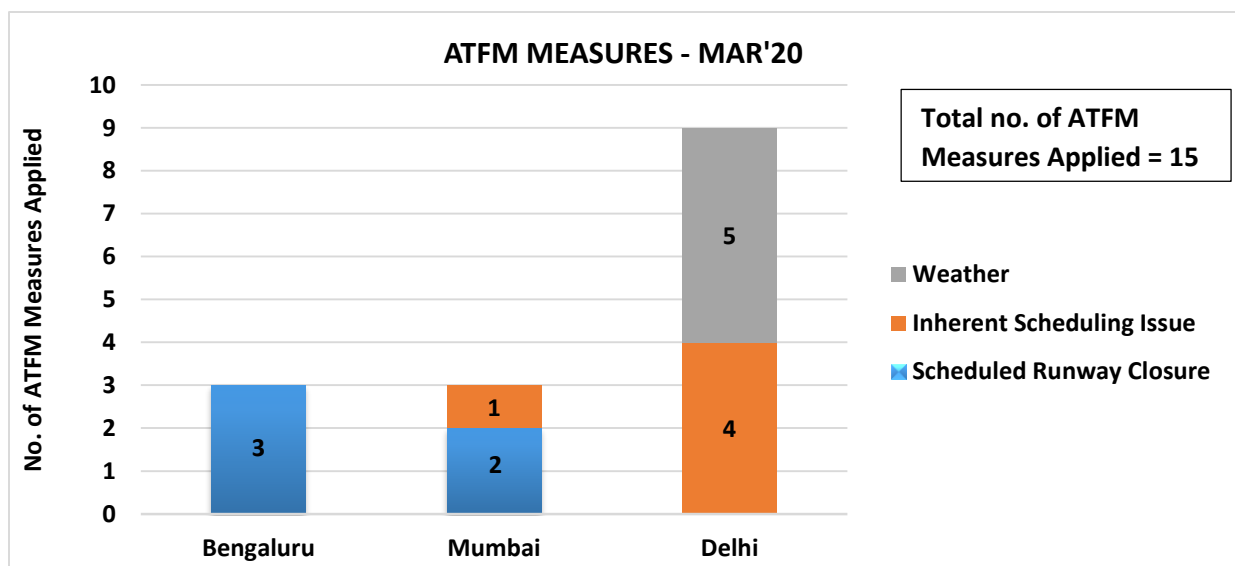Data source   Flights with complete data i.e. ATOT(actual take off time) and ALDT(actual landing time) are only taken into consideration. Out of the total domestic arrivals for which CTOTs (calculated take off time) were issued, 96.5% data has been considered for Compliance measurement. Rest 3.5% data include domestic arrivals that did not operate and flights with incomplete required information.

ATFM Parameters

1.   ATFM Program Impact

-    *ATFM Scenario*
    (An overview of traffic within the CDM scenarios for the month, representing ratio of International traffic & domestic traffic.).

-    *Affected Flight statistics*
    [An insight of participating traffic in the scenario i.e. ratio of the domestic arrivals to the constrained airport affected by ATFM measures (assigned delay by the Ground Delay Program) to the domestic arrivals not affected by ATFM measures (not assigned any delay) within the CDM scenario.]

2.   ATFM Ground delay
    (ATFM ground delay defined as CTOT-ETOT)
     Calculated take off time – Estimated take off time

-    *Total monthly ATFM delay*
    (Value in minutes representing total ATFM delay in the month)

-    *Total flights affected*
     (Flight count)

-    *Average ATFM delay*
    [Total monthly ATFM delay (in minutes)/ total number of domestic arrivals]

-    *Maximum ATFM delay*
    [Maximum ATFM delay (in minutes) assigned in the month]

-    *ATFM delay distribution in the band*
    (No delay, 0-5, 6-10; 11-15; 16-20; 21-25; 26-30; >30 minutes)

    (An overview of ground delay distribution in the different time bands constrained Airport wise)

3.   ATFM Compliance Measurement

-    *Overall compliance rate*

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(Defined as monthly ATFM departure slot adherence rate of regulated flights. Flights having ATOT within the ATFM Slot Tolerance Window (STW) of minus 5 to plus 10 minutes of CTOTs, are considered as compliant flights)

- ***ATFM departure slot adherence distribution***
  [An overview of regulated flight departures within an ATFM slot tolerance window (ASTW), before ASTW & after ASTW]

- ***CTOT Compliance rate of Airline operators***
  (An overview of CTOT compliance rate of various Airline operators)

- ***CTOT Compliance rate of Regions***
  (An overview of CTOT compliance rate of 4 FIRs)

- ***CTOT Compliance rate of Airports within different Regions***
  (An overview of CTOT compliance rate of Airports within 4 FIRs)

4. **Air delay statistics**

   Air delay defined as difference between AET & EET, where AET(actual elapsed time) can be obtained from (ALDT-ATOT) and estimated elapsed time(EET)can be obtained from FPL/RPL or (CLDT-CTOT). **Therefore, Air delay = AET-EET**

- **Monthly *Distribution of (AET-EET) in different time bands for various Constrained Airports***
   (<=-10; -9 to -6; -5 to -1; 0 to 5; 6-10; 11-15; 16-20; 21-25; 25-30 & >30minutes)
   (An overview of Air delay distribution in the different bands

   CLDT: calculated landing time

   CTOT: calculated take off time

   ALDT: actual landing time

   ATOT: actual take off time

- ***Average Air Delay for various constrained Airports***

   Average Air Delay is calculated as:

$$Average\ Air\ Delay = \frac{Total\ Air\ Delay\ to\ domestic\ arrivals\ (with\ values\ greater\ than\ zero)}{Total\ Domestic\ Arrivals}$$

B. Month Overview

1.   ATFM Program Impact

Data in this section helps to assess the impact of ATFM measure on overall flight operations during the ATFM scenario & the extent of flights involved. Analysis provides:

- Picture of overall traffic mixture in the ATFM scenarios for the month and the percentage of participating flights.
- Percentage of participating flights assigned ATFM delay & its impact on overall flights in ATFM scenario.

1.1   ATFM Scenario

Total Flights	1710
International arrivals	161
International departures	163
Domestic arrivals	680
Domestic departures	706
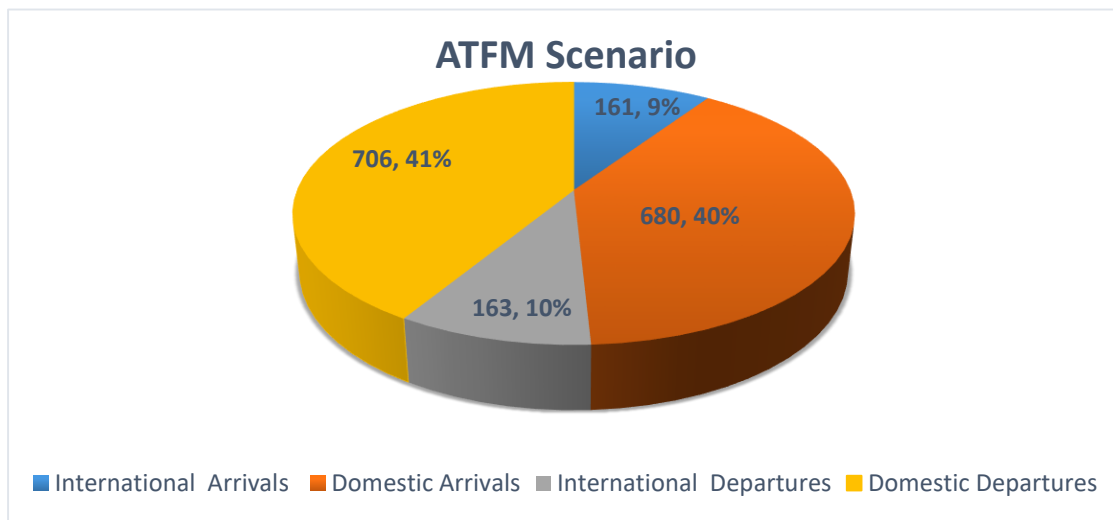
Figure 2: ATFM Scenario

1.2   Affected Flight Statistics

Total affected flights in scenario (Domestic Arrivals)	680
Total Domestic Arrivals with zero ATFM delay	90
Total Domestic Arrivals with ATFM delay	590

Affected Flight Statistics

90, 13%

590, 87%

■ **Delayed flights**   ■ **Non-delayed flights**
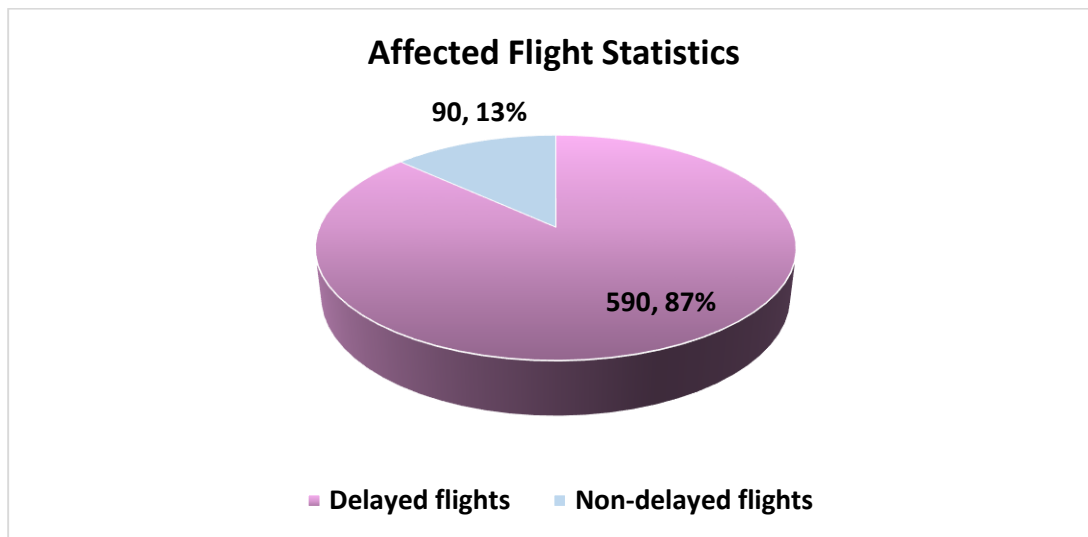
Figure 3: Affected Flight Statistics

1.3   Inference

1.   Out of the total arrivals captured for the constrained Airports during the CDM scenario , 81% of flights i.e. Domestic arrivals, are participating.

