

पोस्ट ऑपरेशन विश्लेषण रिपोर्ट

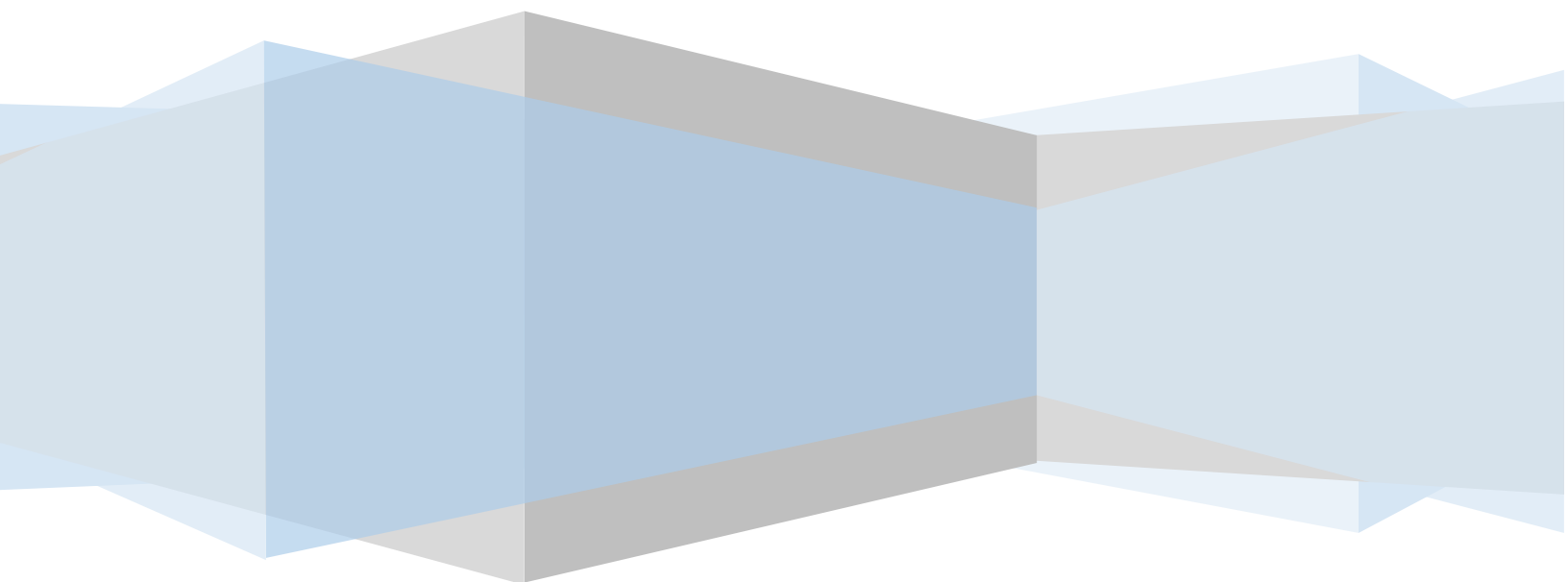
जुलाई, 2026

सेंट्रल कमांड सेंटर, सी ए टी एफ एम, दिल्ली

POST OPERATIONS ANALYSIS REPORT

July, 2026

CENTRAL COMMAND CENTER, C-ATFM, DELHI





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A. कार्यकारी सारांश / Executive Summary

Indian FIR recorded a decrease in the total air traffic by 6.5% in July 2026 as compared to June 2026. Average Domestic air traffic (31 days) has recorded a decrease of 13.1% whereas the average international air traffic has increased by 0.64% in the month of July 2026 as compared to June 2026. The overflying traffic increased by 9.9% in the month of July 2026 as compared to June 2026.

On average, the Indian Airports in the ATFM area saw 4289 IFR flights per day in the month of July 2026. The peak day was on 17th July 2026 (4494 IFR flights). Fridays were the busiest days throughout this month with an average of 4417 IFR flights per day.

Total Five (05) ATFM measures were applied this month during periods of congestion at Delhi, Mumbai, Bengaluru and Shamshabad Airport. In addition, Thirteen(13) ATFM measures through Cherry Picking were applied at Delhi, Mumbai and Chennai.

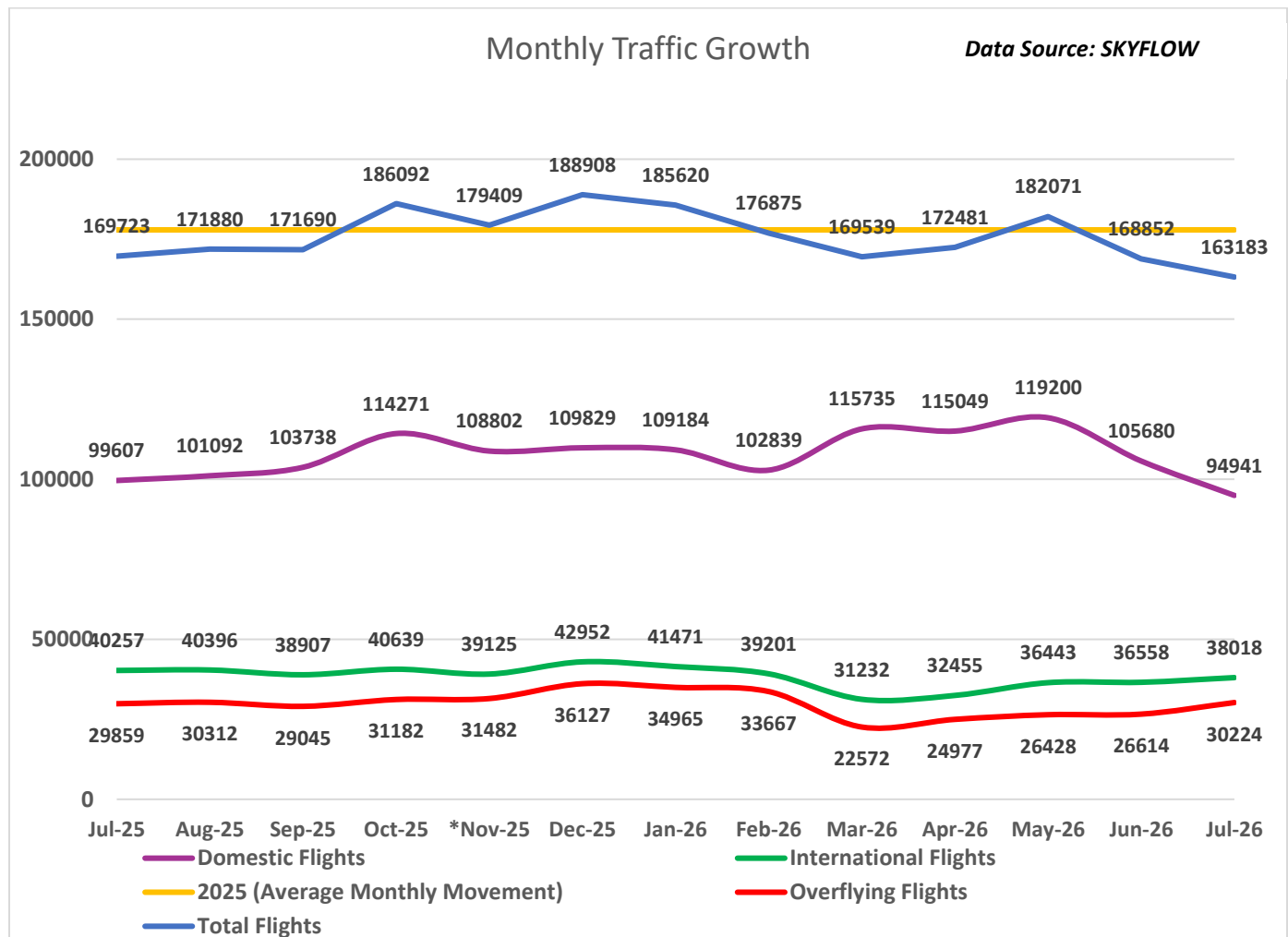


Figure 1: Monthly Traffic Growth

The graph above depicts the Domestic, International and Overflying Air traffic in Indian ATFM Area during the last 13 months (July '25 to July '26).

