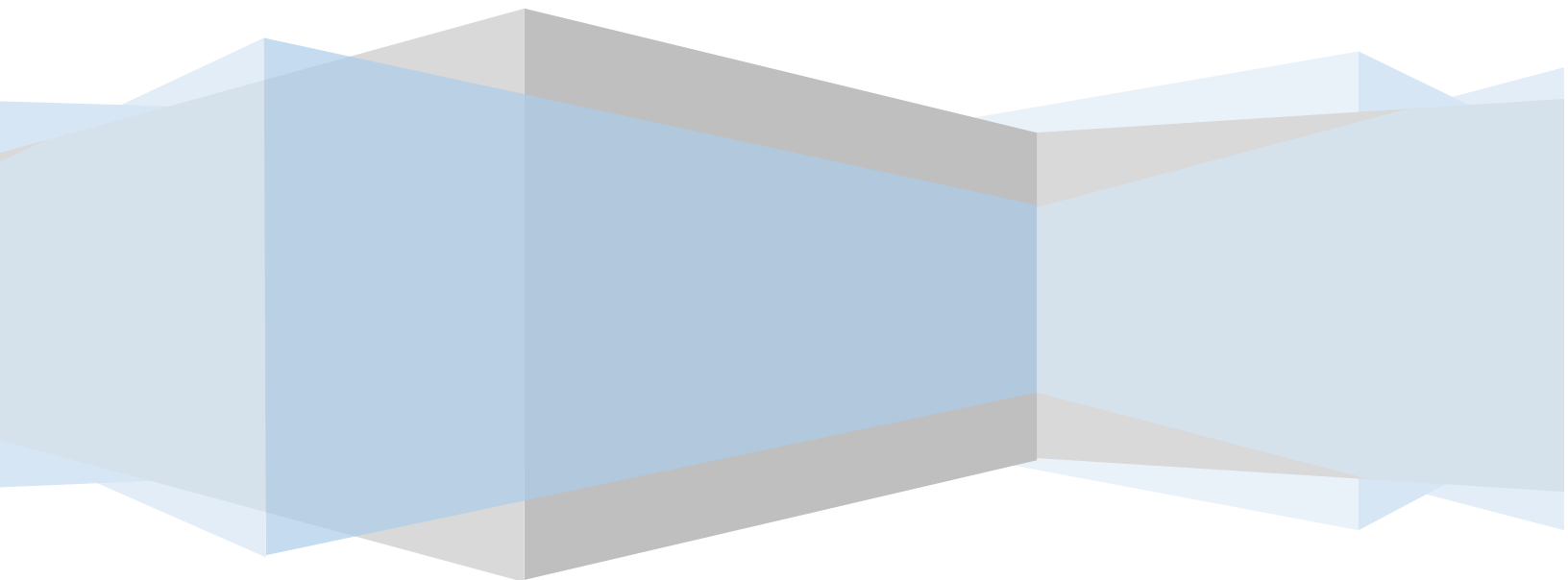


# POST OPERATIONS ANALYSIS REPORT

September, 2023

CENTRAL COMMAND CENTER, C-ATFM, DELHI







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## A. Executive Summary

Average Domestic and international air traffic has recorded an increase of 1.5% and 6.4% respectively in the month of Sep'23 as compared to Aug'23.

On average, the Indian Airports in the ATFCM area saw 4843 IFR flights per day in the month of September 2023. The peak day was on 29<sup>th</sup> September 2023 (5047 IFR flights). Friday's were the busiest days throughout this month with an average of 4978 domestic IFR flights per day.

Total Seventy Four (74) ATFM measures were applied this month during periods of congestion at Delhi, Chennai and Mumbai Airport.

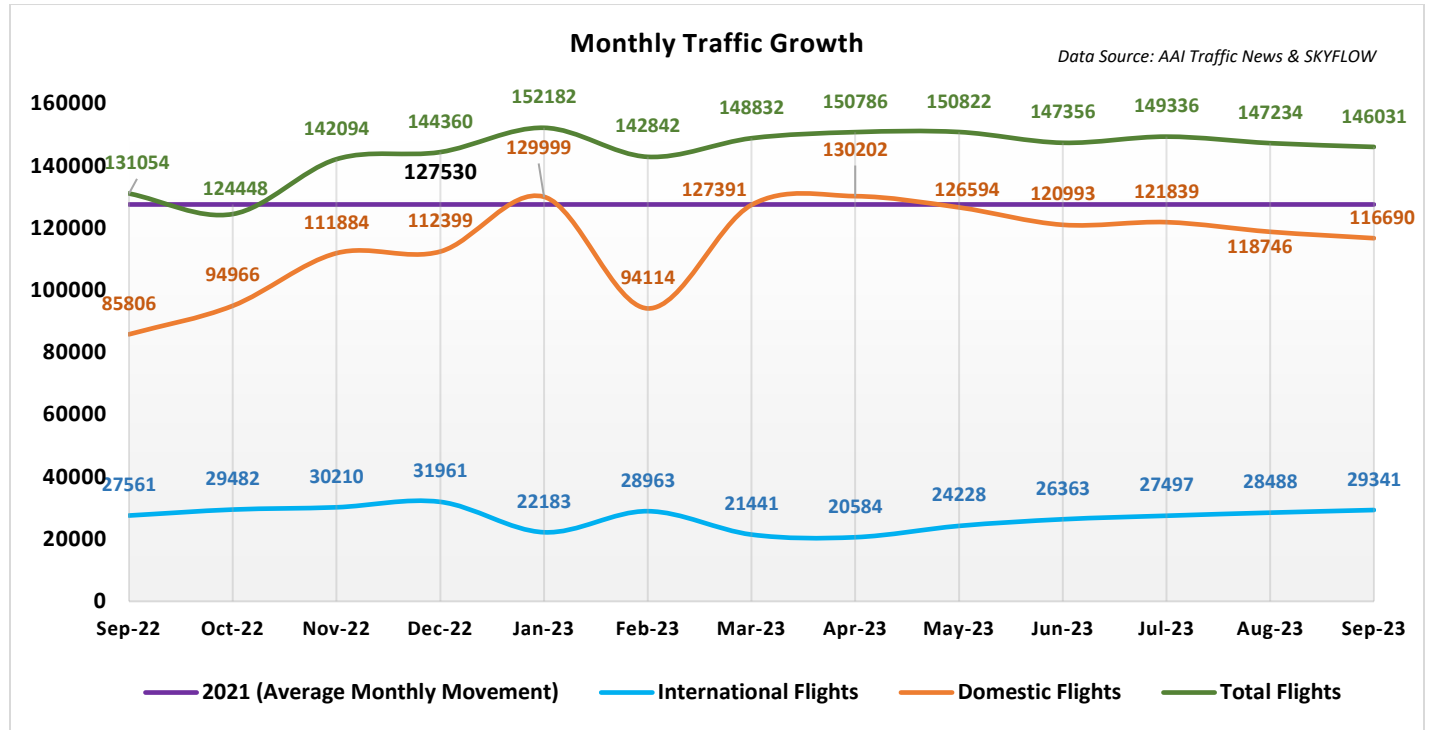


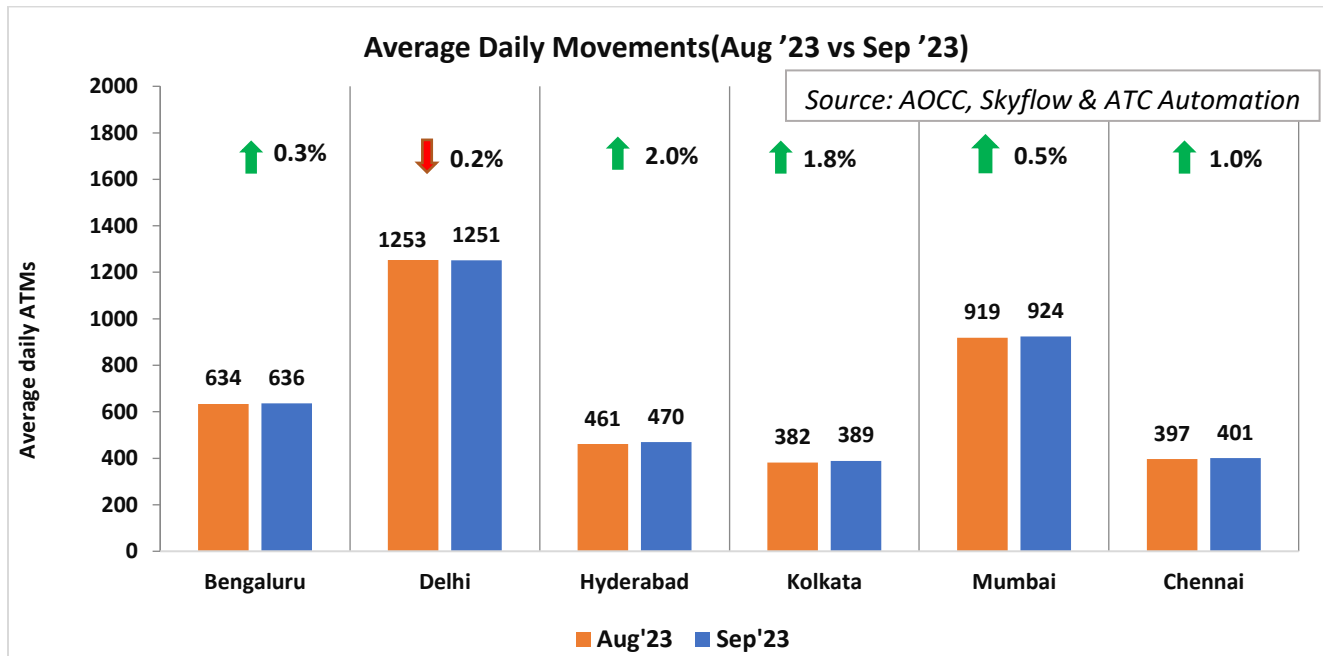
Figure 1: Monthly Traffic Growth

The graph above depicts the Domestic and international Air traffic in Indian ATFCM Area during the last 13 months (Sep'2022 to Sep'2023).