2.   Out of these Domestic Arrivals, 87% of arrivals are assigned ATFM ground delay & 13% of flights are without any ATFM ground delay.

3.   Out of the total arrivals captured to the constrained Airport during the ATFM scenario, 70% of flights are assigned ATFM Ground Delay.

2.   ATFM Ground Delay

Data analysis of this section provides insight into the impact of ATFM measures i.e. Ground delays due to ATFM measures. The study of delay distribution will provide seriousness of capacity constraint.

2.1   ATFM Delay statistics

Total participating flights in CDM (**Domestic Arrivals**)	680
Total ATFM Delay (CTOT-ETOT)	13890 minutes (231hrs:30mins)
Average ATFM Delay to participating flights*	20 minutes
Maximum ATFM Delay	106 minutes

Note:

$$*Average\ ATFM\ Delay = \frac{Total\ ATFM\ Delay}{Total\ Domestic\ Arrivals}$$
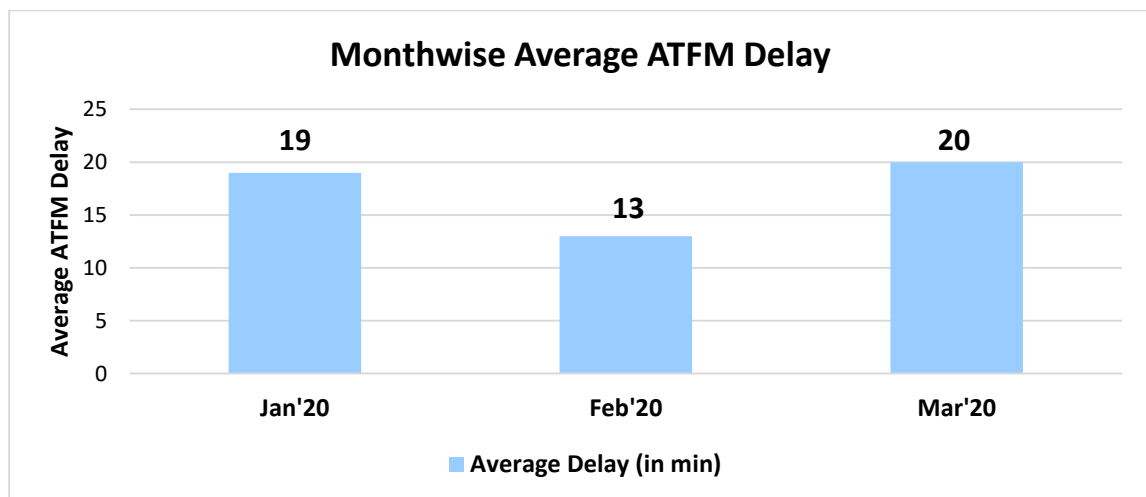

Figure 4: Average ATFM Delay Comparison

2.2   Inference:

1.   Average ATFM Delay has increased by seven minutes as compared to February 2020.

3.   ATFM Compliance Measurement

Data in this section helps us to assess the actual situation achieved at the constrained airport and a measure of collaboration achieved with the stakeholders.

Analysis provides:

- Overall picture of flights operating within the compliance window.
- Overview of regulated flight departures within ATFM slot tolerance window (ASTW), before ASTW & after ASTW
- Compliance rate- Airline Operator wise , Region wise, Station wise within Regions

3.1   Overall Compliance

Total Flights (Domestic arrivals)	680
Flights with complete data (ATOT)	656
Flights with incomplete data	03
Flights Not Operated	21
Compliant*	410
Non-Compliant	246

Total No. of Revised CTOTs issued = 37 (Compliance calculation for flights which were issued revised CTOT is w.r.t. new CTOT issued)
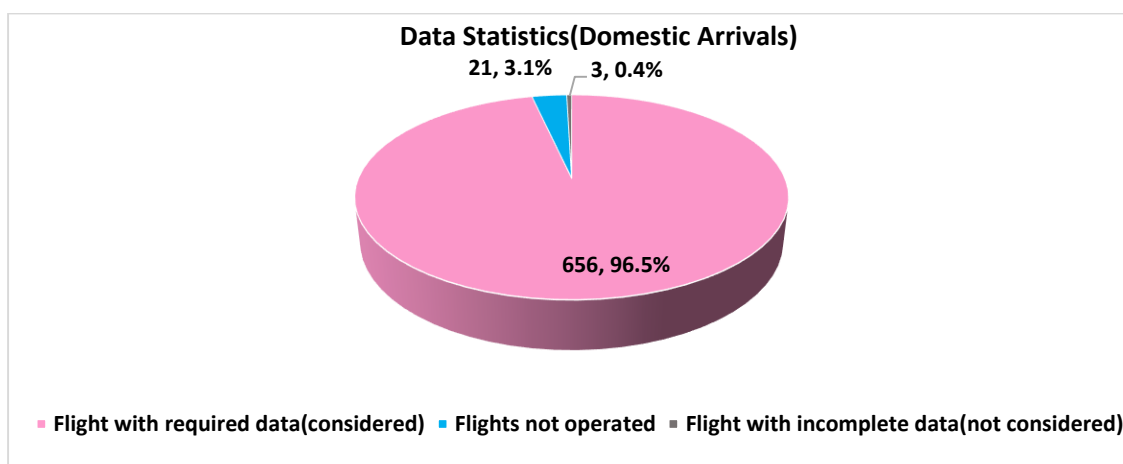
Figure 5: Data Statistics

CCC-CATFM/2020/04/06
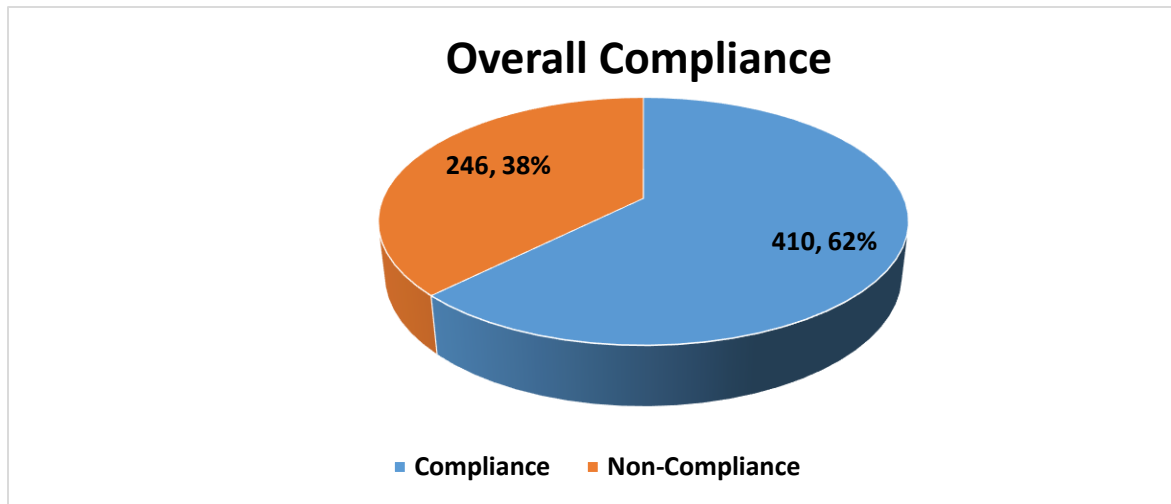
Figure 6: Overall Compliance

NOTE: Flights with required data (i.e. ATOT) are only considered for compliance measurement

3.2 ATFM Slot Adherence distribution

ATFM Slot tolerance window (ASTW) is -5 to + 10 minutes of CTOT. The aircraft departing within this window shall be considered to have adhered to ATFM slots i.e. compliant flights.

