

पोस्ट ऑपरेशन विश्लेषण रिपोर्ट

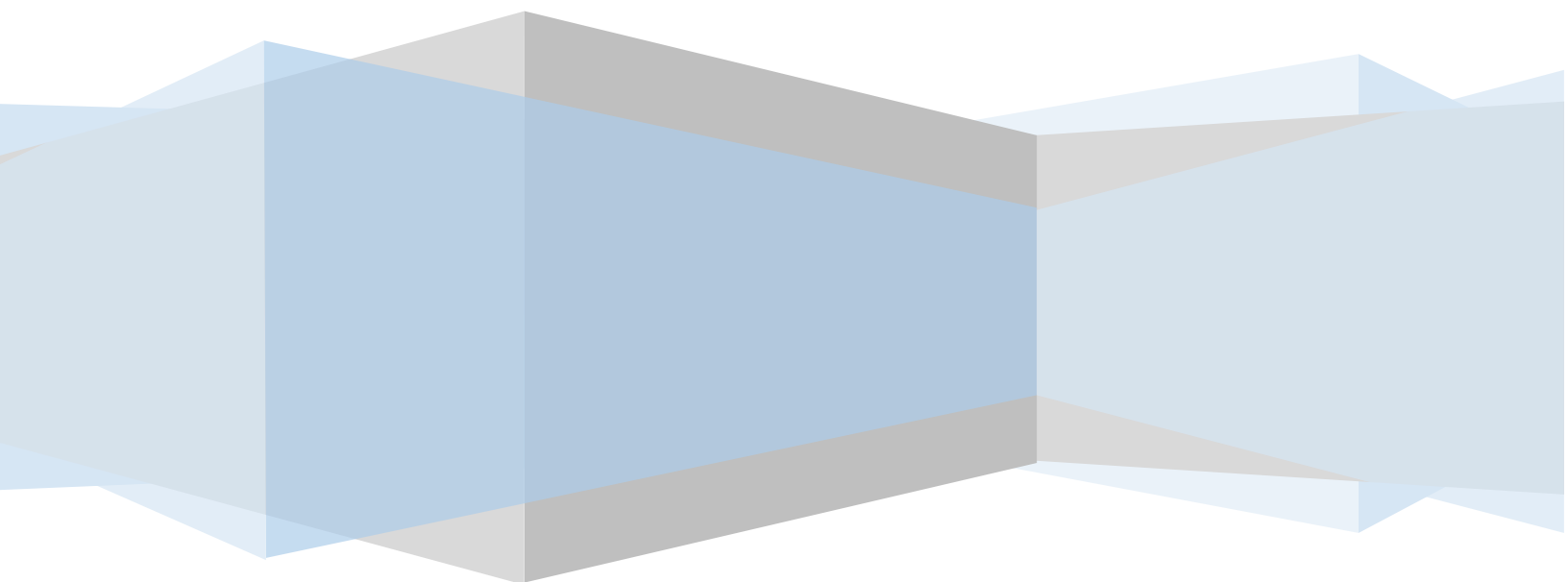
फरवरी, 2026

सेंट्रल कमांड सेंटर, सी ए टी एफ एम, दिल्ली

POST OPERATIONS ANALYSIS REPORT

February, 2026

CENTRAL COMMAND CENTER, C-ATFM, DELHI





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A. कार्यकारी सारांश/Executive Summary

Average Domestic air traffic (28 days) has recorded an increase of 4.3% whereas the average international air traffic has increased by 4.6 % in the month of February 2026 as compared to January 2026.

On average, the Indian Airports in the ATFM area saw 5162 IFR flights per day in the month of February 2026. The peak day was on 13th February 2026 (5376 IFR flights). Friday's were the busiest days throughout this month with an average of 5298 IFR flights per day.

Total Forty Eight (24) ATFM measures were applied this month during periods of congestion at Chennai, Delhi and Mumbai Airport. Cherry Picking ATFM measures were applied at Delhi and Mumbai for Four (04) days.