## B. Traffic Analysis

### I. Air Traffic Movement at Major Airports in India



**Figure 2: Average Daily Movements ( Aug '23 vs Sep '23)**

The above chart depicts the percentage change in average daily ATMs at six major Airports in Sep'23 as compared to the previous month (Aug'23).

Airports\Year	Avg. Daily ATMs (YoY) for six major airports				
	Sep'19	Sep'20	Sep'21	Sep'22	Sep'23
Bengaluru	617	321	412	570	636
Delhi	1330	647	951	1198	1251
Hyderabad	493	268	328	427	470
Kolkata	454	202	281	359	389
Mumbai	878	301	526	805	924
Chennai	471	168	260	362	401



Air Traffic Movement for each day in Sep'23 is plotted for Delhi, Mumbai, Bengaluru and Hyderabad Airport along with the percentage change w.r.t. Avg. Daily Movement for the same month.

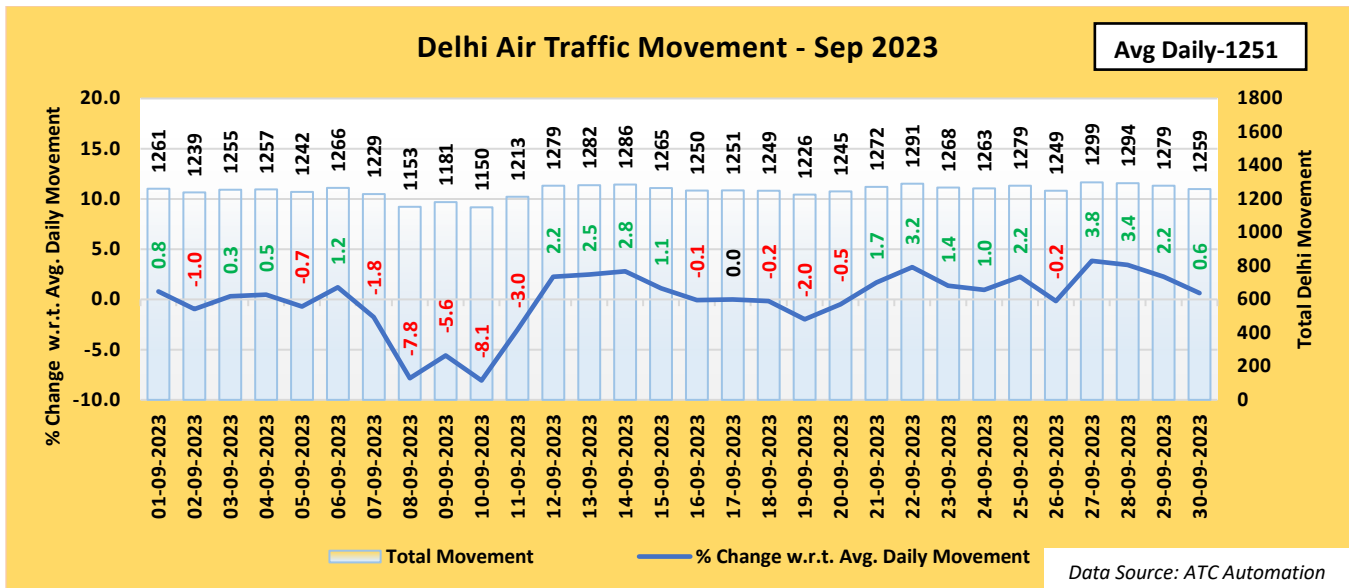


Figure 3: Air Traffic Movement for Delhi –Sep 2023

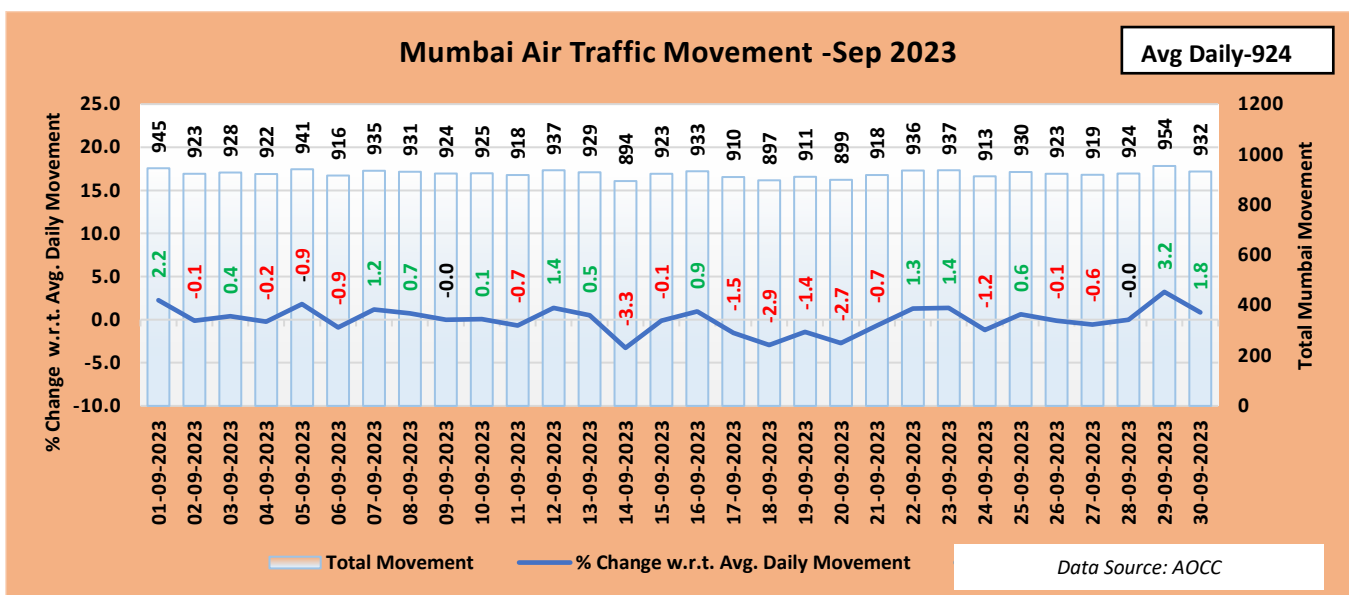


Figure 4: Air Traffic Movement for Mumbai - Sep 2023

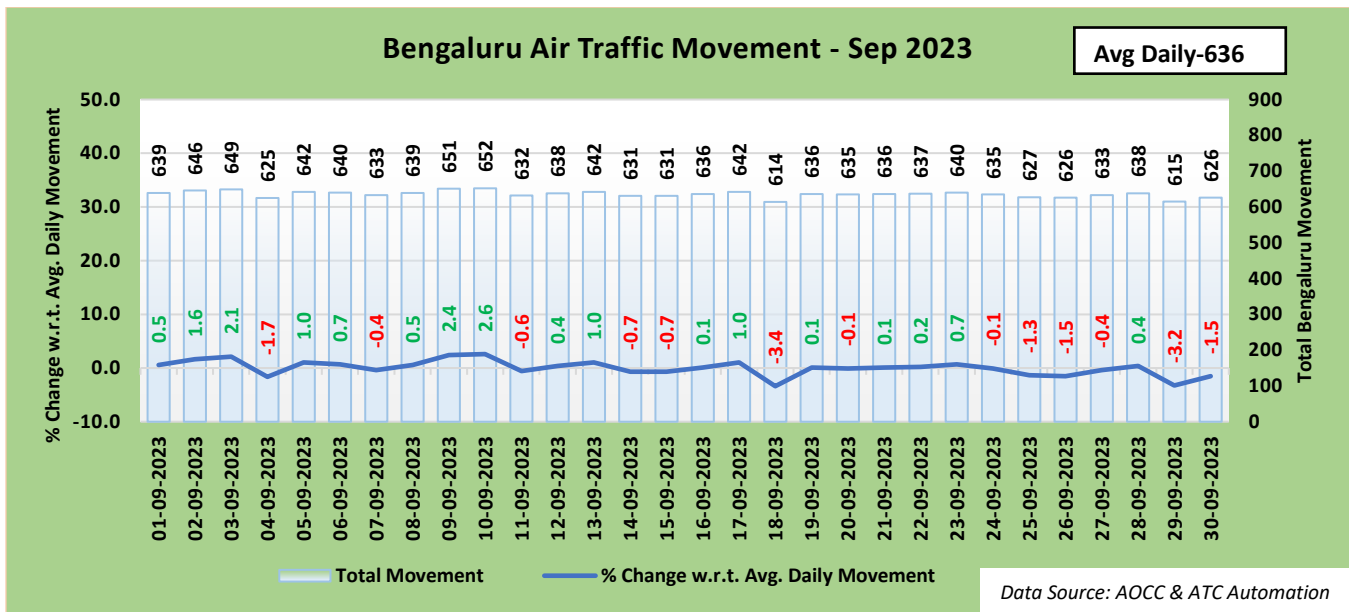


Figure 5: Air Traffic Movement for Bengaluru – Sep 2023

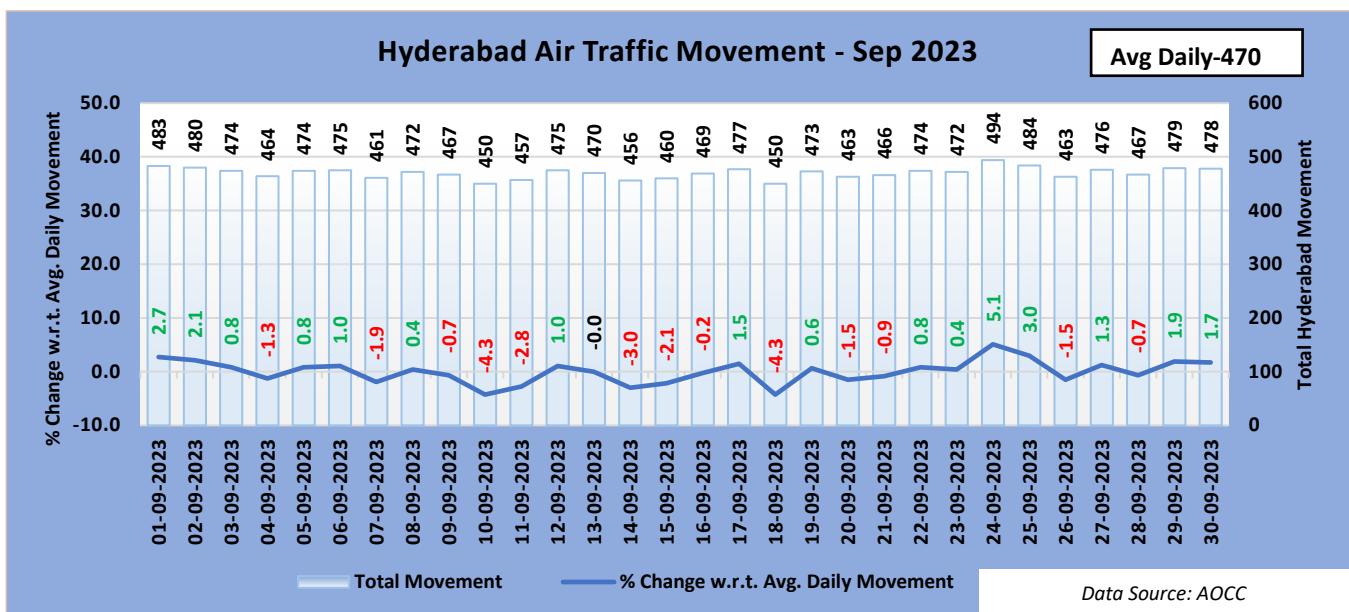


Figure 6: Air Traffic Movement for Hyderabad - Sep 2023