B. यातायात विश्लेषण/Traffic Analysis

I. भारत के प्रमुख हवाई अड्डों पर हवाई यातायात गतिविधि/ Air Traffic Movement at Major Airports in India

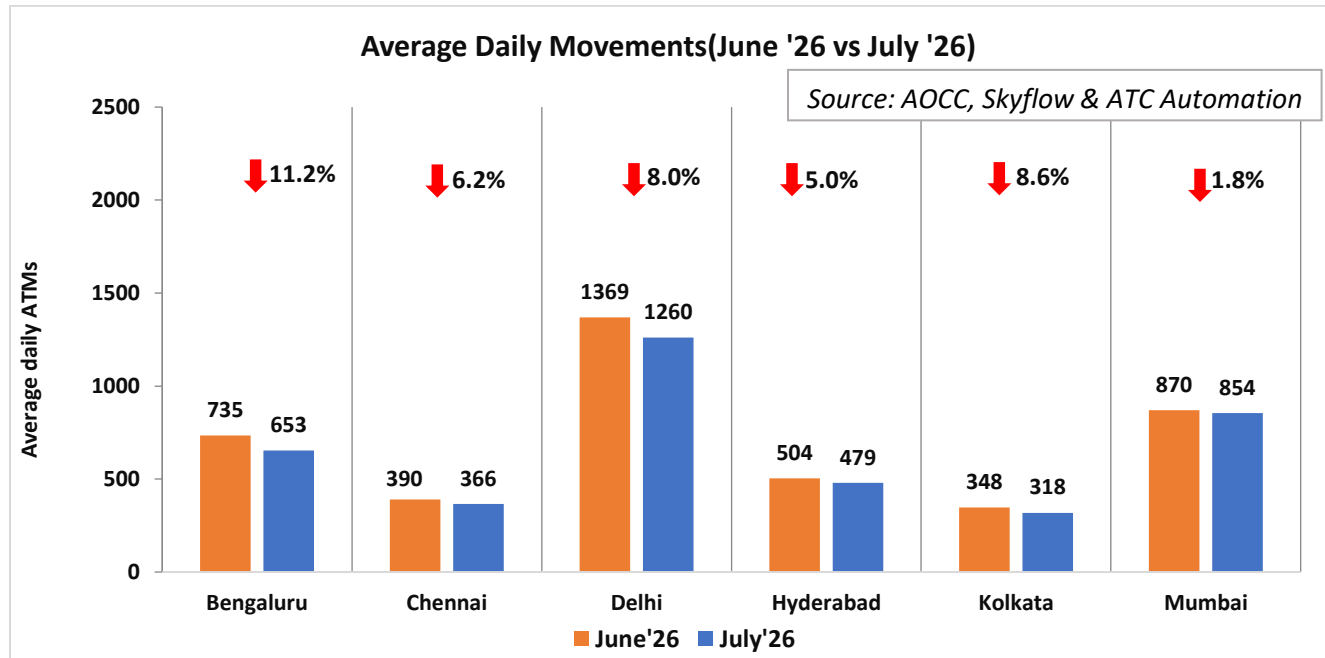


Figure 2: Average Daily Movements (June '26 vs July '26)

The above chart depicts the percentage change in average daily ATMs at six major Airports in July 2026 as compared to the previous month June 2026.

Airports\Year	Avg. Daily ATMs (YoY) for six major airports				
	July'22	July'23	July'24	July'25	July '26
Bengaluru	525	636	694	714	653
Chennai	353	383	403	423	366
Delhi	1171	1231	1315	1219	1260
Hyderabad	405	451	511	555	479
Kolkata	356	376	391	363	318
Mumbai	712	886	928	907	854



Air Traffic Movement for each day in July 2026 is plotted for Delhi, Mumbai, Bengaluru and Hyderabad Airport along with the percentage change w.r.t. Avg. Daily Movements for the same month.