Flight departing before 5 minutes & after 10 minutes of CTOT shall be considered out of ATFM slot tolerance window & accordingly termed as Non-Compliant i.e. before / after ASTW departures respectively.
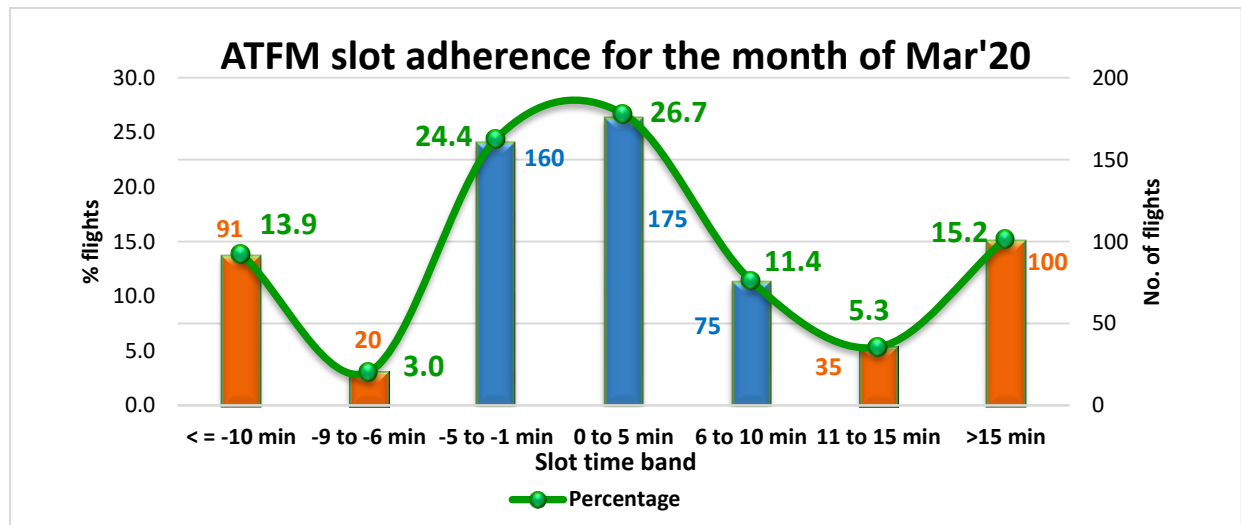
Figure 7: Slot Adherence Mar'20
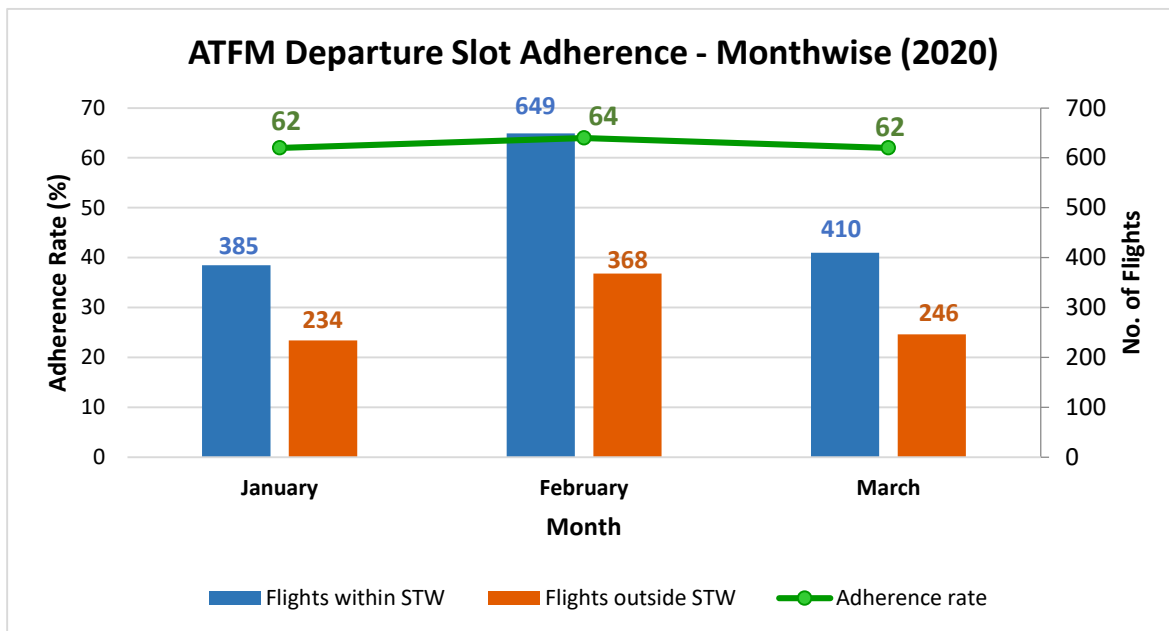
Figure 8: ATFM Compliance

3.3   CTOT Compliance rate of Airline Operators
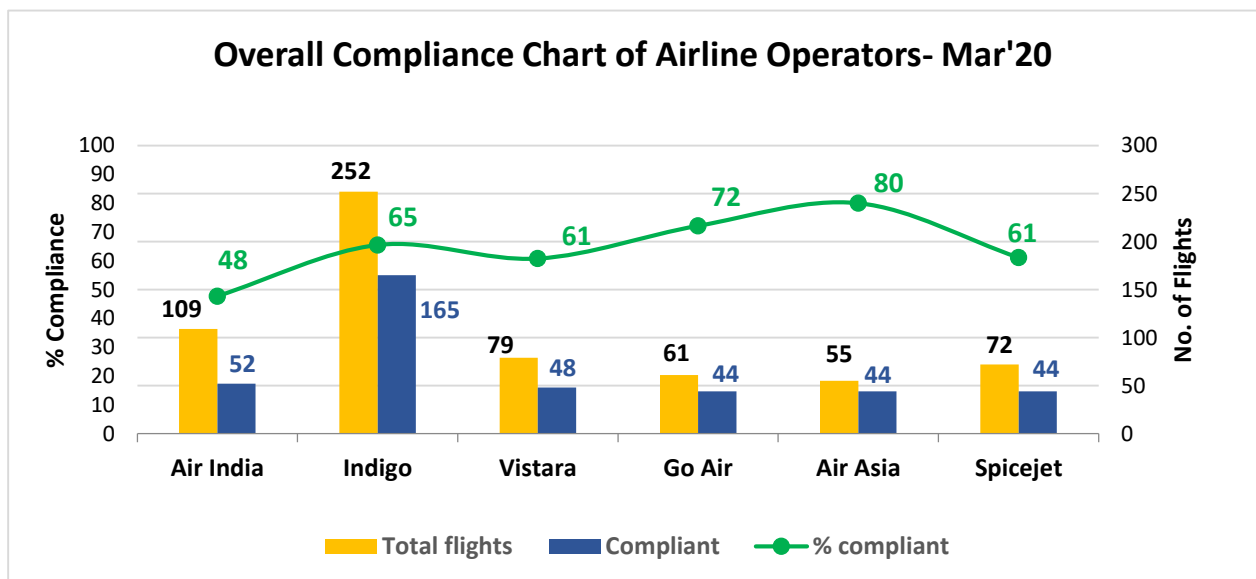
Figure 9: Airlines Overall Compliance Mar'20

3.4   CTOT Compliance rate by FMPs (Region wise)
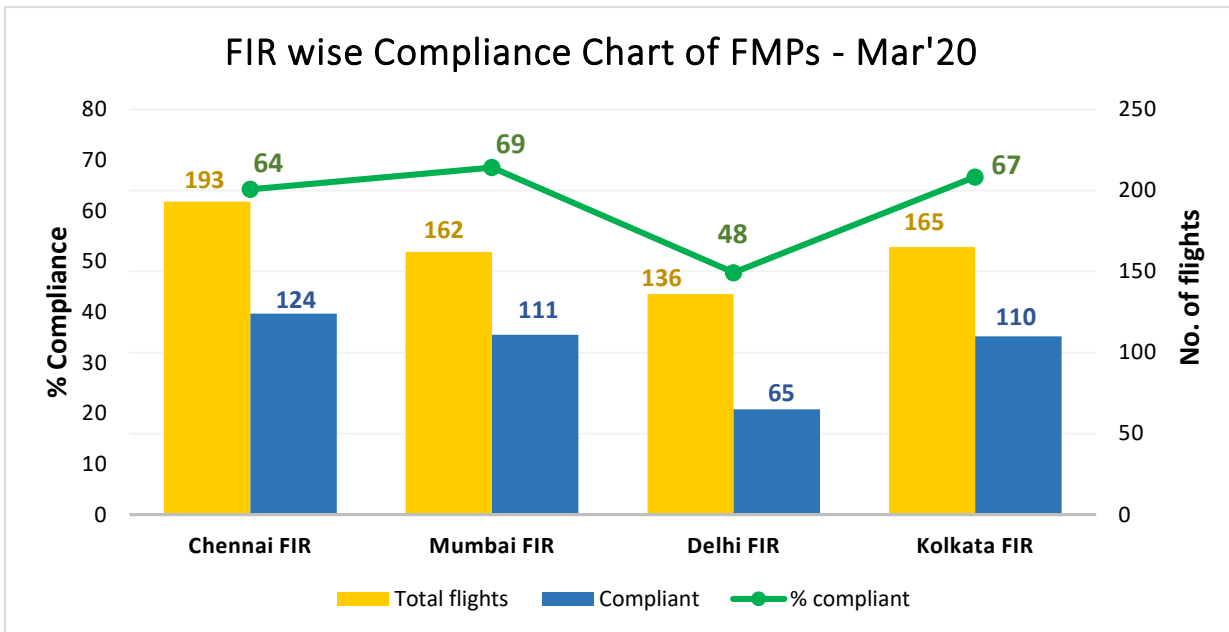
Figure 10: FIR wise Compliance Mar'20