It can be concluded from the above charts that on 30<sup>th</sup> Sep 2023(month end), the ATM at Bengaluru saw a decline of 1.5% where as ATMs in Delhi, Mumbai and Hyderabad witnessed an increase of 0.6%, 1.8% and 1.7% respectively in comparison to the average daily movement for Sep'23.





## II. Comparison of total ATMs (YoY) and Monthwise

The total Air traffic movement(ATMs) including Passenger and other flights such as Cargo flights, International scheduled, International non-scheduled, Domestic scheduled, Domestic non-scheduled, Air taxi & commercial business flights at six major Indian Airports namely Delhi, Mumbai, Bengaluru, Hyderabad, Kolkata and Chennai is plotted for the month of September for two consecutive years 2022 and 2023 respectively. Air Traffic movement is also plotted Airline wise for the last six months for the major Scheduled Operators.

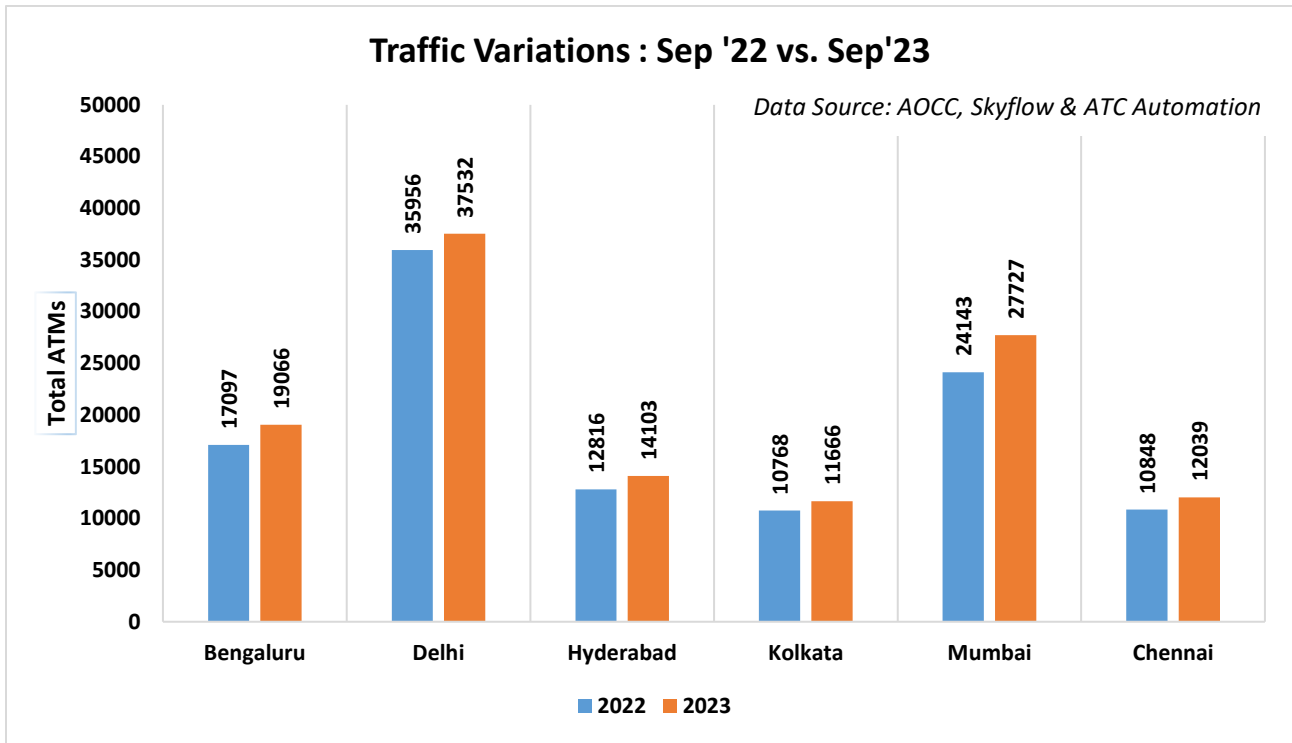


Figure 7: Traffic Variation (YoY)



### III. Flight Operations – Airlinewise

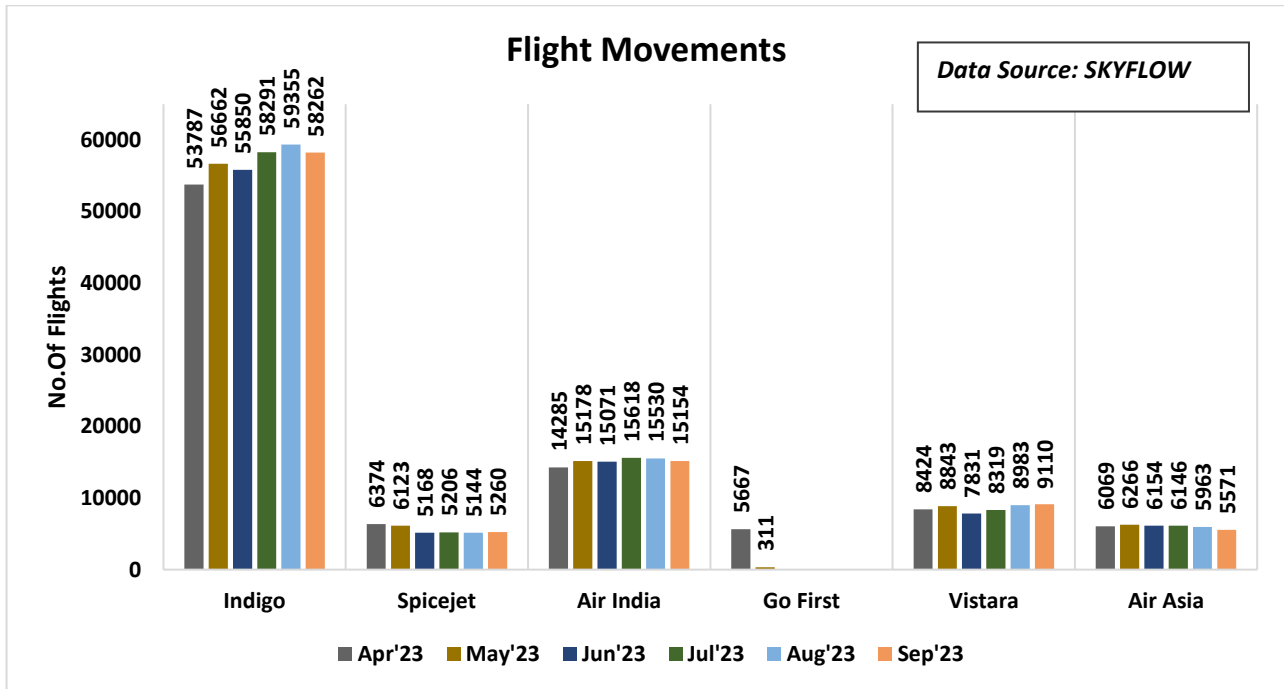


Figure 8: Flight Movements –Airlinewise

**Inference:**

1. Spicejet, Indigo, Air India and Vistara Airlines have recorded an increase in the monthly average Flight movement in Sep'23 as compared to August '23 while Air Asia Airline has recorded a decline during the same period. Go first Airline has stopped operations from 3<sup>rd</sup> May 2023.