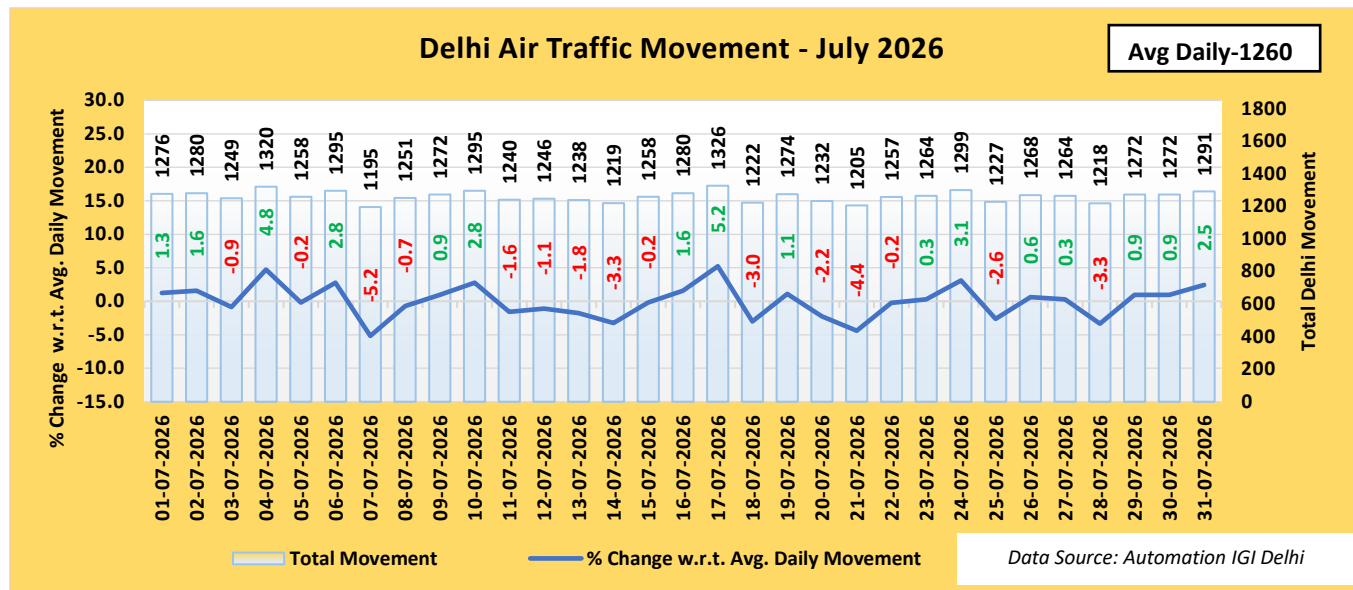


Figure 3: Air Traffic Movement for Delhi – July '26

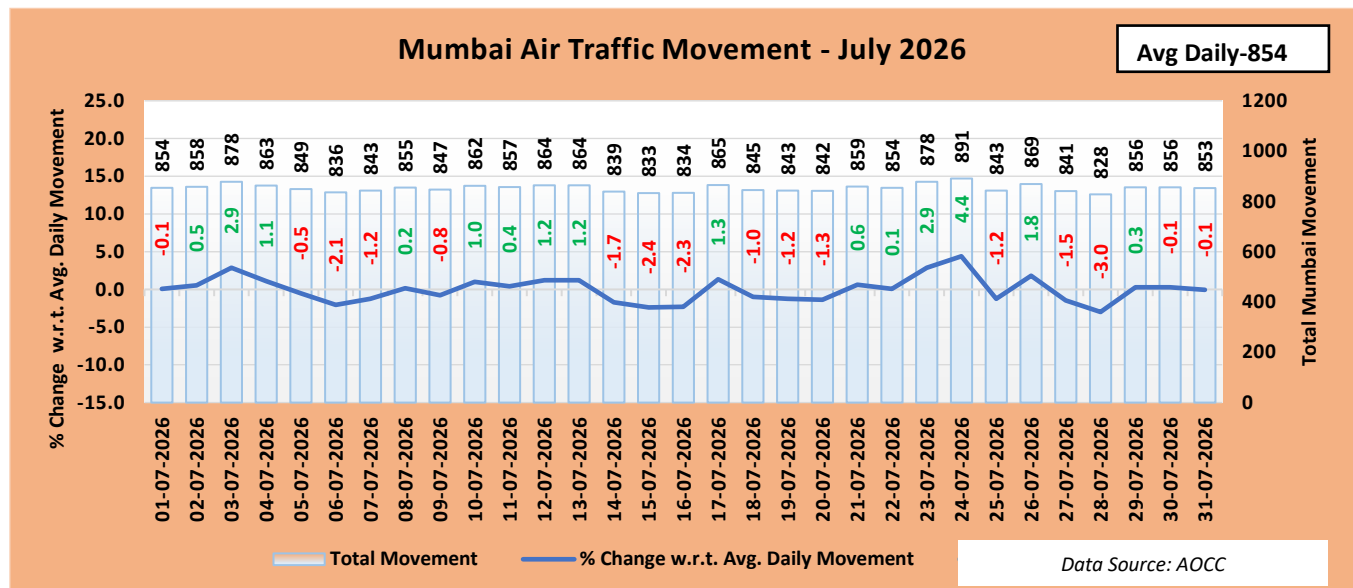


Figure 4: Air Traffic Movement for Mumbai – July '26

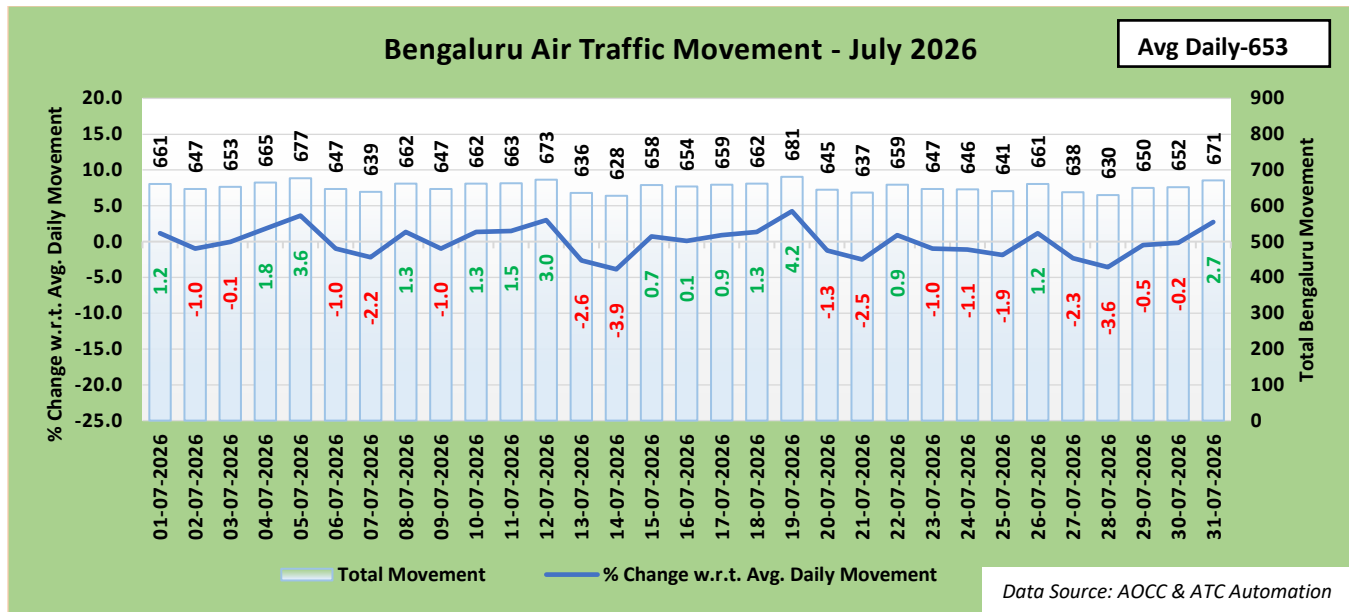


Figure 5: Air Traffic Movement for Bengaluru – July '26

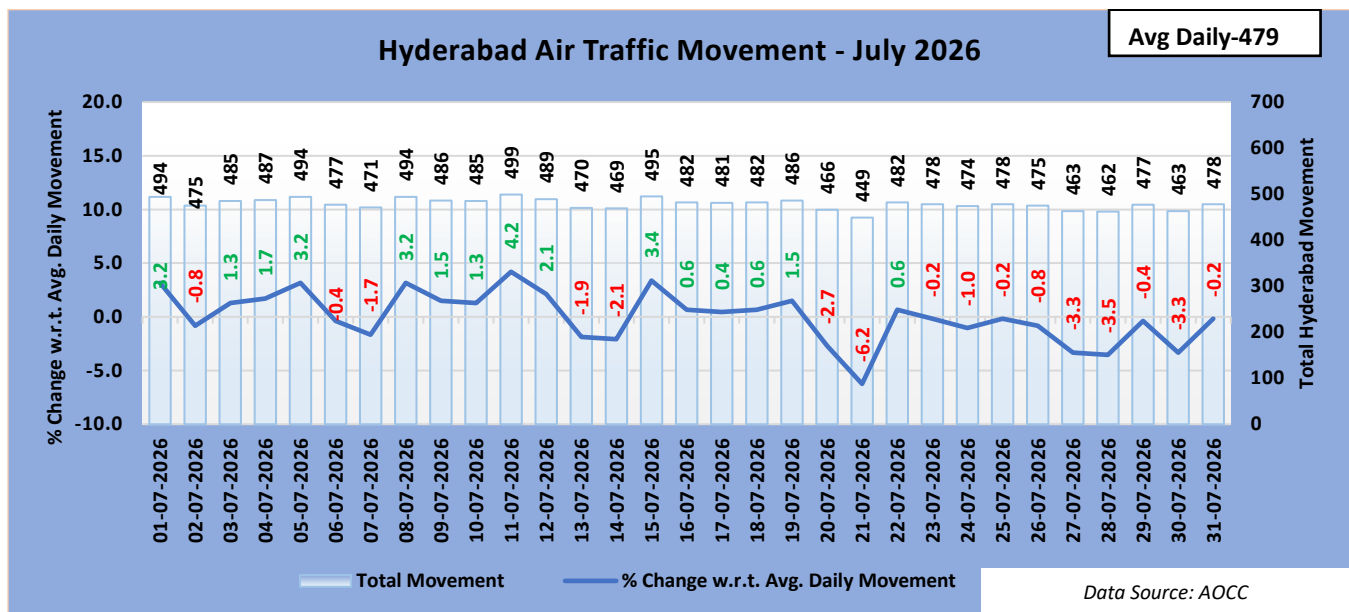


Figure 6: Air Traffic Movement for Hyderabad – July '26

It can be concluded from the above charts that the ATM at Delhi, Mumbai, Bengaluru and Hyderabad exceeds the average daily movement for 16 days, 15 days, 16 days and 15 days respectively in the month of July 2026.

II. एटीएम की वार्षिक व मासिक तुलना/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 July for two consecutive years 2025 and 2026 respectively. Air Traffic movement is also plotted Airline wise for the last six months for the major Scheduled Operators.

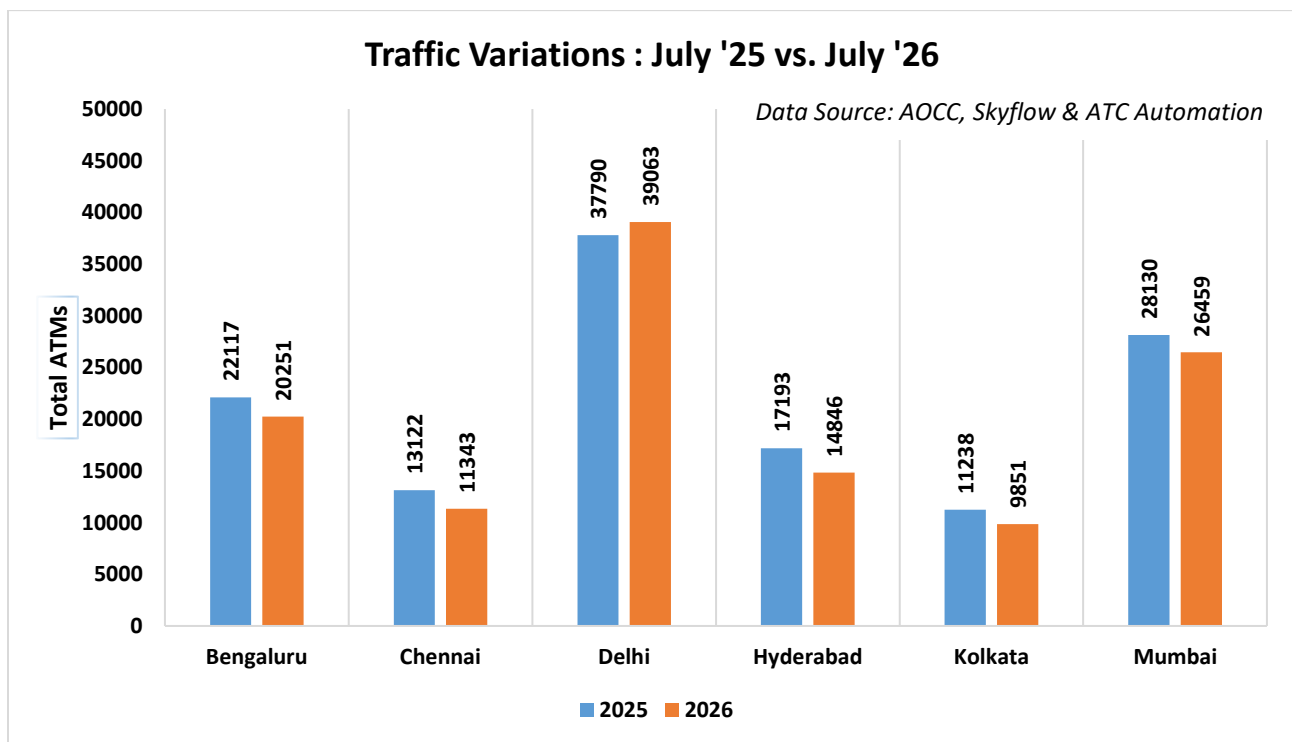


Figure 7: Traffic Variation (YoY)

III. उड़ान संचालन - एयरलाइन अनुसार/Flight Operations – Airlinewise

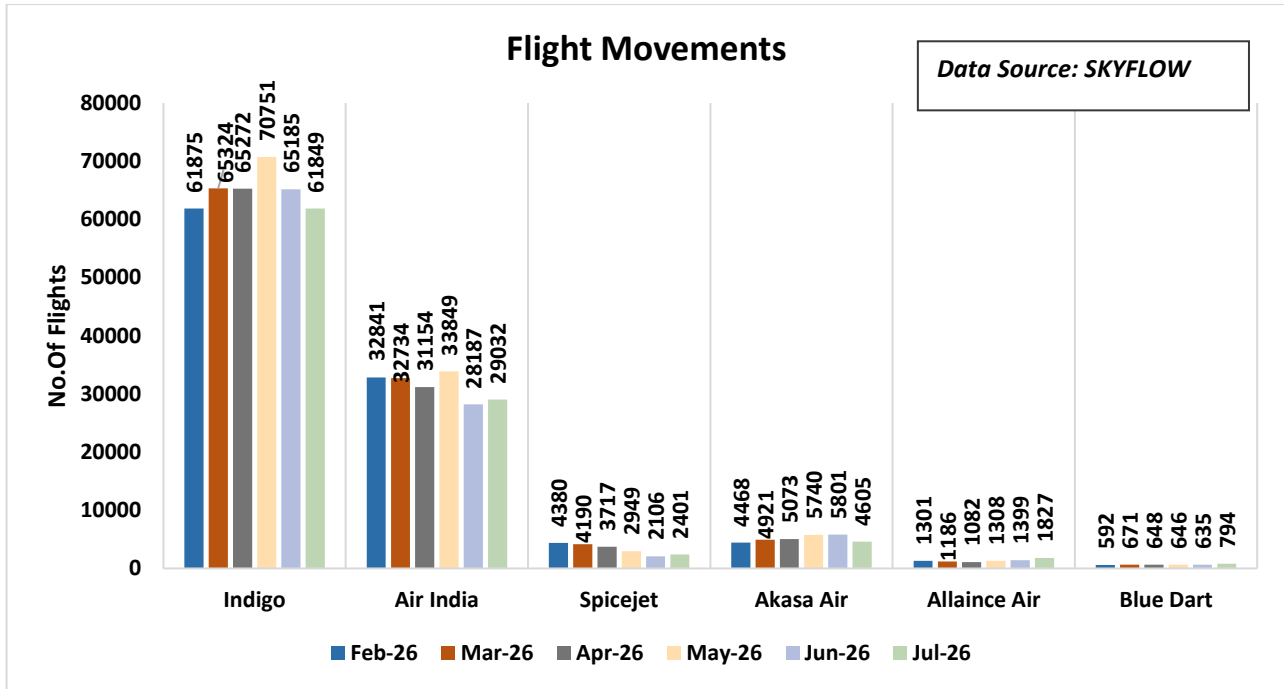


Figure 8: Flight Movements –Airlinewise

Inference:

1. Indigo, Air India and Akasa Air have recorded a decrease in the monthly average(31 days) whereas SpiceJet, Alliance Air and BlueDart have recorded an increase in flight movement in July '26 as compared to June '26.