3.5   CTOT Compliance rate - Airport wise
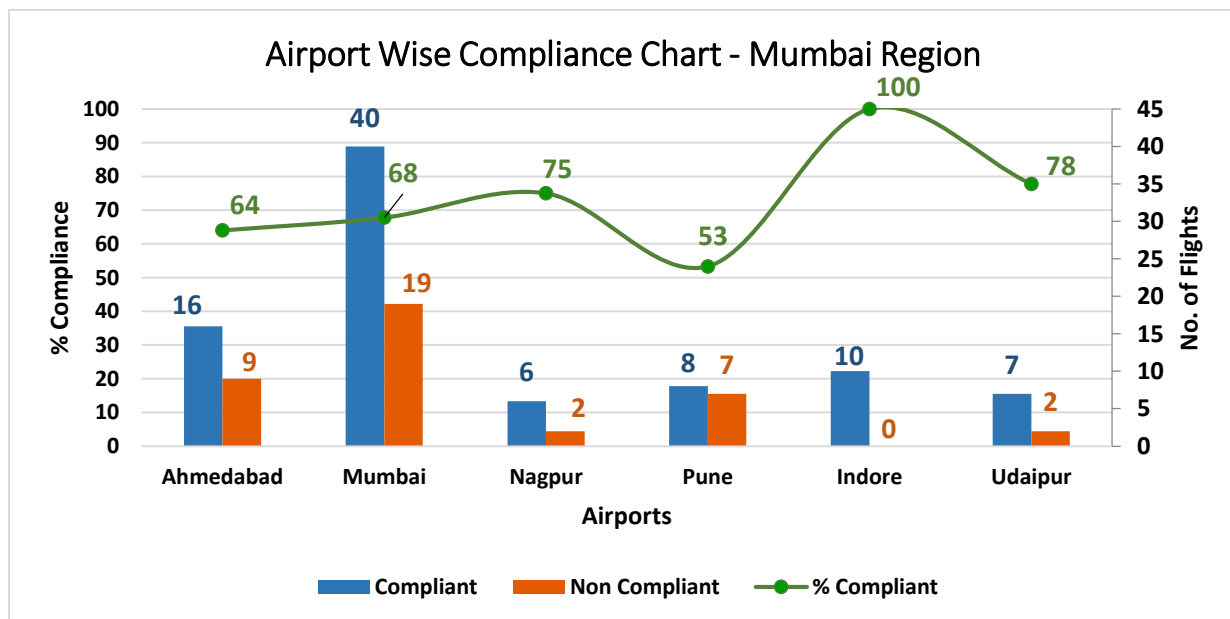
Figure 11: Mumbai Region Airport wise Compliance
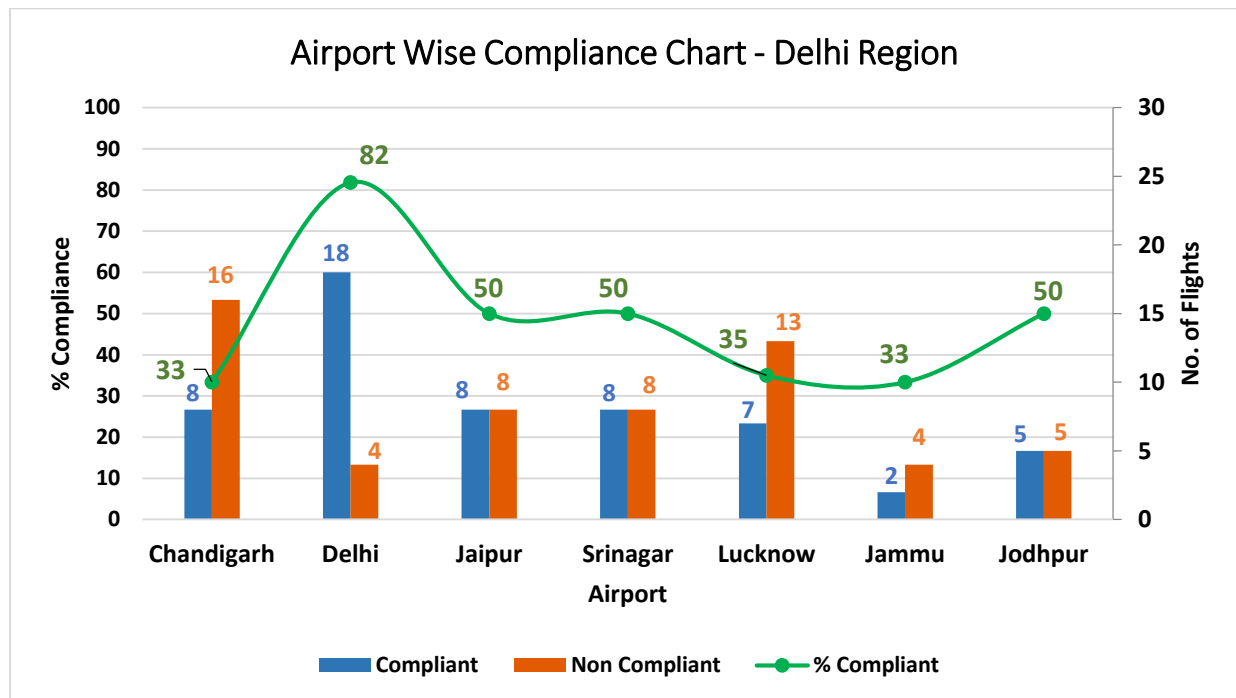
Figure 12: Delhi Region Airport wise Compliance
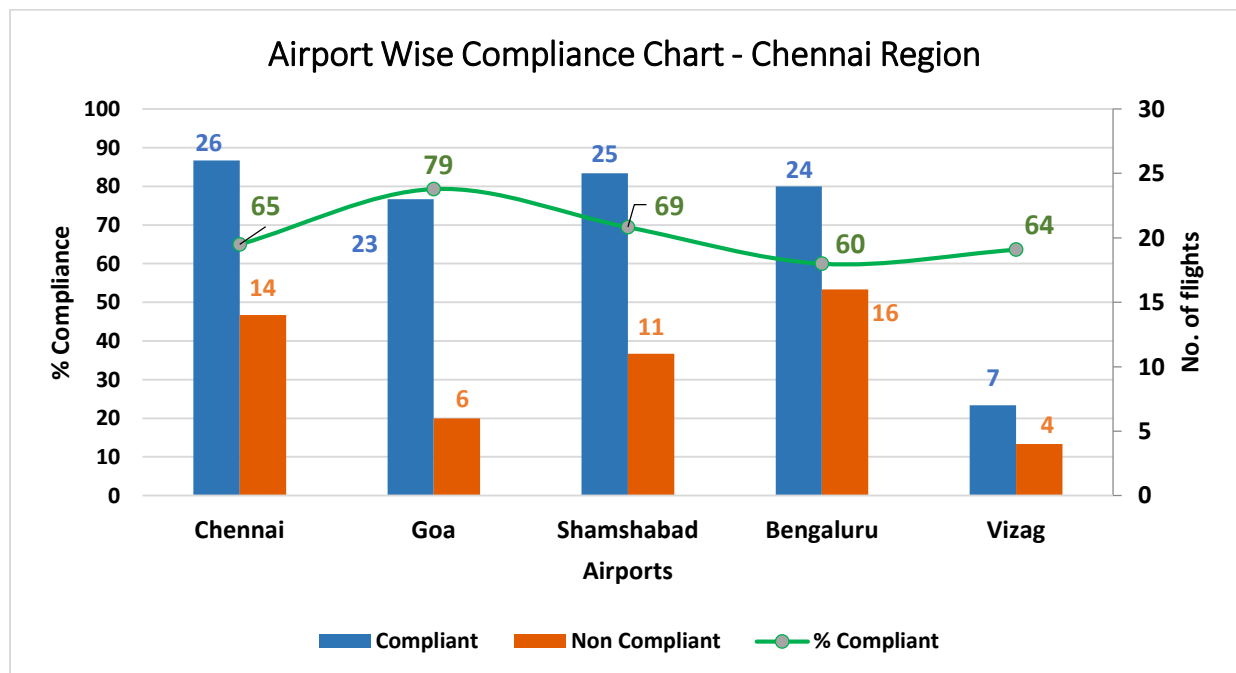
Figure 13: Chennai Region Airport wise Compliance
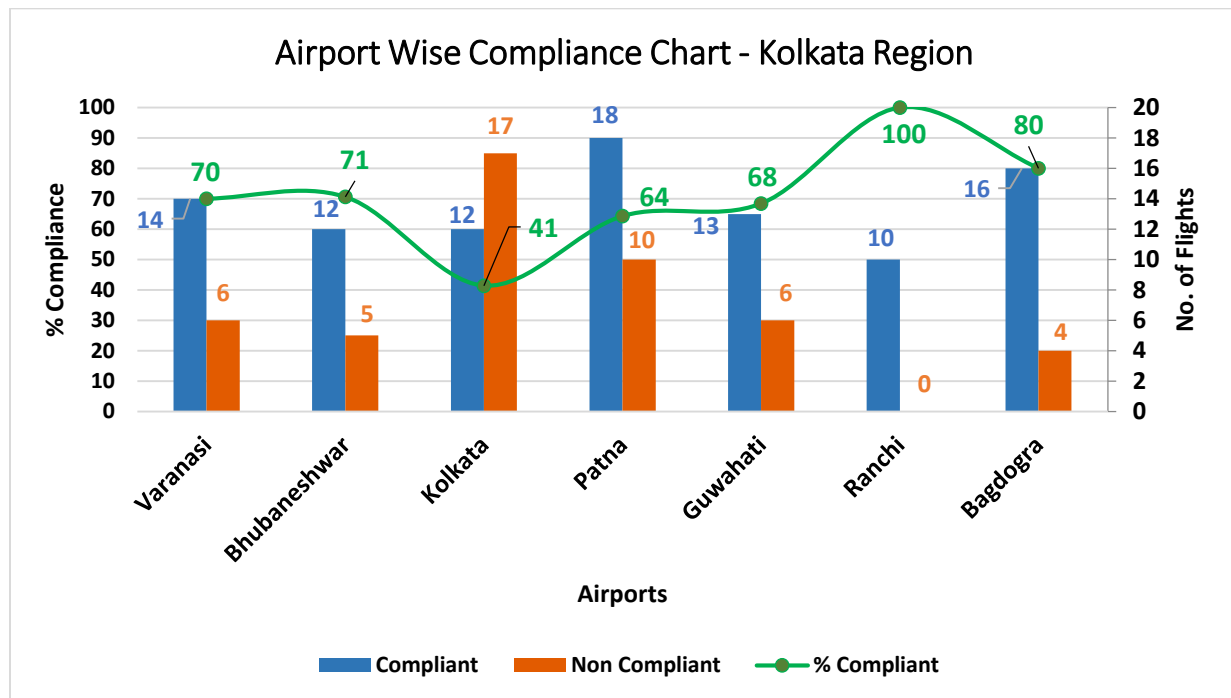
Figure 14: Kolkata Region Airport wise Compliance

3.6 Inference

1. Out of the total domestic arrivals with complete data in the CDM scenario, 62% arrivals are compliant.

2. 17% of flights have departed before the compliance window whereas 21% of flights have departed after the compliance window.