## C. ATFM Post Operations – CDM Analysis

### I. Introduction

**Analysis Period** 1<sup>st</sup> – 30<sup>th</sup> September 23

**Back Ground** During the above mentioned period, **Fifty seven (57)** ATFM measures were applied for **Delhi Airport**, **Nine (09)** ATFM measures were applied for **Chennai Airport** and **Eight (08)** ATFM measures were applied for **Mumbai Airport** due to the following reasons as illustrated in the bar chart below:–

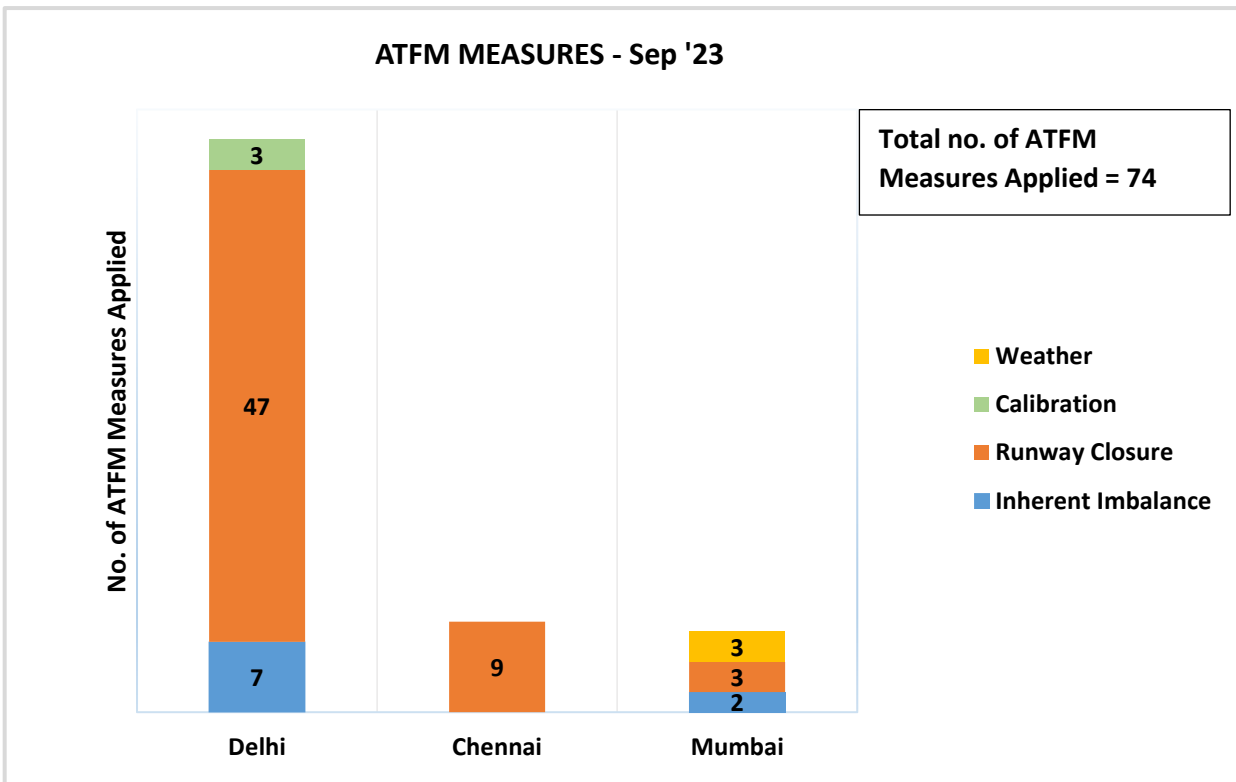


Figure 9: ATFM Measures –Sep '23



## II. ATFM Measures Overview

Constrained Airport	Delhi	Mumbai	Chennai
Number of ATFM measures applied	57	8	9
Average ATFM Ground delay(in min) due to measures*	23	19	19.8
Maximum ATFM Ground delay(in min) due to measures	91	63	42
% Compliance	81.3	82.3	87.8

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

Total Arrivals	5781
Total International Arrivals(exempted)	1095
Total affected flights in scenario (Domestic Arrivals)	4686
Total Domestic Arrivals with zero ATFM delay	512
Total Domestic Arrivals with ATFM delay	4174

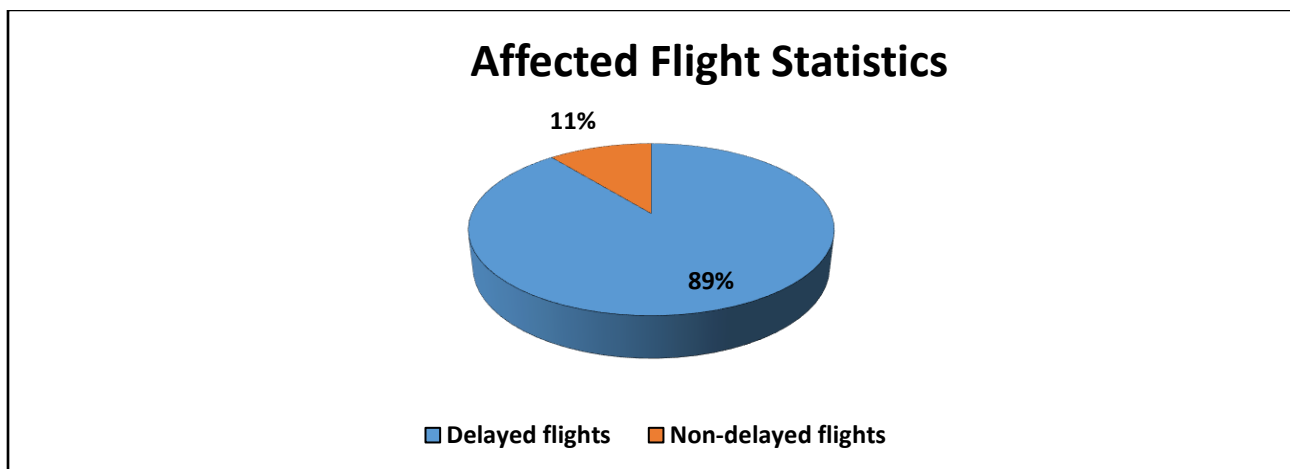


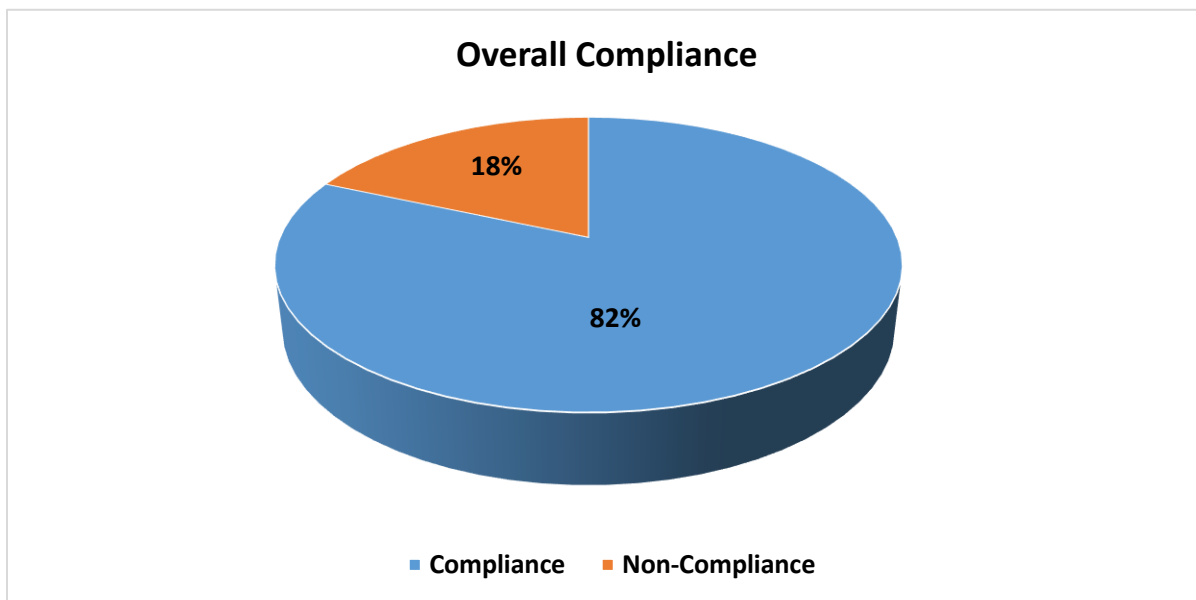
Figure 10: Affected Flight Statistics –Sep'23



### III. Overall Compliance

<b>Total arrivals</b>	5781
<b>Domestic arrivals</b>	4686
<b>Flights with complete data (ATOT)</b>	4558
<b>Flights with incomplete data</b>	36
<b>Flights Not Operated</b>	92
<b>Compliant*</b>	3718
<b>Non-Compliant</b>	840

\*Total No. of Revised CTOTs issued = 1087 (Compliance calculation for flights which were issued revised CTOT is w.r.t. new CTOT issued)



**Figure 11: Overall Compliance – Sep'23**

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

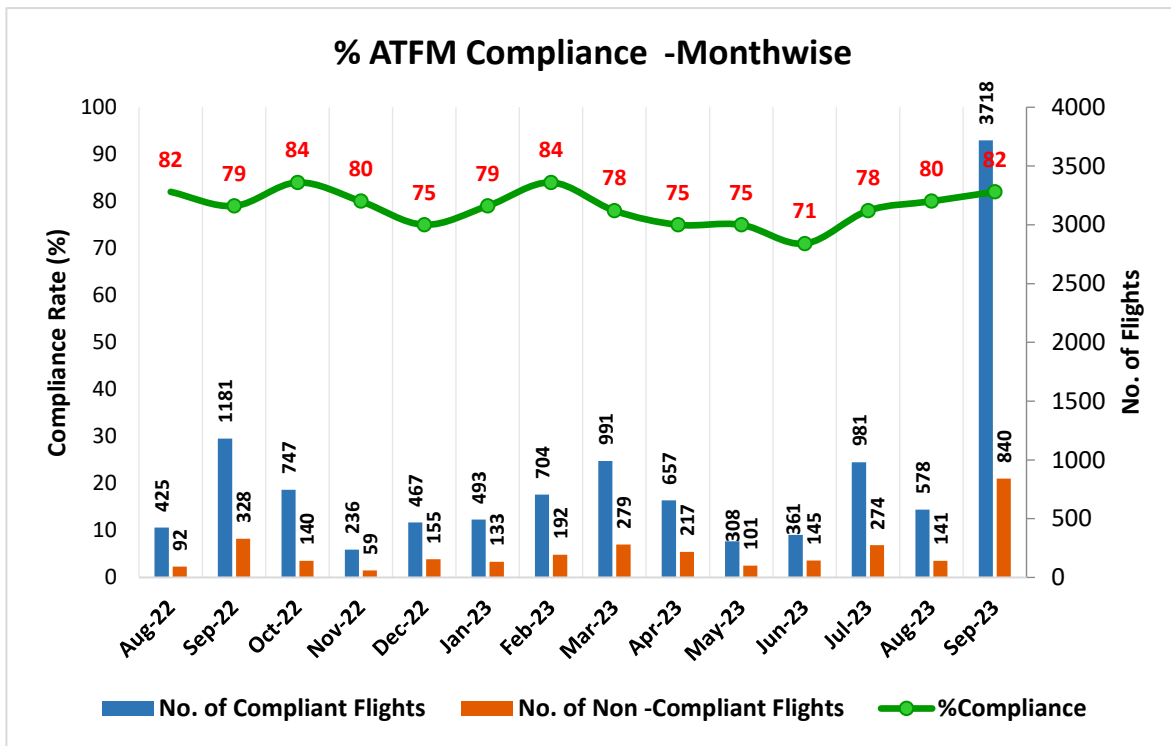


Figure 12: Compliance(Monthwise)

### Inference

1. Out of the total arrivals captured(5781 flights) during the CDM scenario for the constrained Airports, 81.1% of flights i.e. domestic arrivals(4686 flights) were candidates for ground delay(participating).
2. Out of these Domestic Arrivals, 89.1% (4174 flights) are assigned ATFM ground delay.
3. Out of the total arrivals captured(5781 flights) to the constrained Airport during the ATFM scenario, only 72.2% of flights(4174 flights) were assigned ATFM Ground Delay.