C. सी.एटीएफएम पोस्ट ऑपरेशन - सीडीएम विश्लेषण

ATFM Post Operations – CDM Analysis

I. परिचय/Introduction

Analysis Period 1st – 31st July '26

Back Ground During the above mentioned period, **Two (02)** ATFM measures were applied for **Delhi Airport**, **One (01)** ATFM measure was applied for **Mumbai Airport**, **One (01)** ATFM measure was applied for **Bengaluru Airport** and **One (01)** ATFM measure was applied for **Shamshabad Airport** due to the following reasons as illustrated in the bar chart below:-

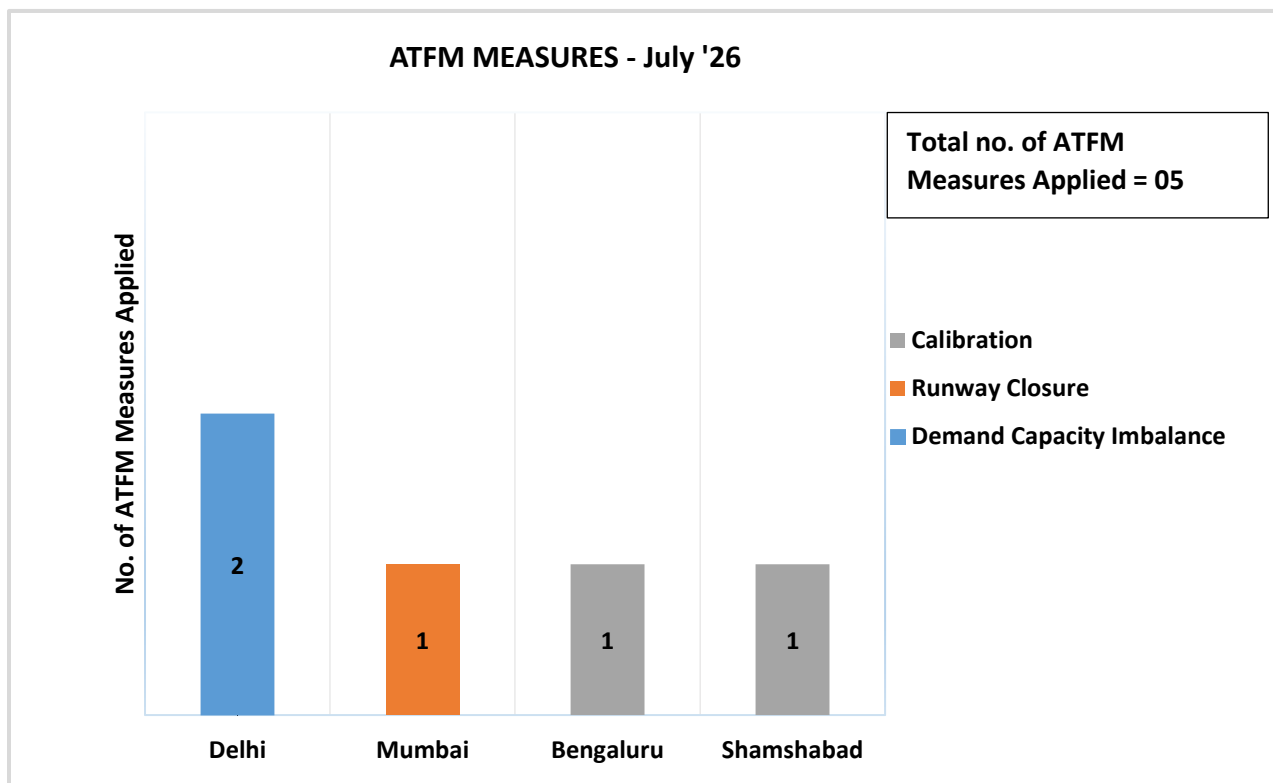


Figure 9: ATFM Measures –July '26

In addition, Thirteen (13) ATFM measures through cherry Picking method were applied at Delhi, Mumbai and Chennai. However such ATFM measures have not been included in the statistics.

II. एटीएफएम मेजर्स का अवलोकन/ATFM Measures Overview

Constrained Airport	Delhi	Mumbai	Bengaluru	Shamshabad
Number of ATFM measures applied	02	01	01	01
Average ATFM Ground delay(in min) due to measures*	21.4	9.4	15.9	16
Maximum ATFM Ground delay(in min) due to measures	43	26	27	37
% CTOT Compliance	99.4	100	100	96

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

Total Arrivals	319
Total International Arrivals(exempted)	72
Total affected flights in scenario (Domestic Arrivals)	247
Total Domestic Arrivals with zero ATFM delay	08
Total Domestic Arrivals with ATFM delay	239

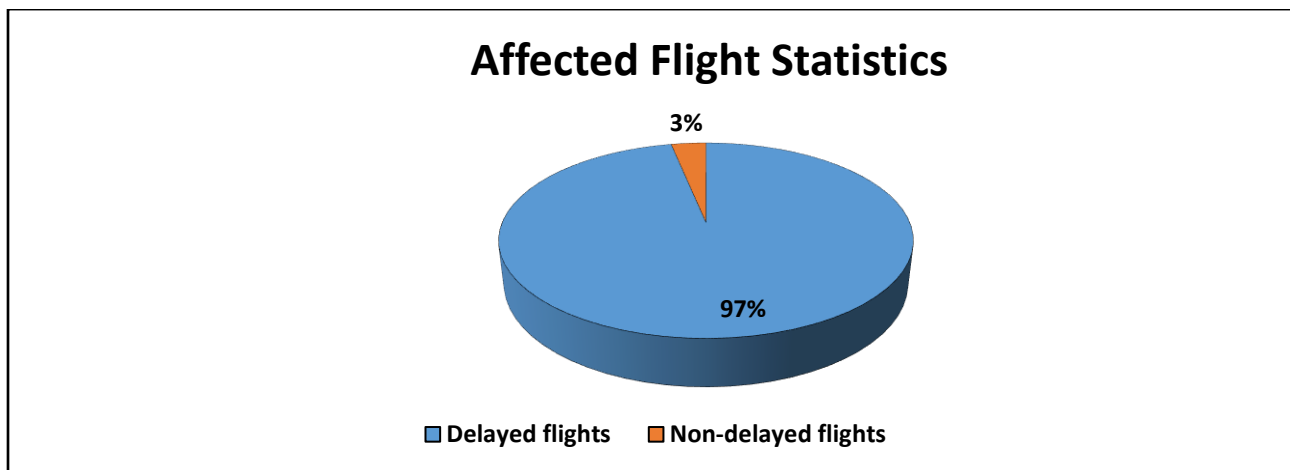


Figure 10: Affected Flight Statistics – July '26

III. समग्र अनुपालन/Overall Compliance

Total arrivals	319
Domestic arrivals	247
Flights with complete data (ATOT)	247
Flights with incomplete data	00
Flights Not Operated	00
Compliant*	245
Non-Compliant	02

*Total No. of Revised CTOTs issued = 73 (Compliance calculation for flights which were issued revised CTOT is w.r.t. new CTOT issued)