3. Mumbai region has the highest compliance rate of 69% whereas Delhi region has the lowest compliance rate of 48%.

4. Indigo, Go Air and Air Asia have a compliance rate above the average recorded 62% compliance.

C. Airport wise Analysis

1.   Delhi Airport

1.1   Traffic Trend

Delhi handled the maximum movements in India with 14177 arrivals and 14100 departures. The average ATM handled per day in Mar'20 is 912 which is less than the average ATMs in Feb'20 (1414 ATMs).

Average ATM per Day (Delhi)
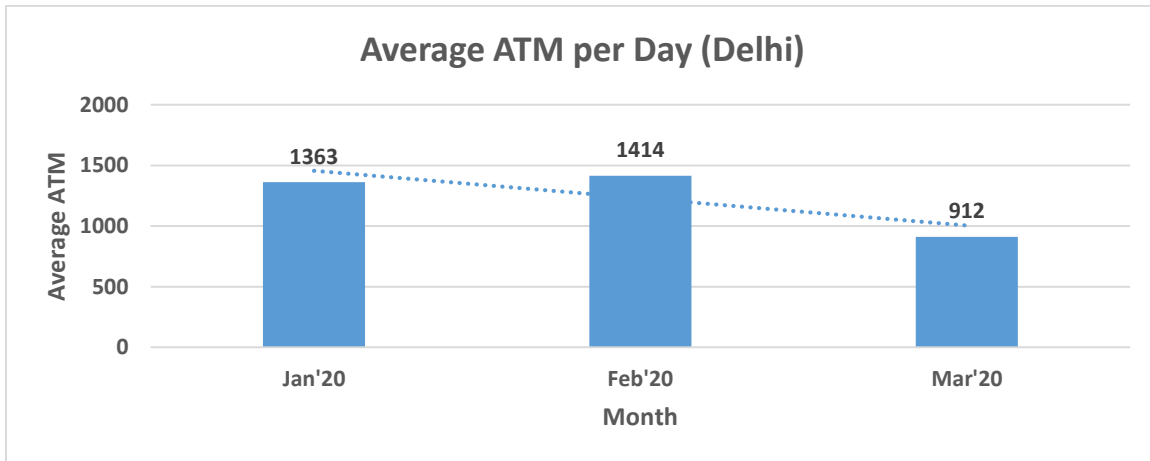
Figure 15: Average ATM per Day (Delhi)

1.2   Details of ATFM Measures:

Number of ATFM measures applied due to constraint at Delhi   : 9

Average ATFM Ground delay due to measures at Delhi   : 24 min

Maximum ATFM Ground delay due to measures at Delhi   : 106 min

% Compliance for Delhi CDM   : 59%

ATFM Ground Delay Distribution
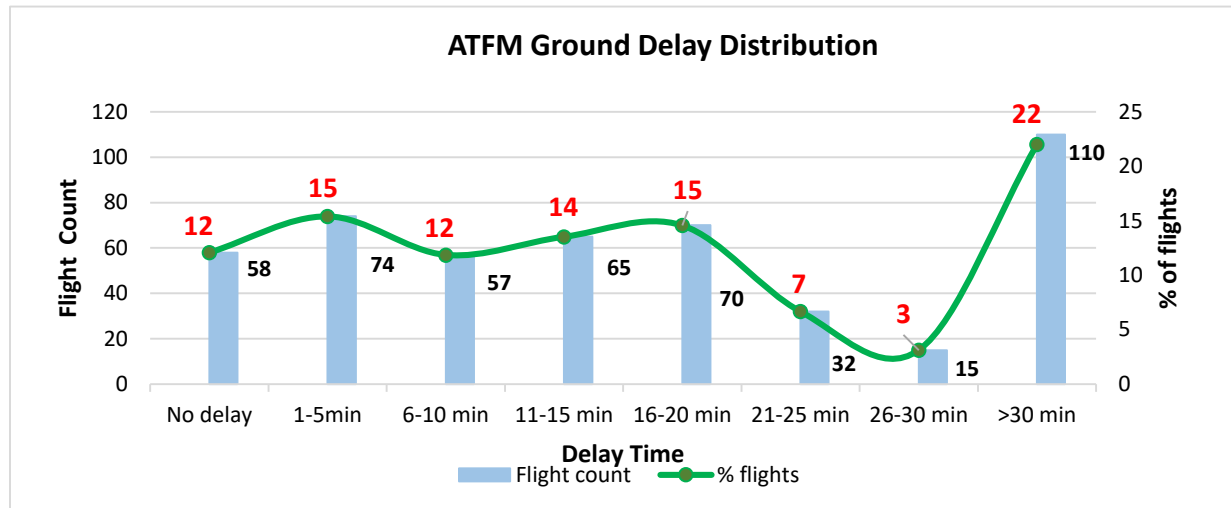
Figure 16: ATFM Ground Delay Distribution (Delhi)

Inference

1. 12% of flights for Delhi had no ATFM ground delay assigned by the system.

2. 41% of flights for Delhi had a ATFM ground delay of up to 15 minutes.

3. 25% of flights for Delhi had an ATFM ground delay in the range of 16 to 30 minutes.

4. 22% of flights for Delhi had an ATFM ground delay of more than 30 minutes.

1.3   Air Delay during the CDM Scenario period:

Average Air Delay to domestic arrivals* within the CDM Scenario period for Delhi is 13 minutes.

*Note: Only calculated for domestic arrivals with both ATOT and ALDT information

Distribution of difference between AET & filed EET

AET-EET min (time band)		<= -10	-9 to -6	-5 to -1	0 to 5	6 to 10	11 to 15	16 to 20	21 to 25	26 to 30	>30
Delhi	**Flt. Count**	14	7	44	95	97	61	55	14	16	53
	% flight	3	2	10	21	21	13	12	3	4	11

CCC-CATFM/2020/04/06
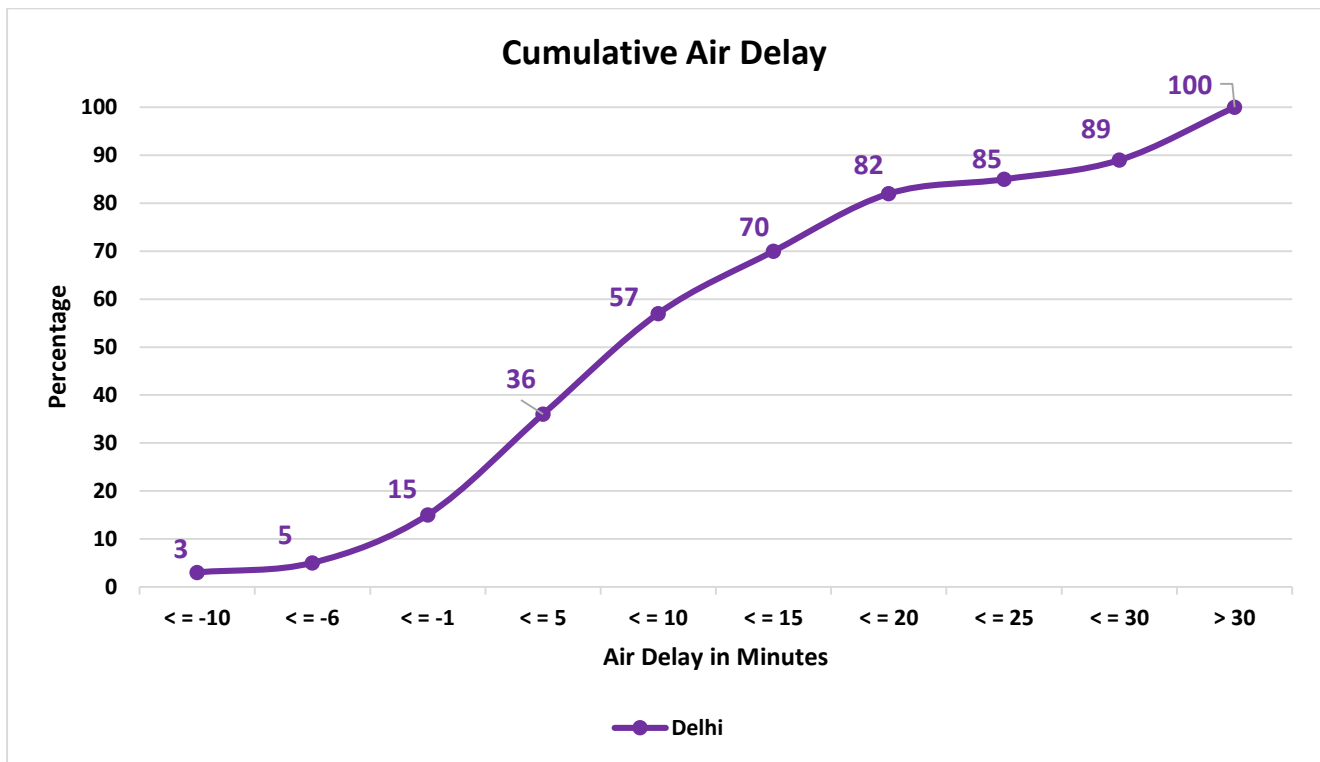
Figure 17: Cumulative Air Delay during CDM period (Delhi)

Inference

1. 70% of flights for Delhi had an Air delay of equal to or less than 15 minutes during the CDM period.

2.   Mumbai Airport

2.1   Traffic Trend:

Mumbai was the 2nd busiest Airport in India with 9022 arrivals and 8961 departures. The average ATM recorded per day for the month of Mar'20 is 580 which is less than the average recorded in the month of Feb'20 (843 ATMs).