## IV. CTOT Compliance rate – Airportwise

<b>MUMBAI FIR (84%)*</b>	<b>Compliant</b>	<b>Non Compliant</b>	<b>% Compliant</b>
Ahmedabad	158	9	95%
Aurangabad	13	4	76%
Mumbai	359	74	83%
Bhuj	1	2	33%
Vadodara	26	10	72%
Bhopal	45	3	94%
Bhavnagar	0	2	0%
Diu	0	1	0%
Hirasar	21	8	72%
Indore	67	8	89%
Jabalpur	21	3	88%
Jamnagar	3	1	75%
Kandla	8	2	80%
Nagpur	42	9	82%
Pune	105	33	76%
Rajkot	4	0	100%
Shirdi	22	5	81%
Surat	34	6	85%
Udaipur	47	7	87%
<b>KOLKATA FIR (84%)*</b>	<b>Compliant</b>	<b>Non Compliant</b>	<b>% Compliant</b>
Prayagraj	9	2	82%
Agartala	13	1	93%
Siliguri	83	11	88%
Shillong	5	0	100%
Varanasi	54	14	79%
Bhubaneswar	70	12	85%
Kolkata	182	45	80%
Chakeri	10	8	56%
Durgapur	13	1	93%
Darbhanga	14	0	100%
Deoghar	6	0	100%
Gorakhpur	22	10	69%
Guwahati	119	23	84%



Gaya	13	1	93%
Imphal	8	1	89%
Jharsuguda	10	2	83%
Jagdalpur	1	0	100%
Kushinagar	3	0	100%
Khajuraho	8	4	67%
Aizawl	1	0	100%
Dibrugarh	20	4	83%
Dimapur	2	3	40%
Patna	119	11	92%
Pakyong	3	2	60%
Ranchi	61	17	78%
Raigarh	0	1	0%
Raipur	57	6	90%
Tezpur	0	1	0%
<b>DELHI FIR (70%)*</b>	<b>Compliant</b>	<b>Non Compliant</b>	<b>% Compliant</b>
Agra	4	4	50%
Amritsar	56	21	73%
Adampur	1	0	100%
Bikaner	0	2	0%
Bathinda	0	2	0%
Bareilly	0	3	0%
Chandigarh	68	28	71%
Dehradun	43	9	83%
Delhi	53	21	72%
Hindon	0	2	0%
Kangra	22	5	81%
Gwalior	7	6	54%
Halwara Air Force Station	2	1	67%
Jodhpur	36	6	86%
Jaipur	46	16	74%
Jaisalmer	0	1	0%
Jammu	61	15	80%
Ajmer	2	0	100%
Leh	42	29	59%
Lucknow	94	19	83%





Pathankot	0	1	0%
Pantnagar	10	2	83%
Shimla	3	4	43%
Srinagar	137	96	59%
Uttarlai Airforce Station	0	1	0%
<b>CHENNAI FIR (87%)*</b>	<b>Compliant</b>	<b>Non Compliant</b>	<b>% Compliant</b>
Hal Bangalore	4	2	67%
Bangalore	283	37	88%
Belgaum	1	0	100%
Bidar	1	1	50%
Vijayawada	15	3	83%
Coimbatore	48	4	92%
Kochi	96	10	91%
Calicut	10	2	83%
MOPA Goa	56	7	89%
Goa	107	39	73%
Hubli	13	3	81%
Hakimpet	1	1	50%
Hyderabad	202	23	90%
Begumpet Hyderabad	6	1	86%
Kannur	1	0	100%
Kurnool	6	1	86%
Madurai	24	2	92%
Mangalore	13	2	87%
Chennai	159	29	85%
Port Blair	13	3	81%
Salem	1	0	100%
Sindhudurg	1	0	100%
Tuticorin	9	0	100%
Tirupati	1	0	100%
Thiruvananthapuram	42	3	93%
Visakhapatnam	36	4	90%

\*FIR wise compliance rate

Note: The above list contains only those airports which had flights to the Constrained Airport and are affected by ATFM measures.

Airports with % compliance less than the average compliance(82%) for the month are highlighted in red.



### V. CTOT Compliance rate – Airline wise

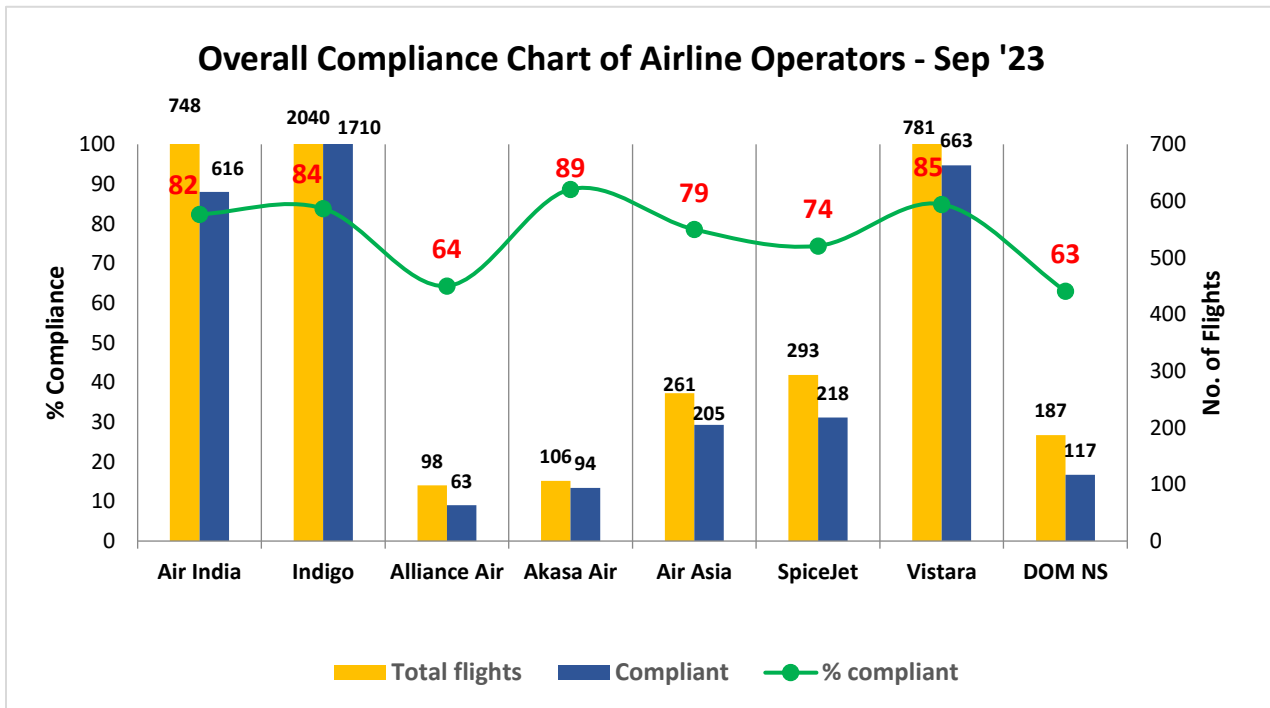


Figure 13: Airline wise Compliance –Sep’23

#### Inference

1. Out of the total domestic arrivals with complete data in the CDM scenario, 81.6% arrivals are compliant.
2. Chennai region has the highest compliance rate of 87% whereas Delhi region has the lowest compliance rate of 70%.
3. Indigo, Akasa Air, Vistara and Air India Airlines have a CTOT compliance higher than the average recorded compliance for the month of Sep '23.