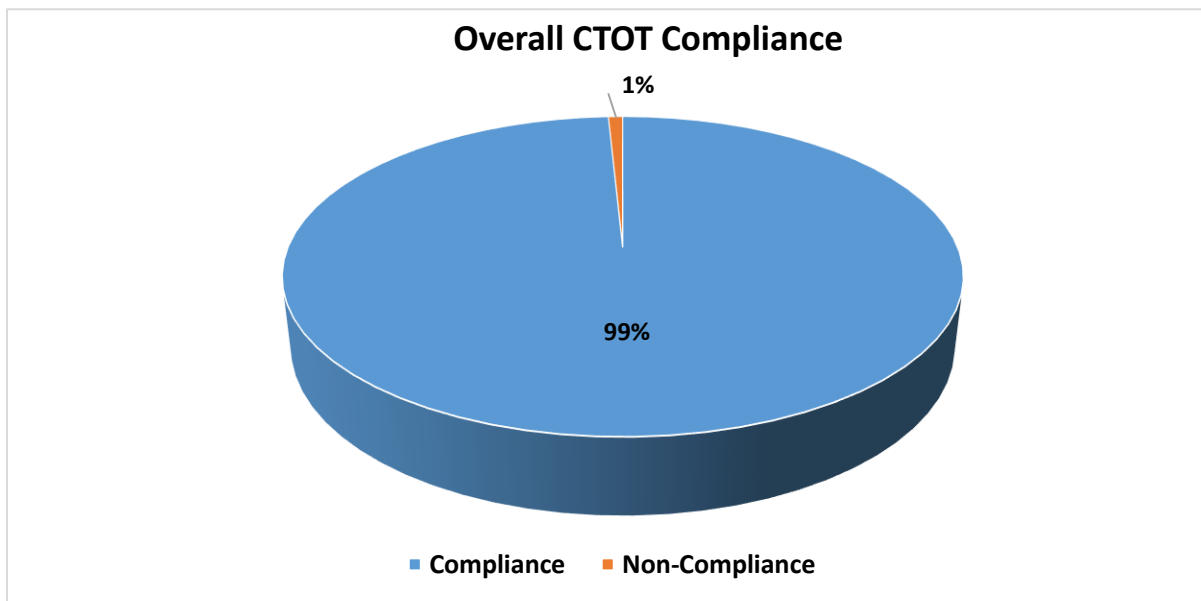
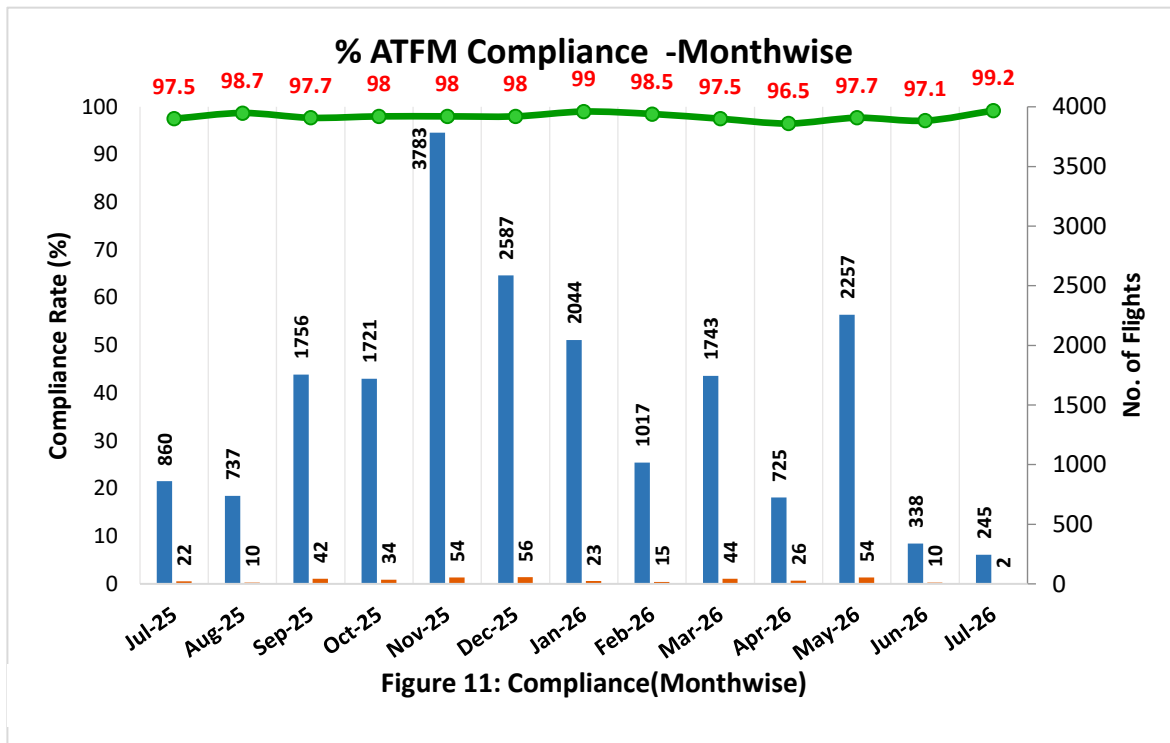


Figure: Overall CTOT Compliance – July '26

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



Out of the total domestic arrivals with complete data in the CDM scenario, 99.2% arrivals are CTOT compliant for the month of July 2026.



Inference

1. Out of the total arrivals captured(319 flights) during the CDM scenario for the constrained Airports, 77.4% of flights i.e. domestic arrivals(247 flights) were candidates for ground delay(participating).
2. Out of these Domestic Arrivals(247), 97% (239 flights) are assigned ATFM ground delay.
3. Out of the total arrivals captured (319 flights) to the constrained Airport during the ATFM scenario, 75% of flights(239 flights) were assigned ATFM Ground Delay.



IV. सीटीओटी अनुपालन दर -एयरपोर्टवाइज/CTOT Compliance rate – Airportwise

MUMBAI FIR (98%)*	Compliant	Non Compliant	% Compliant
Ahmedabad	6	0	100%
Aurangabad	2	0	100%
Mumbai	22	1	96%
Vadodara	2	0	100%
Bhopal	2	0	100%
Diu	1	0	100%
Hirasar, rajkot	2	0	100%
Indore	4	0	100%
Jabalpur	1	0	100%
Jamnagar	1	0	100%
Navi Mumbai	2	0	100%
Nagpur	1	0	100%
Nasik	1	0	100%
Pune	13	0	100%
Surat	2	0	100%
Udaipur	2	0	100%
KOLKATA FIR (100%)*	Compliant	Non Compliant	% Compliant
Agartala	1	0	100%
Ayodhya	1	0	100%
Siliguri	5	0	100%
Varanasi	4	0	100%
Bhubaneswar	6	0	100%
Kolkata	15	0	100%
Gorakhpur	2	0	100%
Guwahati	3	0	100%
Imphal	2	0	100%
Dibrugarh	2	0	100%
Patna	3	0	100%
Ranchi	7	0	100%
Raipur	6	0	100%



DELHI FIR (100%)*	Compliant	Non Compliant	% Compliant
Amritsar	2	0	100%
Chandigarh	1	0	100%
Dehradun	4	0	100%
Delhi	12	0	100%
Kangra	2	0	100%
Jodhpur	2	0	100%
Jaipur	6	0	100%
Jammu	2	0	100%
Leh	10	0	100%
Lucknow	5	0	100%
Srinagar	12	0	100%
CHENNAI FIR (99%)*	Compliant	Non Compliant	% Compliant
HAL Bangalore	1	0	100%
Bangalore	13	0	100%
Belgaum	2	0	100%
Vijayawada	3	0	100%
Coimbatore	3	0	100%
Kochi	4	1	80%
MOPA Goa	3	0	100%
Dabolim, Goa	6	0	100%
Hubli	1	0	100%
Shamsabad, Hyderabad	11	0	100%
Vijaynagar	1	0	100%
Madurai	2	0	100%
Mangalore	1	0	100%
Chennai	8	0	100%
Rajahmundry	2	0	100%
Thiruvananthapuram	2	0	100%
Visakhapatnam	3	0	100%

*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(99.2%) for the month are highlighted in red.

V. सीटीओटी अनुपालन दर- एयरलाइनवाइज़/CTOT Compliance rate – Airlinewise

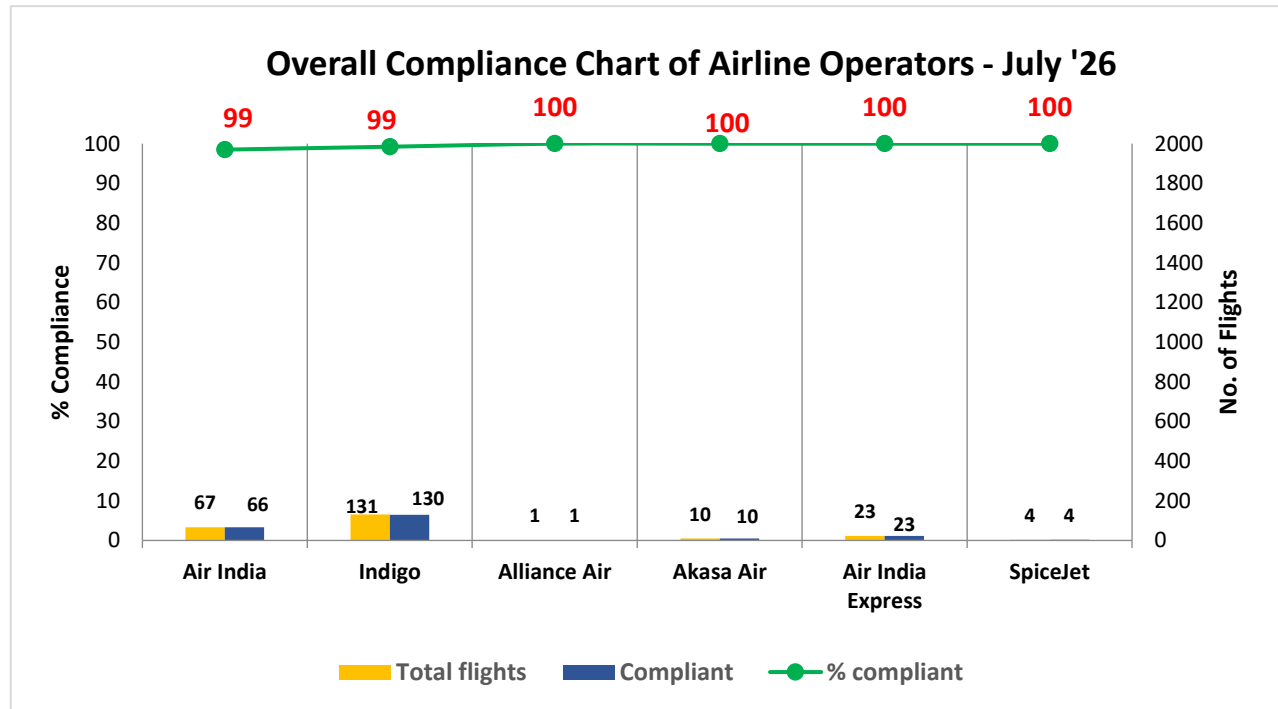


Figure 12: Airline wise Compliance – July '26

Inference

1. Delhi and Kolkata region record the highest compliance of 100% whereas Mumbai region has the lowest percentage compliance of 98%.
2. Alliance Air, Akasa Air, Air India Express and Spicejet have a CTOT compliance higher than the average recorded compliance for the month of July 2026.