Figure 18: Average ATM per Day (Mumbai)

2.2   Number of ATFM measures and Ground Delay Distribution:

Number of ATFM measures applied due to constraint at Mumbai : 3

Average ATFM Ground delay due to measures at Mumbai   : 10 min

Maximum ATFM Ground delay due to measures at Mumbai   : 35 min

% Compliance for Mumbai CDM   : 69%
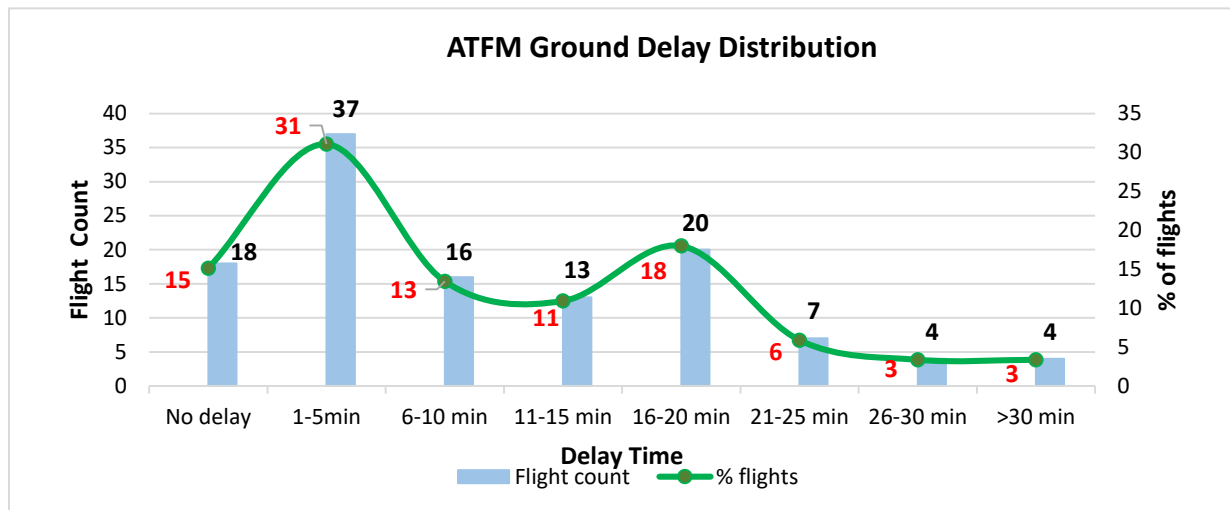
Figure 19: ATFM Ground Delay Distribution (Mumbai)

Inference

1. 15% of flights for Mumbai had no ATFM ground delay assigned by the system.

2. 55% of flights for Mumbai had a ATFM ground delay of up to 15 minutes.

3. 27% of flights for Mumbai had an ATFM ground delay in the range of 16 to 30 minutes.

4. 3% of flights for Mumbai had an ATFM ground delay of more than 30 minutes.

2.3   Air Delay during the CDM Scenario period:

Average Air Delay to domestic arrivals* within the CDM Scenario period for Mumbai is 04 minutes

*Note: Only calculated for domestic arrivals with both ATOT and ALDT information

Distribution of difference between AET & filed EET

| AET-EET min (time band)		<= -10	-9 to -6	-5 to -1	0 to 5	6 to 10	11 to 15	16 to 20	21 to 25	26 to 30	>30
Mumbai	**Flt. Count**	10	11	20	41	24	9	1	2	0	0
	% flight	8	9	17	35	20	8	1	2	0	0
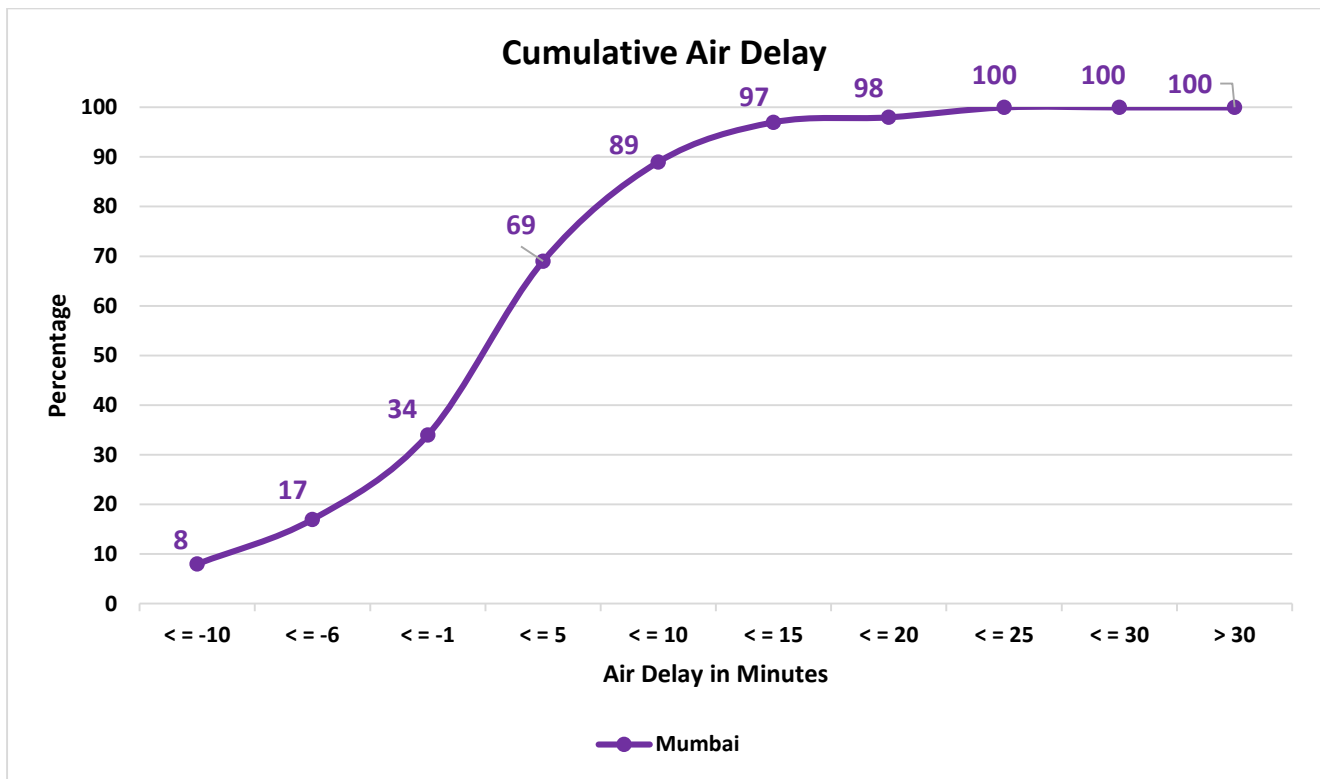
Figure 20: Cumulative Air Delay during CDM period (Mumbai)

Inference

1. 97% of flights for Mumbai had an Air delay of equal to or less than 15 minutes during the CDM period.

3.   Bengaluru Airport

3.1   Traffic Trend :

Bengaluru Airport recorded 7162 arrivals and 7176 departures. The average ATM per day recorded for the month of Mar'20 is 462 which is less than the average recorded in the month of Feb'20 (681 ATMs).
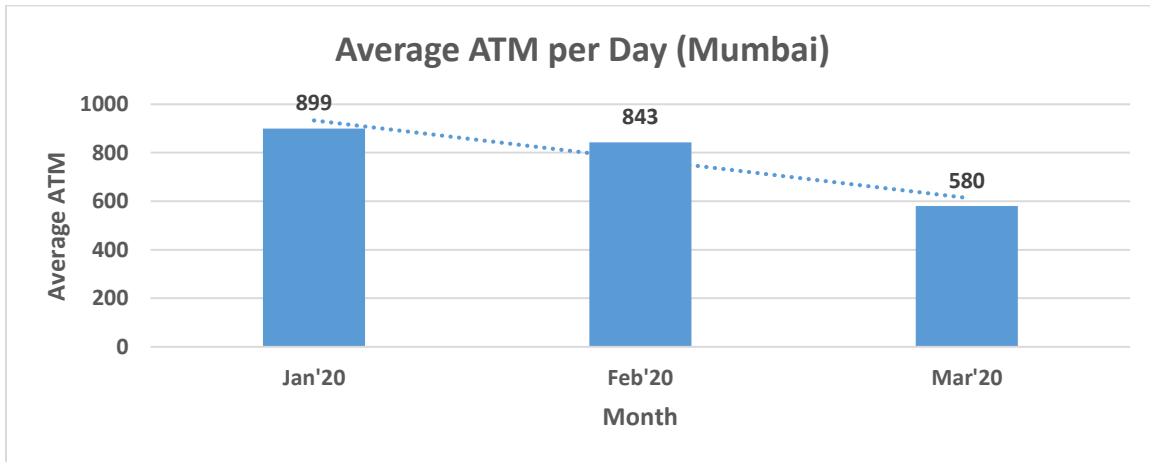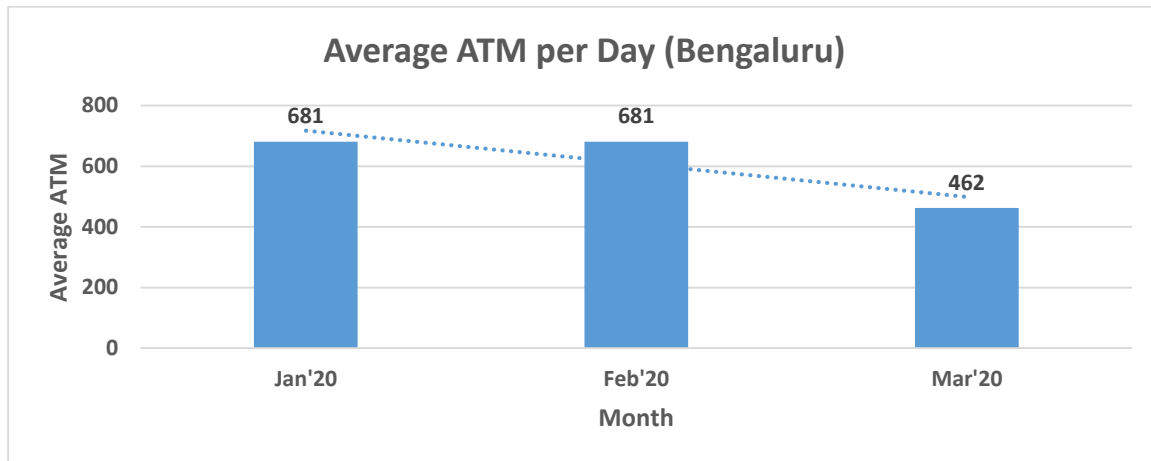