## VI. Reason For Non Compliance

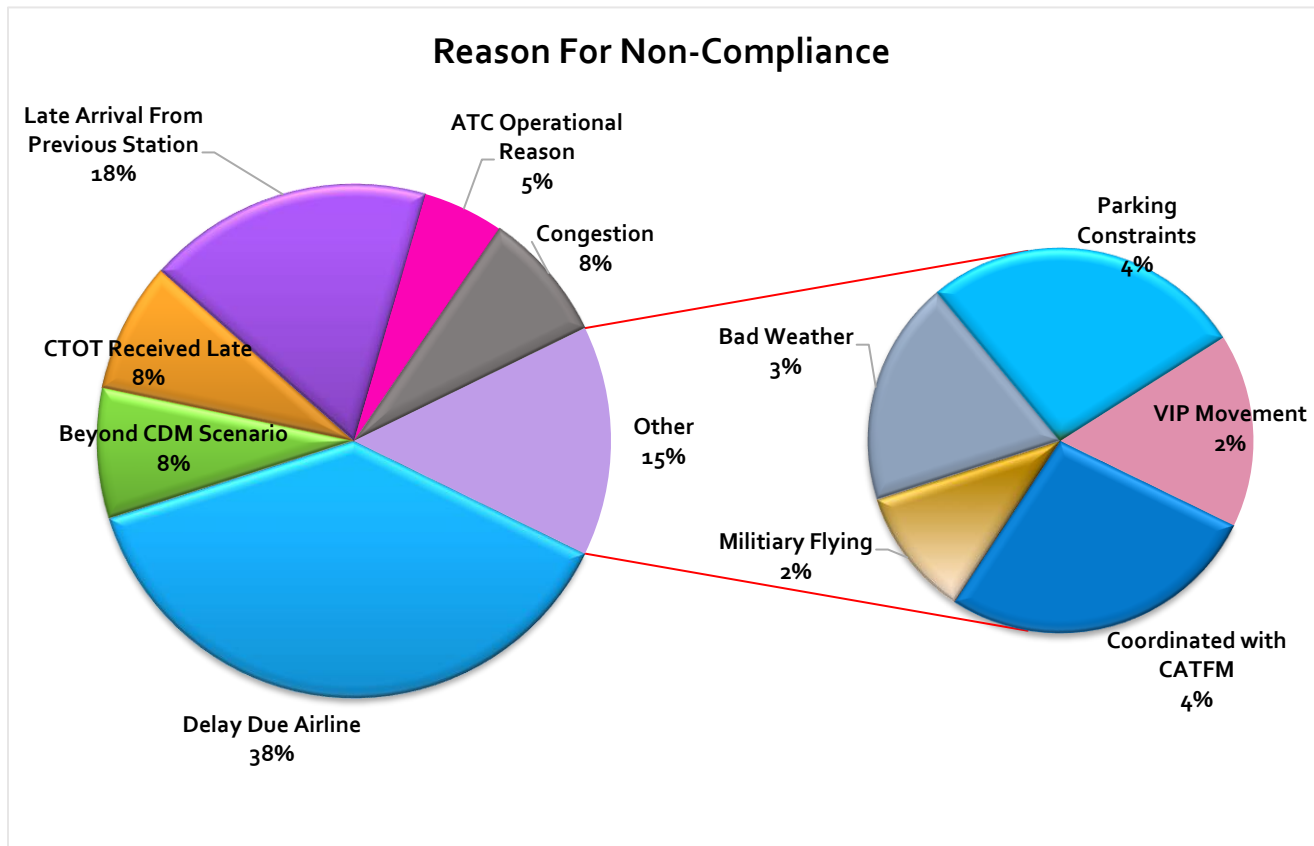


Figure 14: Reason for Non-Compliance as provided by FMPs

### Inference:

1. 38 % of CTOT Non- Compliance was reported by concerned FMPs to be due to delay by Airlines.
2. 18 % of the CTOT Non- compliance was reported to be due to late arrival from previous station. Updated EOBTs of such flights was not available to ATFM unit leading to wastage of unused slots.
3. 8 % of flights captured during the ATFM measures did not operate during the scheduled flight plan timings resulting in under utilization of the constrained Airport.
4. 8 % of the CTOT Non- compliance was reported by concerned FMPs to be due to late receipt of CTOTs and by the time the aircraft had already initiated pushed back or startup.



## VII. Air Delay during the CDM Scenario period

Average Air Delay to domestic arrivals\* within the CDM Scenario period for Delhi, Mumbai and Chennai was 15.0, 12.0 and 12.6 minutes respectively.

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

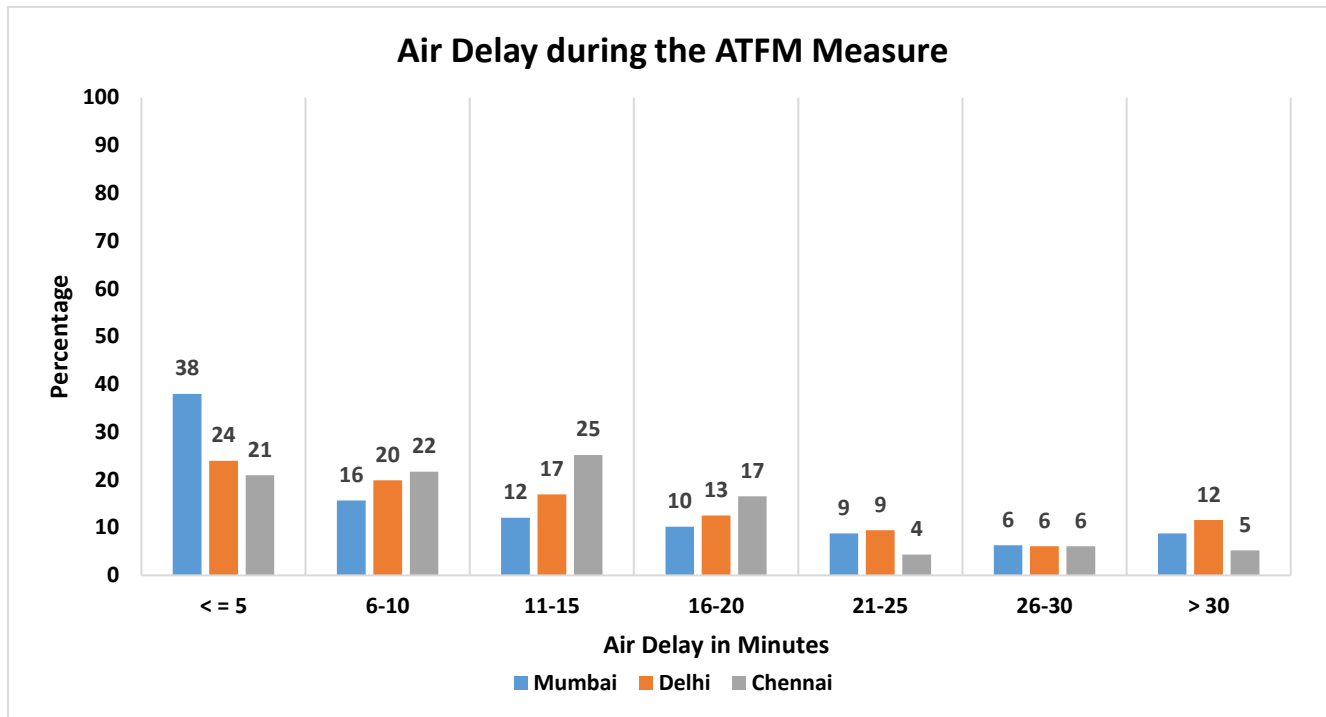


Figure 15: Air Delay distribution during the CDM period

### Inference

1. 54% of domestic arriving flights to Mumbai had an Air delay of equal to or less than 10 minutes during the CDM period.
2. 44% of domestic arriving flights to Delhi had an Air delay of equal to or less than 10 minutes during the CDM period.
3. 43% of domestic arriving flights to Chennai had an Air delay of equal to or less than 10 minutes during the CDM period.



## Tangible Benefits due to ATFM Measures

A modest attempt is made to find out the tangible benefit of ATFM measures applied.

### Assumptions:

- When ATFM measures are not in force, all flights take off at their ETOT where Estimated take off time(ETOT)= Estimated off block time(EOBT) + default taxi time
- All flights have an Estimated elapsed time(EET) as calculated by SKYFLOW using the Flight Plan information and Basic Aircraft data.

### Methodology:

**Air delay (with ATFM measures in force)** is calculated during the period when ATFM measures are in force by summing the air delay for all the flights landing at constrained Airport.

i.e. **Total Air Delay =  $\sum$  (Actual Flying time – SKYFLOW calculated EET)**

Air delay (with no ATFM measures) is calculated as the sum of Air delay for all the flights during the above said period with no ATFM measures in place and the air delay for each flight is the difference in its ideal landing time and its ideal estimated landing time.

**Total Air Delay (with no ATFM measures) =  $\sum$  (Ideal LDT - Ideal ELDT)**

\*Ideal LDT is taken by assuming every flight is landing at a specified interval based on the Arrival acceptance rate(AAR) defined,

\*Ideal ELDT = ETOT + SKYFLOW calculated Flying time

### Fuel Saving Calculation :

Great Circle Distance(GCD)\* was calculated for all the arrivals during the ATFM Measure from the point of origin to destination. Assuming Airbus 320 as reference aircraft for flights (flight distance equal to or less than 3000 nm) and B777 for international flights (flight distance more than 3000nm):

Fuel consumption (Kgs / nm) for each affected flight in the scenario was then calculated using the Reference document: ICAO Carbon emissions calculator methodology, version10, Appendix C: ICAO Fuel Consumption Table.

The Fuel consumed per minute(Kg/min) was calculated for each affected flight.