VI. गैर-अनुपालन का कारण/Reason For Non Compliance

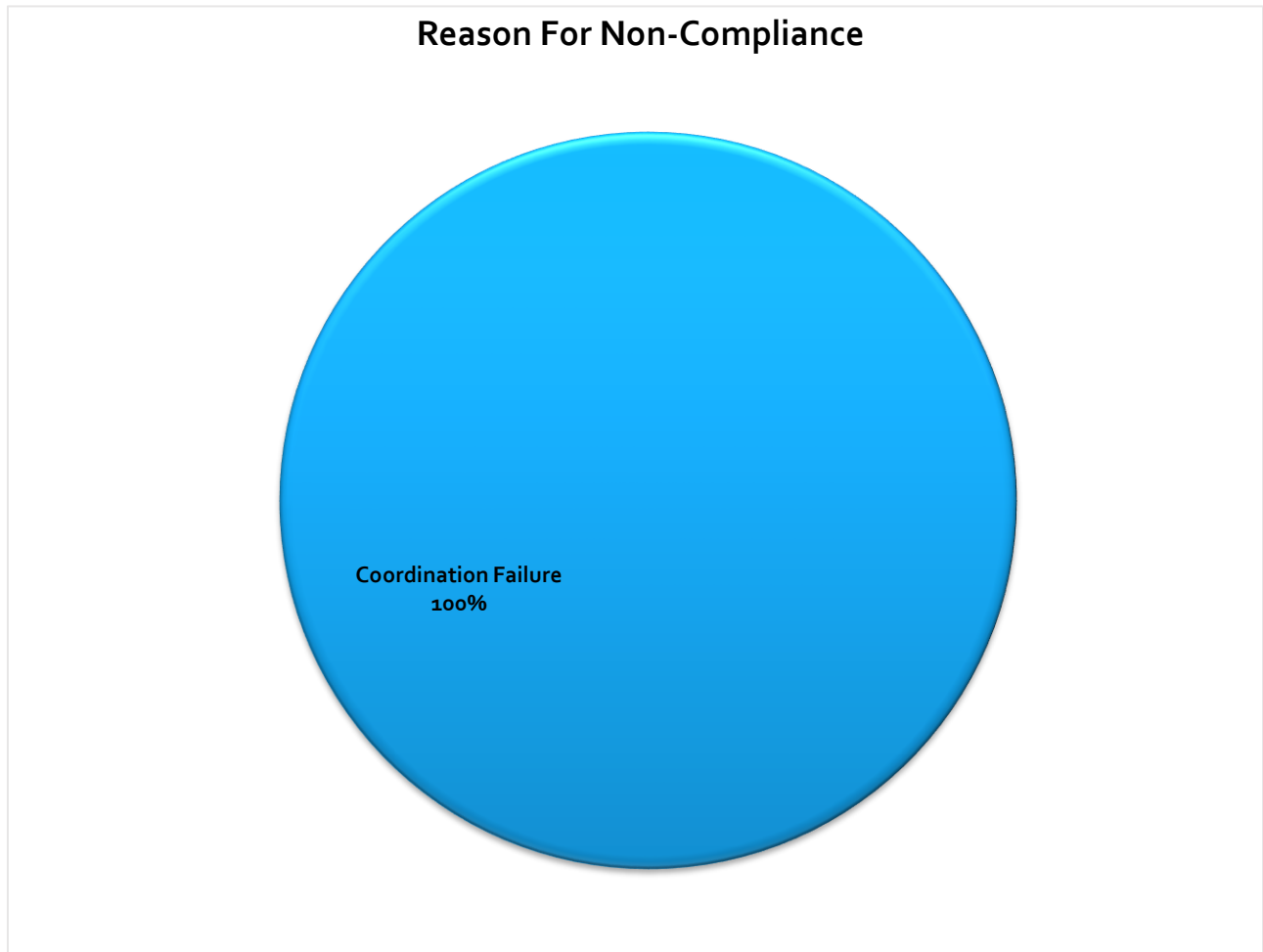


Figure 13: Reason for Non-Compliance as provided by FMPs

Inference:

1. 100% of CTOT Non- Compliance was reported by concerned FMPs to be due to coordination failure.

VII.सीडीएम परिदृश्य अवधि के दौरान वायु विलंब/Air Delay during the CDM Scenario period

Average Air Delay to domestic arrivals* within the CDM Scenario period for Delhi, Mumbai, Bengaluru and Shamshabad was 8.1, 4.5, 6.3 and 6.6 minutes respectively.

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

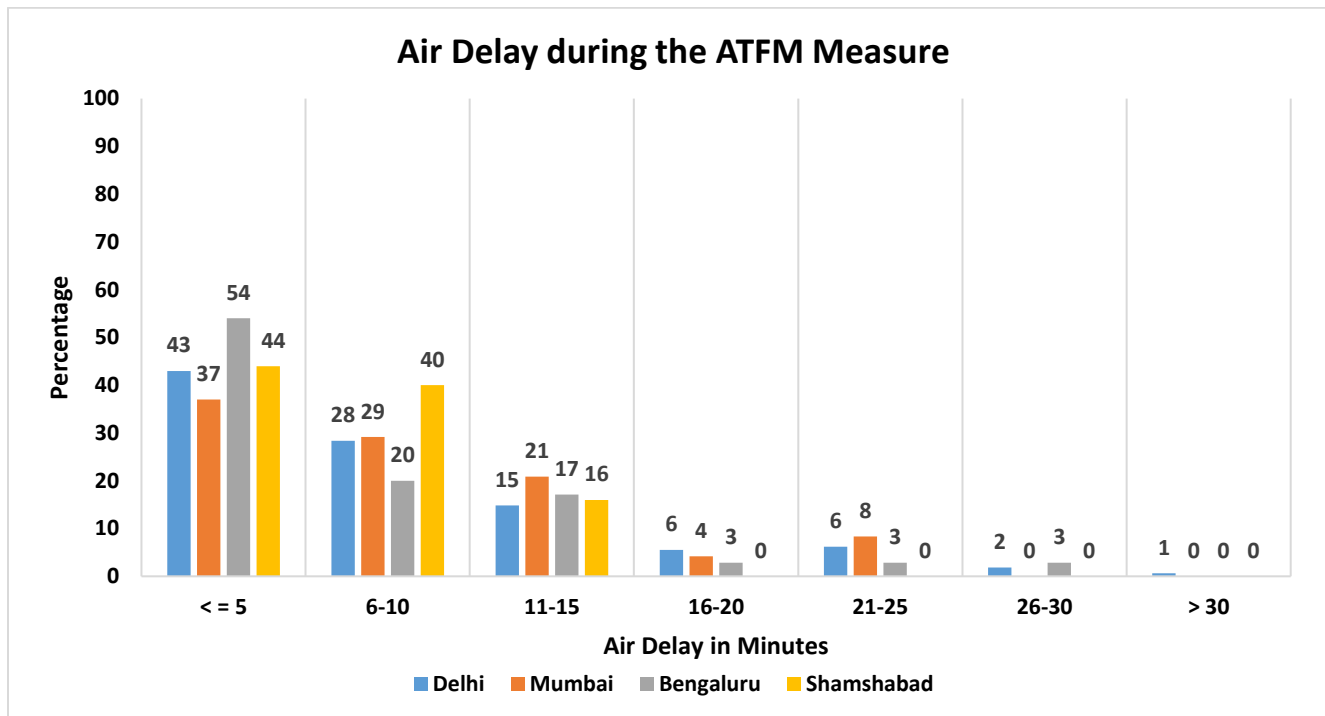


Figure 14: Air Delay distribution during the CDM period

Inference

- 71% of domestic arriving flights to Delhi had an Air delay of equal to or less than 10 minutes during the CDM period.
- 66% of domestic arriving flights to Mumbai had an Air delay of equal to or less than 10 minutes during the CDM period.
- 74% of domestic arriving flights to Bengaluru had an Air delay of equal to or less than 10 minutes during the CDM period.
- 84% of domestic arriving flights to Shamshabad had an Air delay of equal to or less than 10 minutes during the CDM period.