Figure 21: Average ATM per Day (Bengaluru)

3.2   Number of ATFM measures and Ground Delay Distribution:

Number of ATFM measures applied due to constraint at Bengaluru : 3

Average ATFM Ground delay due to measures at Bengaluru   : 15 min

Maximum ATFM Ground delay due to measures at Bengaluru   : 30 min

% Compliance for Bengaluru CDM   : 71%
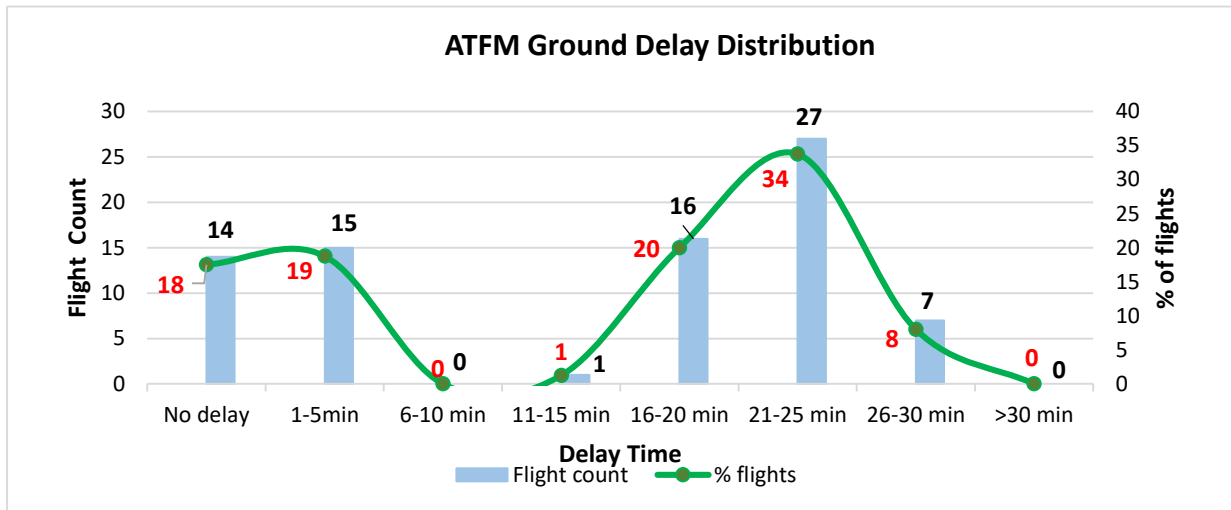
Figure 22: ATFM Ground Delay Distribution (Bengaluru)

Inference

1. 18% of flights for Bengaluru had no ATFM ground delay assigned by the system.

2. 20% of flights for Bengaluru had a ATFM ground delay of up to 15 minutes.

3. 62% of flights for Bengaluru had an ATFM ground delay in the range of 16 to 30 minutes.

4. No flights for Bengaluru had an ATFM ground delay of more than 30 minutes.

3.3 Air Delay during the CDM Scenario period:

Average Air Delay to domestic arrivals* within the CDM Scenario period for Bengaluru is 06 minutes

*Note: Only calculated for domestic arrivals with both ATOT and ALDT information

Distribution of difference between AET & filed EET

| AET-EET min (time band)		<= -10	-9 to -6	-5 to -1	0 to 5	6 to 10	11 to 15	16 to 20	21 to 25	26 to 30	>30
Bengaluru	**Flt. Count**	4	2	16	20	12	7	6	1	2	0
	% flight	6	3	23	29	17	10	9	1	2	0
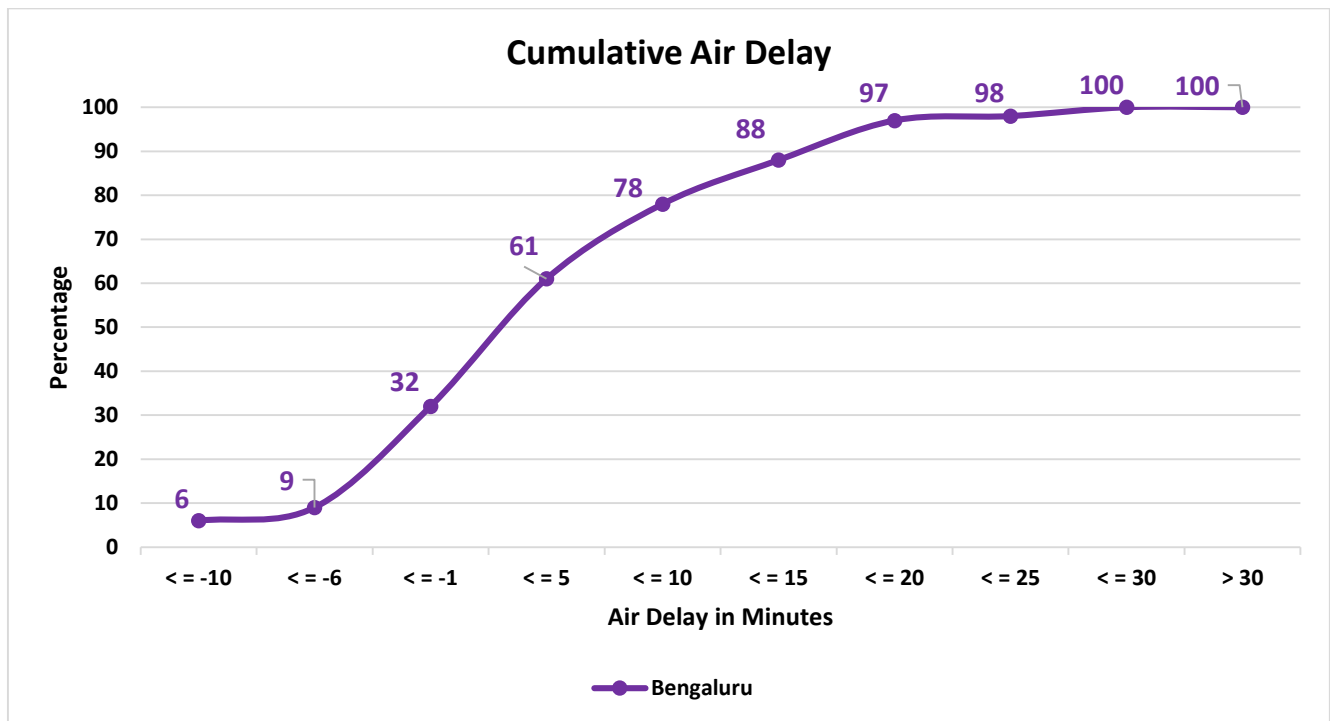
Figure 23: Cumulative Air Delay during CDM period (Bengaluru)

Inference

1. 88% of flights for Bengaluru had an Air delay of equal to or less than 15 minutes during the CDM period.

D.   Challenges

1.   System related issues

1. "Watch Hours" of all the Airports is entered in the system. However, the system does not consider these watch hours while issuing CTOTs and issues CTOTs beyond the watch hours of the Airport.

2. "Partial Update" feature of updating the demand in tactical environment leads to large delays to a new FPL or any "CHG" message received for any FPL (irrespective of the change , e.g. an aircraft type, route, EOBT change etc. is likely to affect the profile of the aircraft, whereas a change in navigation capability, squawk change does not have any influence on the profile)

3. After using "APPLY" feature to a CDM scenario, Delay messages (DLA) are being sent by SKYFLOW system resulting in revision of EOBT of the delayed flight in ATS automation system .This is incorrect, as the initiation of a DLA message is the prerogative of the originator. The issue is already taken up with ATECH.

4. The system does not have any feature to put independently Airport Arrival rate (AAR) and Airport Departure rate (ADR) to regulate the demand against the practiced capacity.

5. The Arrival message for Delhi Arrivals isn't interpreted correctly by SKYFLOW because of format inconsistency, resulting in large error queues. This leads to inaccurate demand in the tactical environment for Delhi when ACDM is not functioning.

6. System functionalities are limited to balancing demand against capacity of an individual Aerodrome. **In case of two constrained Airports with overlapping timings, the SKYFLOW system Algorithm may not be able to give an acceptable solution. (refer ATECH e-mail dated 28th April, 2017).**

7. Once the CDM is applied , the system does not update the CDM Scenario. Lack of dynamic update presents stale demand information through the CDM.

2.   Operational Issues

1. The present means of communicating the application of ATFM measures is through instant messaging followed by an email addressed to all stations. This has proved to be an inefficient means of information broadcast as many stations are unaware of the measures till CTOTs are actually passed to them from the main FMP units. Many stations are not manning the FMP position.

2. The existing means of CTOT dissemination by FMPs to different ATS units and ATCs within their jurisdiction leads to delays in timely dissemination of CTOTs for ensuring compliance. The Airline operators are also falling short in their responsibility of sharing the CTOTs received with their Air crew.