Total Air Delay(with ATFM Measures)= 58946 mins

Total Air Delay (with no ATFM measures) = 103565 mins

Reduction in Air delay due to ATFM measures= (103565-58946) = **44619 mins**

#### **Fuel Saving Calculation:**

Total Fuel saved during the ATFM Measure: **25,94,657.66 Kg**

**Total reduction in CO<sub>2</sub> emission : 3.16(KgCO<sub>2</sub>/kg fuel)\* 25,94,657.66 Kg = 81,99,118.21Kg**

*\*GCD (Great Circle Distance): The distance between origin and destination airports is derived from latitude and longitude coordinates originally obtained from ICAO Location Indicators database.*

*3.16 = constant representing the number of tonnes of CO<sub>2</sub> produced by burning a tonne of aviation fuel.*



## D. Glossary

<b>ATFM Parameters</b>	<b>Definition</b>
<i>Affected Flight statistics</i>	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.
ATFM Ground delay	ATFM ground delay defined as CTOT-ETOT (Calculated take off time – Estimated take off time)
<i>Average ATFM delay</i>	<b><i><math display="block">\frac{\text{Total monthly ATFM delay (in minutes)}}{\text{Total Domestic Arrivals}}</math></i></b>
<i>Maximum ATFM delay</i>	Maximum ATFM delay (in minutes) assigned in the month
<i>Overall compliance rate</i>	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
<i>CTOT Compliance rate of Airline operators</i>	An overview of CTOT compliance rate of various Airline operators
<i>CTOT Compliance rate of Airports within different Regions</i>	An overview of CTOT compliance rate of Airports within 4 FIRs
Air delay statistics	<p>Air delay defined as difference between AET &amp; 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). <b>Therefore, Air delay = AET-EET</b></p> <p>Average Air Delay is calculated as:</p> <p><b><i>Average Air Delay</i></b>  <b><i><math display="block">= \frac{\text{Total Air Delay to domestic arrivals (with values greater than zero)}}{\text{Total Domestic Arrivals}}</math></i></b></p> <p><i>CLDT: Calculated Landing Time</i>  <i>CTOT: Calculated Take off Time</i>  <i>ALDT: Actual Landing Time</i>  <i>ATOT: Actual Take off Time</i></p>



## Annexure-A

Compliance by Airlines with Flight Planning Requirements of Common Business rules(CBR)- September 2023





**I. Introduction:**

Accurate and timely input in respect of flight intent is paramount to the correct traffic demand projection and eventually effective ATFM implementation. FPLs remain the main source of tactical demand prediction for ATFM systems. Early filing of error free FPL helps in improving the lead time required for ATFM measures and reduces the number of unexpected flights(pop-up). This in turn helps in improving the accuracy of demand-capacity imbalance prediction and optimizes slot utilization.

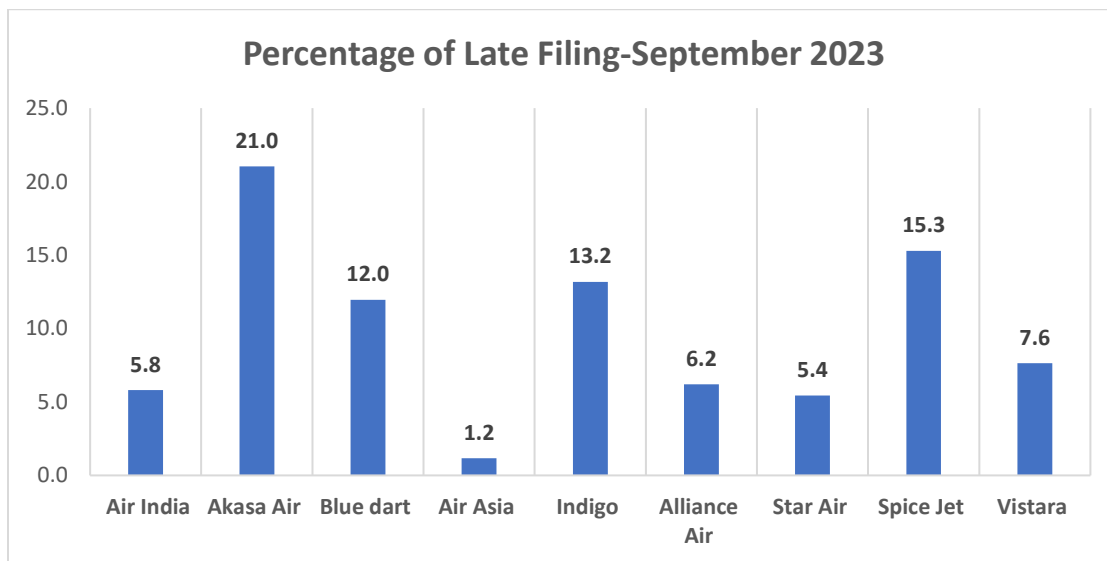
AIP India, ENR 1.9 section 4 on Flight Planning in the context of ATFM recommends Flight Planning requirements for all Airline Operators –

- “a) Flight plans shall be submitted at least 3 hours before the estimated off block time (EOBT);
- b) The window for filing FPL is between 3 Hours and 120 Hours (Five days) before the EOBT. Earlier filing of FPL will give a realistic demand data to the CCC and hence the requirement of ATFM measures can be identified early for better planning. Late filing of a flight plan will lead to inaccuracies in predicting the demand and may lead to undesirable delay;”

**II. Analysis**

- A. An analysis has been conducted to find out the difference between the flight plan filing time and filed EOBT for all the FPLs received at ATFM system from 1<sup>st</sup> September 2023 to 30<sup>th</sup> September 2023. The purpose of the analysis is to monitor the compliance with provisions of AIP India, section 4, ENR 1.9 regarding Flight Planning requirements in the context of ATFM.

This flight plan filing requirement has been reiterated through the recently agreed ATFM common business rules (CBR) document and is recognized as a metrics to be monitored regularly for any improvement.





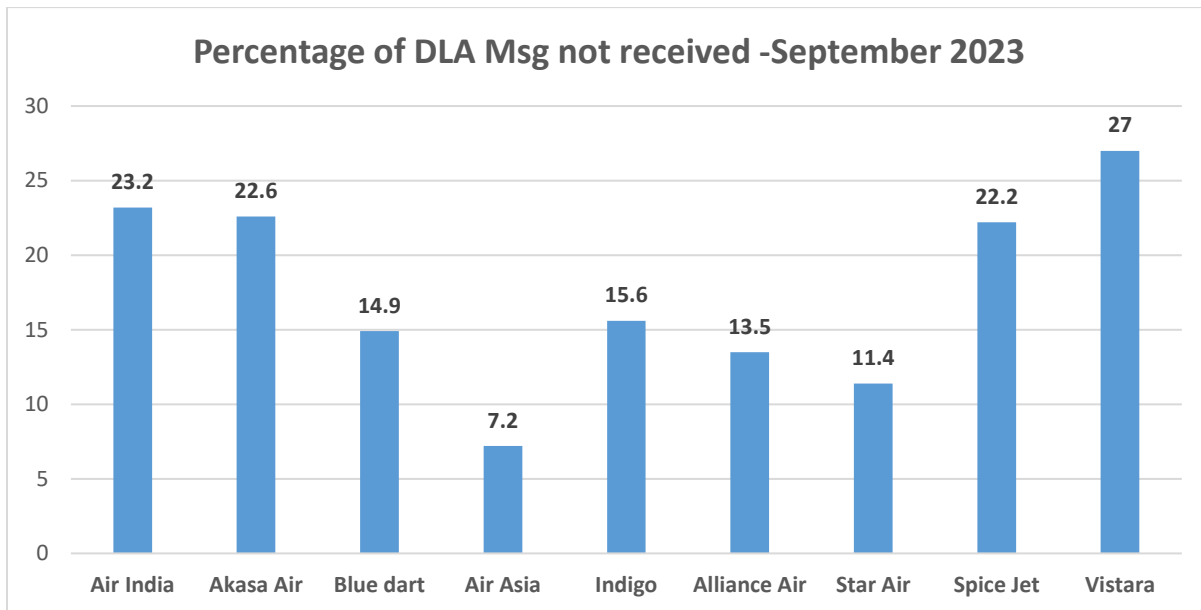
The table below lists number of filed flight plans (FPLs) with less than 3 Hours prior to EOBT:

Name of Airline	Late Filed FPL	Total No. Of FPL	% Delayed Filing
Air India	764	13142	5.8
Akasa Air	683	3246	21
Blue dart	64	535	11.9
Air Asia	67	5767	1.1
Indigo	7757	58824	13.1
Alliance Air	191	3083	6.1
Star Air	40	734	5.4
Spice Jet	860	5621	15.2
Vistara	688	9011	7.6
<b>Total no. of FPLs for Scheduled Airlines</b>	<b>11114</b>	<b>99963</b>	<b>11.1</b>

- B. For the analysis of non-receipt of DLA (Delay) messages for flight plans filed, the EOBT of FPL received has been compared with Actual Take off time (ATOT) received through DEP (Departure) messages. Thus, only those FPLs were considered for analysis for which DEP messages were available and no associated DLA messages were received.

The Table below lists number of flights for which no DLA message was received in July 2023. **{{EOBT of original FPL} - (ATOT received)} > 30 minutes**

Name of Airline	DLA Message not received	Total No. of flights considered for analysis	% of flights for which no DLA message was received
Air India	2228	9600	23.2
Akasa Air	559	2464	22.6
Blue dart	72	483	14.9
Air Asia	314	4323	7.2
Indigo	7396	47151	15.6
Alliance Air	268	1971	13.5
Star Air	40	348	11.4
Spice Jet	765	3440	22.2
Vistara	1964	7283	27.0



- C. For analysis of non-receipt of CNL (cancel) messages for September 2023, annulled FPLs were considered for which no CNL/DEP/DLA messages were received. A FPL gets annulled in SKYFLOW system, if it doesn't get activated through Dep message /surveillance data/ manual activation by FMP within a defined system parameter.
- D. The table below lists the number of Flights for which no CNL Msg. was received in September 2023:

Name of Airline	CNL message not received	No. of flights annulled
Air India	33	78
Akasa Air	4	11
Blue dart	1	3
Air Asia	14	20
Indigo	147	256
Alliance Air	132	152
Star Air	9	14
Spice Jet	78	112
Vistara	9	15



## Annexure- B

### CASE STUDY

#### G-20 Summit (2023)

##### **I. Introduction:**

In this case study, the coordination and management in Delhi during the G20 Summit 2023 is discussed. During the event, special procedures were implemented to manage the civil air traffic amidst a large contingent of VIP movements, ensuring the safety and security of Heads-of-States in attendance. Details on the airspace structure, the ATM procedure, and most importantly the coordination among stakeholders for a smooth operation are given in this case study.

##### **II. Background:**

Leaders met in New Delhi, India, for the 18th summit of the G20, the intergovernmental forum for international economic cooperation of the world's major economies. The 2-day meeting (9 to 10 September 2023) hosted by the Indian G20 presidency took place at a time of increasing political and economic rivalry, in which the world's leading and emerging economies are shaping new alliances around the globe. The Group of Twenty (G20) comprises 19 countries (Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Türkiye, United Kingdom and United States) and the European Union. The G20 members represent around 85% of the global GDP, over 75% of the global trade, and about two-thirds of the world population.