VIII. एटीएफएम उपायों के कारण मूर्त लाभ/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)= 2124 mins

Total Air Delay (with no ATFM measures) = 5610 mins

Reduction in Air delay due to ATFM measures= (5610-2124) = **3486 mins**

Fuel Saving Calculation:

Total Fuel saved during the ATFM Measure: **207,650.067 Kgs**

Total reduction in CO₂ emission : 3.16(KgCO₂/kg fuel)* 207,650.067 Kgs = 656,174.21 Kgs

**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 CO₂ produced by burning a tonne of aviation fuel.

D. शब्दकोश/Glossary

ATFM Parameters	Definition
<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)
Average ATFM delay	<i>$\frac{\text{Total monthly ATFM delay (in minutes)}}{\text{Total Domestic Arrivals}}$</i>
Maximum ATFM delay	Maximum ATFM delay (in minutes) assigned in the month
Overall compliance rate	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
CTOT Compliance rate of Airline operators	An overview of CTOT compliance rate of various Airline operators
CTOT Compliance rate of Airports within different Regions	An overview of CTOT compliance rate of Airports within 4 FIRs
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 Average Air Delay is calculated as: <i>Average Air Delay</i> <i>$= \frac{\text{Total Air Delay to domestic arrivals (with values greater than zero)}}{\text{Total Domestic Arrivals}}$</i> CLDT: Calculated Landing Time CTOT: Calculated Take off Time ALDT: Actual Landing Time ATOT: Actual Take off Time



Annexure-A

एयरलाइनों द्वारा सामान्य व्यावसायिक नियमों (सीबीआर) की उड़ान योजना आवश्यकताओं का अनुपालन - जुलाई 2026

Compliance by Airlines with Flight Planning Requirements of Common Business
rules(CBR)- July 2026



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 –

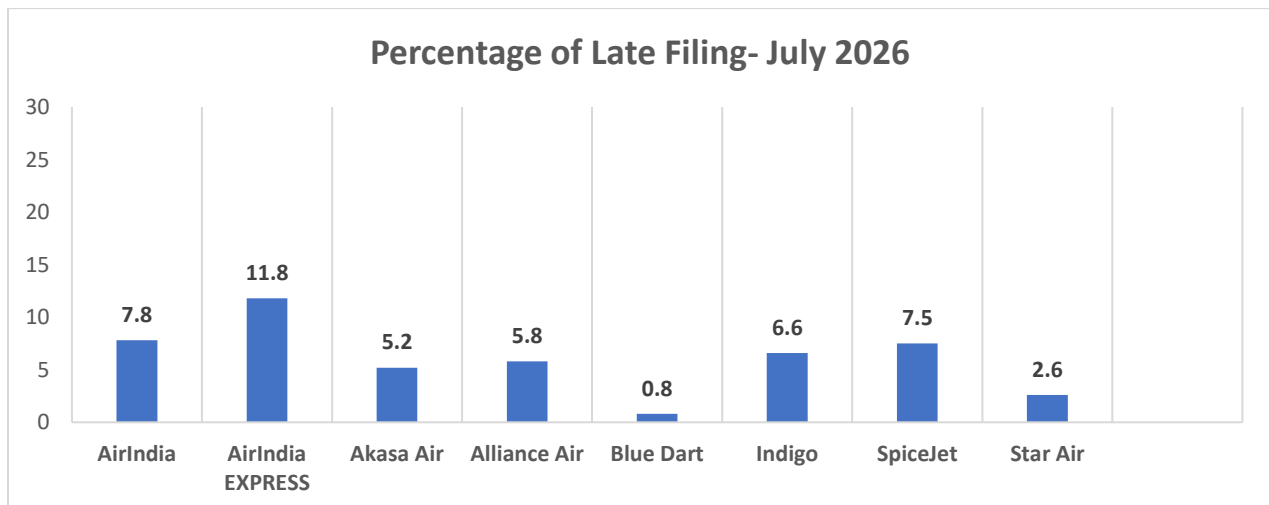
- a) Flight plans shall be submitted at least 3 hours before the estimated off block time (EOBT);
- b) The window for filing FPL is between 3 Hours and 120 Hours (Five days) before the EOBT. Earlier filing of FPL will give a realistic demand data to the CCC and hence the requirement of ATFM measures 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 1st July 2026 to 31st July 2026.

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 context of the 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.





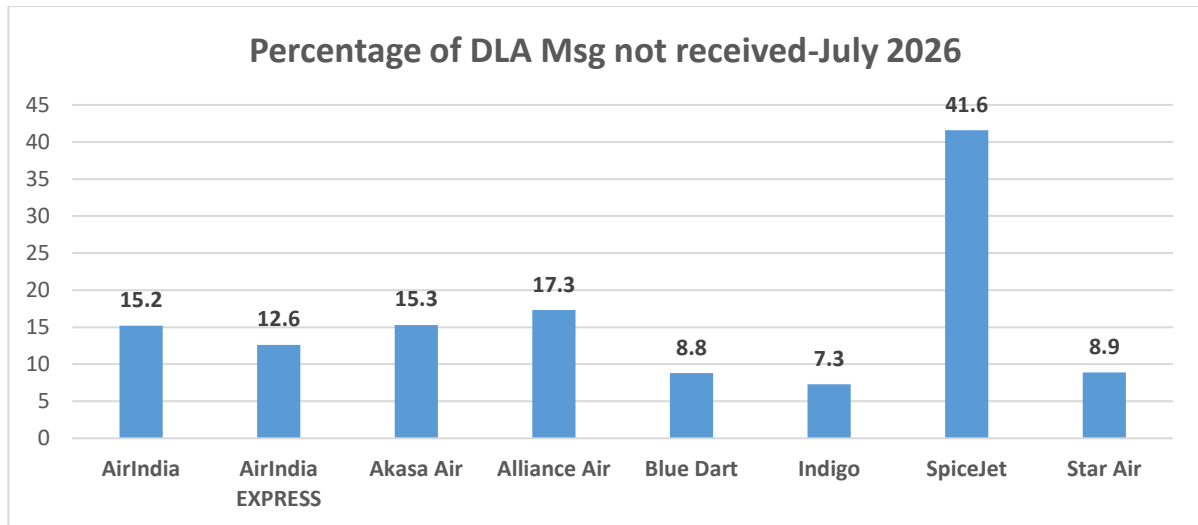
The table below lists number of filed flight plans (FPLs) with less than 3 Hours prior to EOBT:

Name of Airline	Late Filed FPL	Total No. Of FPL	% Delayed Filing
AirIndia	1396	17913	7.8
AirIndia EXPRESS	1668	14178	11.8
Akasa Air	275	5272	5.2
Alliance Air	96	1642	5.8
Blue Dart	6	731	0.8
Indigo	4567	69011	6.6
SpiceJet	172	2292	7.5
Star Air	46	1746	2.6
Total no. of FPLs for Scheduled Airlines	8226	112785	7.3

- 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 2026. **{{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
AirIndia	1780	11687	15.2
AirIndia EXPRESS	1221	8071	12.6
Akasa Air	437	3450	15.3
Alliance Air	117	677	17.3
Blue Dart	44	498	8.8
Indigo	3166	43175	7.3
SpiceJet	248	596	41.6
Star Air	41	456	8.9



- C. For analysis of non-receipt of CNL (cancel) messages for July 2026, 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.

The table below lists the number of Flights for which no CNL Msg. was received in July 2026:

Name of Airline	CNL message not received	No. of flights annulled
AirIndia	19	21
AirIndia EXPRESS	53	64
Akasa Air	4	5
Alliance Air	137	140
Blue Dart	0	2
Indigo	83	90
SpiceJet	30	32
Star Air	36	39



Annexure-B

बंगाल की खाड़ी सहयोगी वायु यातायात प्रवाह प्रबंधन (बीओबीसीएटी): अनुपालन रिपोर्ट जुलाई 2026

Bay of Bengal Co-operative Air Traffic Flow Management (BOBCAT): Compliance Report
July 2026.



I. Introduction:

On 24 July 2006, the States of the ICAO Asia/Pacific Region within the Bay of Bengal, South Asia and Pakistan airspace implemented an operational trial of an automated Air Traffic Flow Management (ATFM) service under the auspices of the ICAO Bay of Bengal ATS Coordination Group - ATFM Task Force. Pursuant to comprehensive reviews of the performance of the operational trial by the ATFM Task Force, ATFM procedures were permanently implemented.

Bay of Bengal cooperative ATFM system (BOBCAT), services were temporarily suspended since 08th September 2021, due to the absence of Enroute overflight Air Traffic Service (ATS) in Afghanistan airspace (Kabul FIR) and lack of traffic demand to operate through the Kabul FIR.

The States of the ICAO Asia/Pacific Region, which have westbound night time flights operating through the Kabul FIR between 2000 UTC to 2359 UTC, re-activated the integrated Air Traffic Flow Management (ATFM) service using the BOBCAT wef 04 September 2025. However, enroute ATS service in the Kabul FIR remain unavailable. Aircraft's are operating through Kabul airspace via designated routes using Traffic information broadcast by aircrafts (TIBA) with larger longitudinal separation of 15 minutes.