3. FMPs installed at Defence and few satellite Airports have been trained on ATFM "SKYFLOW" but still have CTOT accessibility issues. Information sharing regarding commencement of ATFM measures and ADP is still an issue with these stations.

4. A lead in time of at least 3 hours is required for preparation of CDM, in order to disseminate CTOTs at least 2 hours prior to EOBT. Airports with flying time of more than 2 and half hours face the difficulty in dissemination of the CTOT information to Airlines in time for CTOT compliance. This leads to non-compliance of CTOT timings, as with passengers on board the flights, it becomes difficult for Airlines to comply with the CTOT restriction.

5. The RPLs received from Airlines on fortnightly basis does help CCC in strategic decision making. Very few domestic airlines share their "No ops" information or send an associated AFTN CNL or CHG message. As SKYFLOW utilizes, RPL for Demand projection, absence of correct information leads to wrong demand prediction.
    In some cases, the EOBT shared in RPLs with CCC and FPL filed on the 'D' day does not match leading to long error queues. These FPLs with different EOBT get stuck in error queues because of a duplicate plan already available in the system.
    Such flights have to be manually allocated a revised CTOT after application of ATFM measures or at times they take off without a valid CTOT.

6. The RPLs and FPLs in SKLYFLOW get annulled after 120 minutes of their EOBT in absence of timely origination of "DLA" messages by airlines, This leads to display of wrong demand in the System, specially any CDM prepared for post disruption period will reflect wrong demand until and unless the Airlines amend their flight intentions by generating appropriate AFTN message addressed to VIDPCTFM.

7. Many IAF flights do not update their flight intentions leading to wrong demand(no Delay and cancellation messages) in ATFM system.

8. SKYFLOW system is not receiving DEP messages from many domestic and international Airports. In such cases, the demand is not correctly updated for a constrained Airport.

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9. At times, additional tactical flow measures are applied by ATC of constrained Airport during the period when ATFM measures are in force. leading to confusion and conflicting instructions for Airline operators. Tactical flow measures initiated by constrained Airport cannot be incorporated in the SKYFLOW system which causes wrong representation of demand in the system.

10. Requests for revised CTOT has increased but the airlines are still not updating their flight intent in SKYFLOW by originating an appropriate AFTN message addressed to VIDPCTFM. Genuine requests for revision of slot allocation are handled manually by CCC as there is no provision of revision of CTOT in SKYFLOW system after the use of " APPLY " feature. This leads to over delivery of flights to a constrained Airport during such hours. The slots vacated cannot be assigned to others through the system. This leads to under delivery during that period. SKYFLOW system does not have facility of dynamic CTOT allocations. (refer ATECH e-mail dated 28th July, 2017) [This procedure sometime leads to over or under delivery of flights to the constrained airport, as revised CTOTs and vacant slots cannot be assigned through SKYFLOW system.]

11. Due to lack of understanding at many Airports, flights following ATFM Ground delay for a constrained Airport are held on ground and made to depart within their CTOT tolerance window whereas flights which are actually planned to operate after the ATFM Scenario period to the same constrained Airport are not restricted at all.

12. Many operators, mostly non-scheduled operators and Military flights, are not filing their FPLs three (03) hours prior to their EOBTs leading to wrong demand prediction.

13. The flights given exemption(accommodated in the CDM with no delay) on operational grounds are at times not following the allotted CTOT (which is same as filed EOBT plus default taxi time). It is essential for all stakeholders to note that these exempted flights are accorded priority over others but even these flights need to adhere to the issued CTOT, within the permissible tolerance window of minus 5 to plus 10 minutes.

14. Increasing number of exemption requests on various reasons like VIPs on board, watch hour restrictions, Sunset restrictions , operational Constraints etc. leads to undue delays to other flights. This problem becomes grave when the constrained Airport has a grid lock lasting for more than an hour.

15. The CDMs prepared to cater to demand capacity imbalance towards the end of a day usually reflects wrong demand as the Flight intentions are not timely updated by Airlines in the SKYFLOW i.e. by originating appropriate ATS messages through AFTN.

16. CTOT compliant flights are not receiving any preference over non-compliant flights while arriving at constrained airport, therefore getting substantial ground as well as airborne delay.

17. **CDMs prepared to cater to post Weather disruption or post exigency period**, even with few hours prior notice might not capture actual scenario, as for a correct demand prediction updated information on

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delayed and diverted flights in the SKYFLOW system is essential. Airport operators are also unable to provide advance flight information due to uncertainty in such situation.

Annexure A: Traffic at Indian Airports amidst COVID-19 Scare

Introduction:

Declaration of COVID-19 as a pandemic has severely impacted the aviation Industry. India initially started with the issue of travel advisory suggesting against non- essential travel and subsequently followed it up with an outright ban on flights to restrict the spread of the virus. The unfolding of unexpected events like trip cancellations, country-specific restrictions on international flights and finally total embargo on flight operations, has resulted into drastic reduction of Air Traffic movements at Indian airports.

Traffic in Indian Airspace decreased significantly owing to governments initiative to curtail the spread of COVID-19 virus and suspending all domestic and international movements to/from India till 1829 UTC of 14th April'20 vide NOTAM no. G0210/20 and G0211/20.

NOTAMs:

G0210/20 (Issued for VIDF VABF VECF VOMF) - COVID-19: IN EXERCISE OF THE POWERS CONFERRED BY SUB SECTION (1)

OF SECTION 8B OF AIRCRAFT ACT 1934 (XXII OF 1934), THE CENTRAL GOVERNMENT HEREBY DIRECTS THAT:

1. THE OPERATION OF ALL SCHEDULED DOMESTIC FLIGHTS (EXCEPT ALL-CARGO FLIGHTS) BY ANY AIRCRAFT OPERATOR HOLDING AN AIR OPERATOR CERTIFICATE ISSUED BY DGCA-INDIA CEASES WITH EFFECT FROM 1829 UTC ON 24 MAR 2020.

2. THE OPERATION OF FLIGHTS BY THE HOLDERS OF NON SCHEDULED OPERATOR PERMIT (EXCEPT ALL-CARGO FLIGHTS, OFF-SHORE HELICOPTER OPERATIONS, MEDICAL EVACUATION FLIGHTS OR FLIGHT SPECIFICALLY APPROVED BY DGCA-INDIA) AND FLIGHTS BY PRIVATE AIRCRAFT OPERATORS ALSO CEASES WITH EFFECT FROM 1829 UTC ON 24 MAR 2020.

3. THE ABOVE RESTRICTIONS SHALL NOT APPLY TO AIRCRAFT/HELICOPTER(S) BELONGING TO OR BEING OPERATED ON BEHALF OF STATE/UT GOVERNMENTS.

4. ALL AIRPORTS SHALL CONTINUE TO FUNCTION FOR HANDLING THE PERMITTED FLIGHT OPERATIONS.

5. THE ABOVE INSTRUCTIONS SHALL REMAIN IN FORCE TILL 1829 UTC ON 14 APR 2020.

(G0211/20 NOTAMR G0209/20

Q) VIXX/QXXXX/IV/NBO/W/000/999/

A) VIDF VABF VECF VOMF B) 2003310620 C) 2004141829

E) COVID-19:

IN ORDER TO RESTRICT THE SPREAD OF COVID-19 (NOVEL CORONA VIRUS 2019) DISEASE IN INDIA, FOLLOWING RESTRICTIONS ARE IMPOSED ON ALL SCHEDULED INDIAN AND FOREIGN AIRLINES ENGAGED IN INTERNATIONAL AIR TRANSPORTATION TO/FROM INDIA:

1. NO SCHEDULED INTERNATIONAL COMMERCIAL PASSENGER AIRCRAFT SHALL TAKE OFF FROM ANY FOREIGN AIRPORT FOR ANY AIRPORT IN INDIA AFTER 0001 UTC OF 22 MAR 2020 TILL 1829 UTC OF 14 APR 2020.

2. THESE INSTRUCTIONS ARE IN ADDITION TO THE TRAVEL RESTRICTIONS/ ADVISORIES ALREADY ISSUED AND UNDER IMPLEMENTATION.

3. THE RESTRICTIONS DO NOT APPLY TO ACFT OPERATED IN THE FOLLOWING CIRCUMSTANCES:

- AIRCRAFT IN A STATE OF EMERGENCY

- AT ALTERNATE AERODROMES IDENTIFIED IN A FLT PLAN (INCLUDING THOSE FOR EDTO)

- CARGO FLIGHTS

- TECHNICAL LANDINGS WHERE PASSENGERS DO NOT DISEMBARK

4. OPERATIONS RELATED TO HUMANITARIAN AID, MEDICAL SUPPLIES OR RELIEF FLIGHTS WILL NEED APPROVAL FROM DIRECTOR GENERAL OF CIVIL AVIATION, INDIA. THIS WILL REQUIRE COORDINATION BETWEEN THE DIPLOMATIC REPRESENTATIVES FROM CONCERNED COUNTRY IN INDIA AND THE MINISTRY OF CIVIL AVIATION.

5. THE ABOVE ARE TEMPORARY MEASURES TO RESTRICT THE SPREAD OF COVID-19, AND ARE SUBJECT TO REVIEW BY GOVERNMENT.

6. OVERFLYING FLIGHTS TO OPERATE WITH DUE PERMISSION.)

TRAFFIC ANALYSIS:

The drop in total movements at three major Indian Airports Delhi, Mumbai and Bengaluru is plotted for each day of the month of February and March for comparison. The data is collected from SKYFLOW system.

Daily ATMs Feb Vs March'20(Delhi)

Daily ATMs Feb Vs. March'20(Mumbai)

Daily ATMs Feb Vs March'20(Bengaluru)