##### **III. Planning Considerations**

Due to various VVIP flights movements to/from Delhi Airport during the period from 5<sup>th</sup> Sep'23 to 11<sup>th</sup> Sep'23. Airspace restriction was imposed through NOTAMs A1763/23A02, A1763/23B02, A1764/23, A1765/23, A1766/23.

(A1763/23A02 NOTAMN

Q) VIDF/QRACA/IV/NBO/W/000/999/2834N07707E165

A) VIDF B) 2309090300 C) 2309101100

D) **09 0300-0530 1100-1330, 10 0130-0530 0700-1100**

E) 1. IN CONNECTION WITH G20 SUMMIT 2023, NO FLT PERMITTED TO

TKOF/LAND, AT INDIRA GANDHI INTERNATIONAL AIRPORT (VIDP), DELHI AND SUBSIDIARY AIRPORTS WI A RADIUS OF 300KM AROUND DELHI (WI DELHI FIR), EXCEPT THE FLW FLIGHTS :

A. SKED FLIGHTS BY THE SKED FLT OPERATORS.



B. SPECIAL FLIGHTS OF G20 DIGNITARIES AND THEIR ASSOCIATED FLIGHTS,  
WHOSE FLIGHT PLANS/PATHS HAVE BEEN SHARED/APPROVED IN ADVANCE WITH  
ATC.

C. IAF, BSF AND AVIATION RESEARCH CENTRE (ARC) FLIGHTS.

D. ARMY AVIATION HELICOPTERS UNDERTAKING AIRBORNE QRT MISSIONS AND CASUALTY/IMMEDIATE MEDICAL  
EVACUATION.

E. STATE OWNED ACFT /HELICOPTER FLYING THE GOVERNOR  
OR THE CHIEF MINISTER OF A STATE.

2. SKED FLIGHTS BY SKED OPERATORS ON ATS ROUTES ARE PERMITTED TO OVERFLY A ZONE OF 300KM RADIUS AROUND IGI  
AIRPORT (DELHI) ABOVE F290. IN ADDITION, FLIGHTS INTENDING TO TAKE OFF OR LAND FM/AT A SUBSIDIARY AIRFIELD  
LOCATED BEYOND 300KM FM DELHI WHILE CLIMBING SHALL ATTAIN F290 BY 200KM TO DELHI AND WHILE DESCENDING  
SHALL COMMENCE DESCEND FM F290 AT A DISTANCE OF 200KM OR MORE FM DELHI.

3. SAFDARJUNG AIRPORT(VIDD) SHALL REMAIN CLSD EXCEPT FOR THE IAF HELICOPTERS, WHICH MAY BE DEPLOYED ON  
EMERGENCY DUTY OR VVIP DUTY AND BSF/IAF HELICOPTERS UTILIZED BY NSG PROVIDING IMMEDIATE BACK UP  
SUPPORT.

4. ROHINI HELIPORT (2845N07703E) SHALL REMAIN CLSD.

5. APART FROM THE FLIGHTS MENTIONED IN PARA (1) ABOVE, ANY OTHER FLIGHT WOULD REQUIRE PRIOR CLEARANCE  
FROM MINISTRY OF HOME AFFAIRS(MHA) IN THE AREA AND PERIOD MENTIONED ABOVE. FOLLOWING WILL BE THE NODAL  
OFFICER OF )

**(A1763/23B02 NOTAMN**

Q) VIDF/QRACA/IV/NBO/W/000/999/2834N07707E165

A) VIDF B) 2309090300 C) 2309101100

D) 09 0300-0530 1100-1330, 10 0130-0530 0700-1100

E) MHA FOR IMMEDIATE CONTACT/CLEARANCE OF THE FLIGHT:-

SHRI RAJIV SHARMA, DEPUTY SECRETARY (VS), MHA, CONTACT NOS:-

011-23075313/23075315 (TEL), 011-23075311/12 (FAX), 9999383812(M).

F) GND G) UNL)

**(A1764/23 NOTAMN**

Q) VIDF/QRACA/IV/NBO/W/000/999/2834N07707E165

A) VIDF B) 2309070030 C) 2309111530



E) DUE G20 SUMMIT 2023, OPS OF LIGHT/MICRO-LIGHT ACFT, UAV AND SIMILAR LONG RANGE AERIAL VEHICLES , THEIR FLIGHTS FM FLYING CLUBS AND OTHER AIRPORTS ARE NOT PERMITTED WI 300KM ZONE AROUND DELHI. STATE OWNED LIGHT ACFT FLYING THE GOVERNOR OR THE CHIEF MINISTER OF A STATE ARE EXEMPTED FM THE RESTRICTIONS.

F) GND G) UNL)

**(A1765/23 NOTAMN**

Q) VIDF/QRACA/IV/NBO/W/000/999/2834N07707E055

A) VIDF B) 2309070030 C) 2309111530

E) DUE G20 SUMMIT 2023, OPS OF HANG-GLIDERS, PARA-GLIDERS, PARA- MOTORS, AERO- MODELS, ALL TYPES OF DRONES AND SIMILAR SHORT RANGE AERIAL VEHICLES NOT PERMITTED WI 100KM AROUND DELHI.

F) GND G) UNL)

**(A1766/23 NOTAMN**

Q) VIDF/QRACA/IV/NBO/W/000/999/2838N07715E005

A) VIDF B) 2309090300 C) 2309101100

D) 09 0300-0530 1100-1330, 10 0130-0530 0700-1100

E) DUE G20 SUMMIT 2023, OPS OF FLYING OBJECTS LIKE AIRBORNE VIDEO CAMERAS/DRONE CAMERAS OR FLYING DRONES ARE NOT PERMITTED WI A RADIUS OF 5KM AROUND PRAGATI MAIDAN (283739N0771436E).

F) GND G) UNL)



#### IV. Highlights:

- i. Coordination meeting was initiated with Delhi ATC to agree on the course of action w.r.t handling of increased traffic due to the summit and VVIP movements. Both teams agreed to nominate nodal points of contact for effective coordination and an arrival rate based on the wind direction and runway in use.
- ii. DIAL slot allocation team and AOCC promptly shared the approved schedule with cancellations for the said period.
- iii. Met predictions pointed to easterly mode of operations which is usually accompanied with weather phenomena.
- iv. The list of cancellations received from Airlines during 8th Sep'23 to 11th Sep'23 was updated in the existing RPL edition by the Flight Plan management team. However, shift officers were advised to consult the daily flight schedule from DIAL AOCC for any RPL inconsistency observed during the period.
- v. On request of C-ATFM unit, the IGI AMSS team had ensured a copy of all ATS messages addressed to VIDPZTX to VIDPCTFM. Under the circumstances, CCC would receive all FPLs and associated ATS messages for arrivals and departures to/from Delhi Airport.
- vi. The list of NOTAMs was already shared with the shift supervisor. All CCC officers were advised to be abreast with the latest NOTAMs.
- vii. A spreadsheet of times and events was developed to manage arriving VIP flights. This was developed by the Delhi ATC and included the following information: Whether VVIP was arriving through a special aircraft, Aircraft type, VVIP status, Allotted Arrival time, Handling part of the Airport, Receptorium, Parking slot/bay etc. A similar spreadsheet was also developed to manage the coordination of departing VIP flights.
- viii. The list of VVIP arrivals and VVIP departures was shared with CCC officers. Any subsequent change received was also shared in due course. All CCC officers were advised to keep the list handy for ready reference. Maximum three VVIP arrivals were initially planned per hour and that too in different quarters of an hour.
- ix. The WSOs were advised to inform all FMPs, satellite FMPs and Airlines ,preferably through teleconferencing, about the upcoming event and the need of their pro-active participation in any ATFM measures planned,



- x. CCC operations team also wrote a mail to this effect to all Flow Management positions(FMPs) and domestic airlines.
- xi. ATFM daily plan (ADP) published on included the G-20 restrictions as promulgated in the NOTAMs.
- xii. Runway 27/09 was not be available for landing and take -off during the VVIP reception in Technical Area.
- xiii. It was agreed with Delhi ATC that a VVIP arrival was likely to consume 4 domestic slots. An ATFM measure planned for a VVIP arrival should keep this in mind.
- xiv. Departure of VVIP flights was updated in the SKYFLOW system through either 'DEP' message or manually through information available on web based applications. This ensured updated demand prediction in the SKYFLOW system
- xv. Domestic Airlines were advised to keep their flight intent updated through timely generation of appropriate ATS messages in case of delay, cancel or change.
- xvi. All FMPs were be advised to comply with the issued CTOT for effective ATFM. Any non-compliance was to be immediately taken up with the concerned ATC station seeking a reason for Non-compliance.

## **V. Actual Operations**

- i. Airline representative from Indigo and Air India were present in CCC operational floor to facilitate swift coordination.
- ii. Real time coordination was maintained with Delhi ATC. All updated information received were exchanged between the units.
- iii. During few hours of the day, there was bunching of five VVIP movements resulting in huge ground delays to domestic scheduled operators.
- iv. Few Non-Scheduled flights did not comply with the issued CTOT resulting in Air delay on 8<sup>th</sup> Sep'23.



**VI. ATFM Overview:**

The data for the period during which ATFM measures were applied in Delhi on 8<sup>th</sup> and 9<sup>th</sup> Sep'23 is considered for analysis

<b>Constrained Airport-Delhi</b>	<b>8<sup>th</sup> Sep'23</b>	<b>9<sup>th</sup> Sep'23</b>
<b>Number of ATFM measures applied</b>	2	1
<b>Duration of ATFM measure</b>	3 hours each	3 hours
<b>Number of domestic flights delayed</b>	144	75
<b>Average ATFM Ground delay(in min) due to measures</b>	29	14
<b>Maximum ATFM Ground delay(in min) due to measures</b>	73	25
<b>% Compliance</b>	88	87
<b>Average Air Delay (in min)</b>	14	16
<b>Fuel Saving (in Kg)</b>	147366	38739.4
<b>Reduction in CO<sub>2</sub> emission(in Kg)</b>	465676.6	122416.5

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