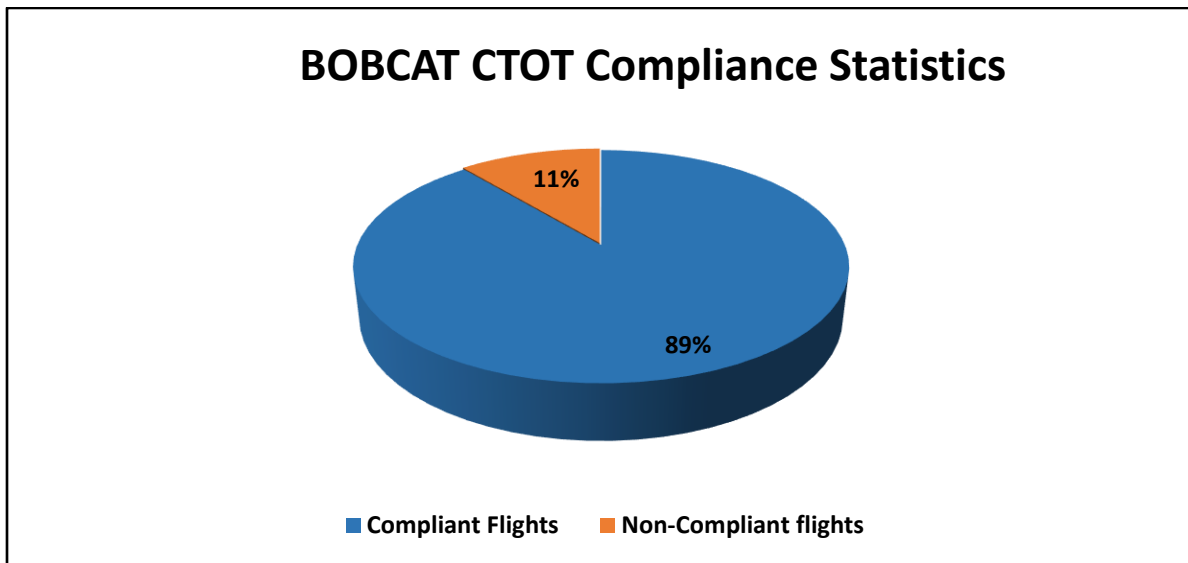
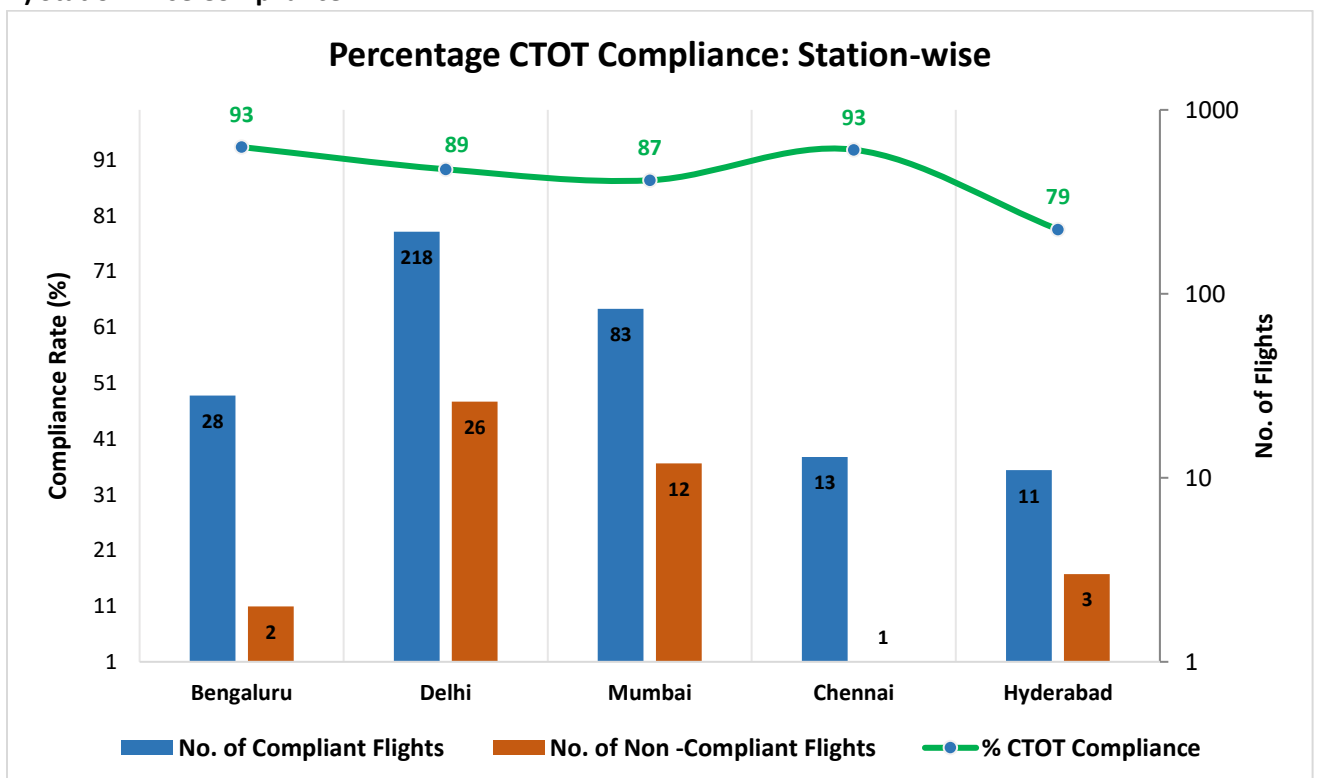
India is also part of BOBCAT reactivation group. Accordingly, AAI has also published AIP supplement 139 of 2025 effective from 04.09.2025 for the reactivation of Bay of Bengal Cooperative Air Traffic Flow Management (BOBCAT) Procedures and Implementation of BOBCAT Services. The cited AIP supplement contains the detailed processes, procedure, and duties and responsibilities of the stakeholders.

The cited AIP supplement is complimented by NOTAM G-325 issued by Kabul FIR OAKX and/or any subsequent relevant NOTAM issued by Kabul FIR OAKX.

II. Analysis:

The compliance analysis is performed only for departures from India participating in the BOBCAT. As it is an airspace program the compliance window for the same is from -5 minutes to +5 minutes of the CTOTs issued.

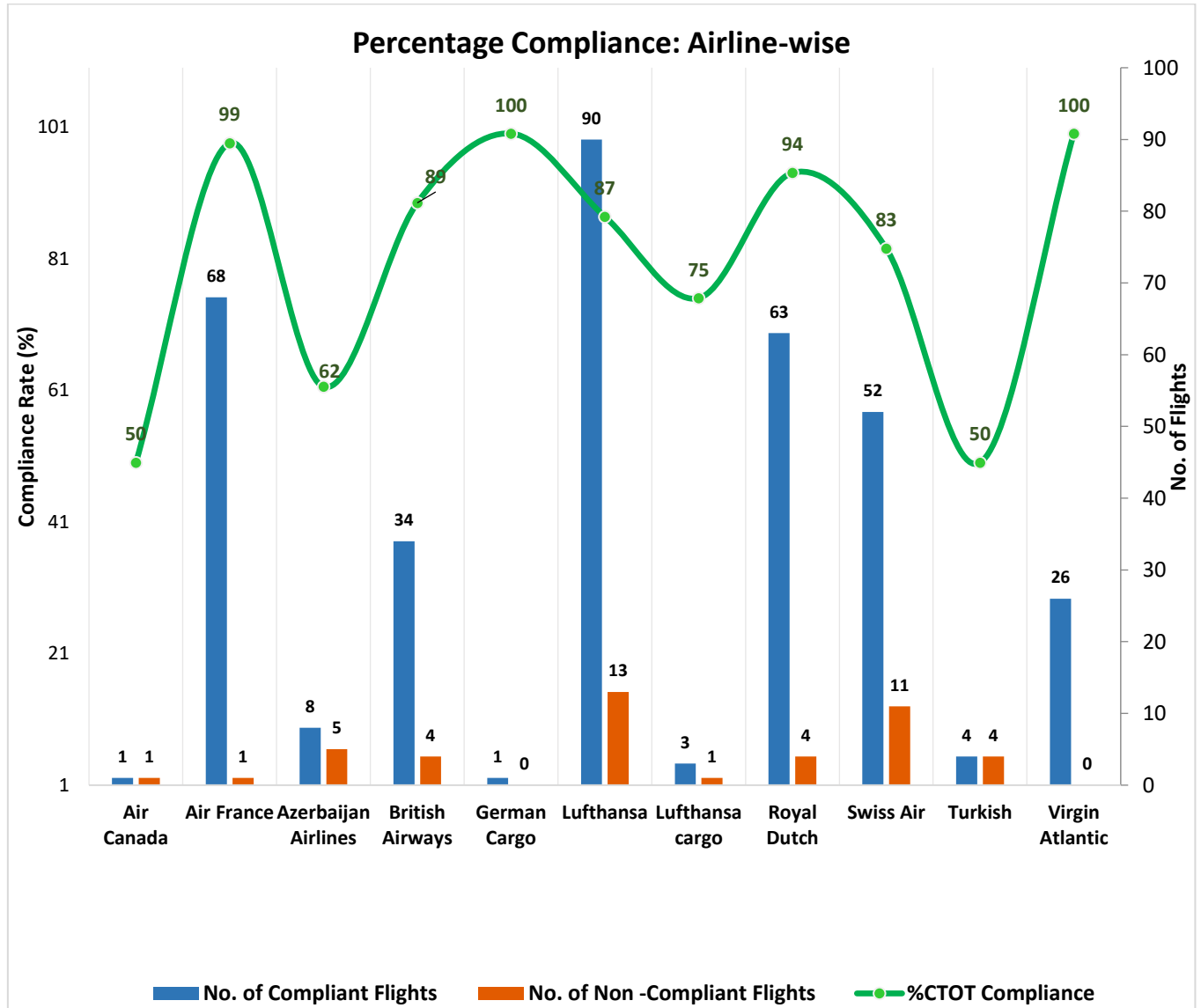
No. of Compliant Flights	No. of Non- Compliant Flight	Total
353	44	397

**A) BOBCAT Compliance Overview:****B) Station Wise Compliance:**



	Bengaluru	Delhi	Mumbai	Chennai	Hyderabad
No. Of Compliant Flights	28	218	83	13	11
No. of Non-Compliant Flights	02	26	12	01	03
CTOT Compliance %	93	89	87	93	79

C) Airline wise Compliance:



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