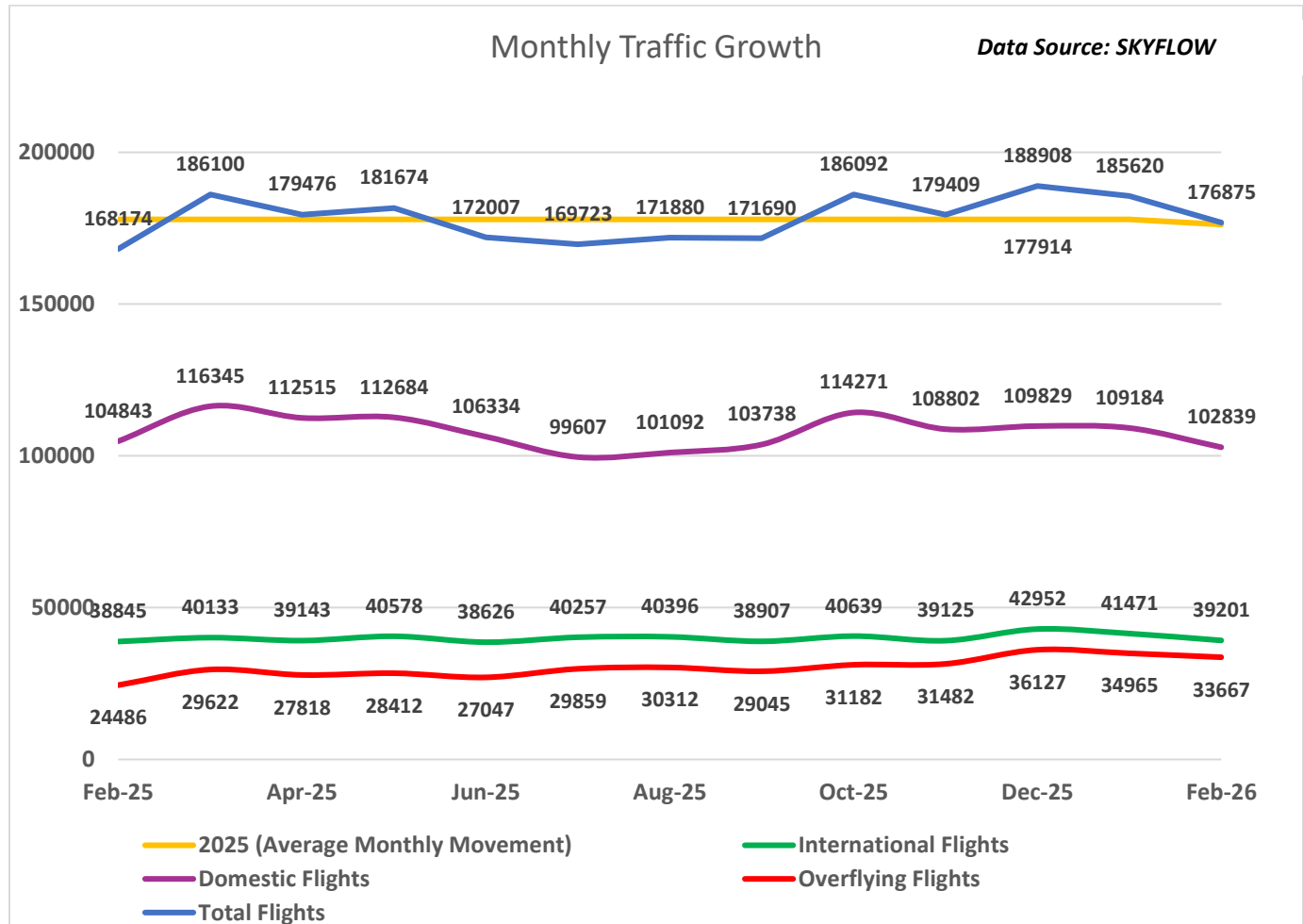


Figure 1: Monthly Traffic Growth

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

B. यातायात विश्लेषण/Traffic Analysis

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

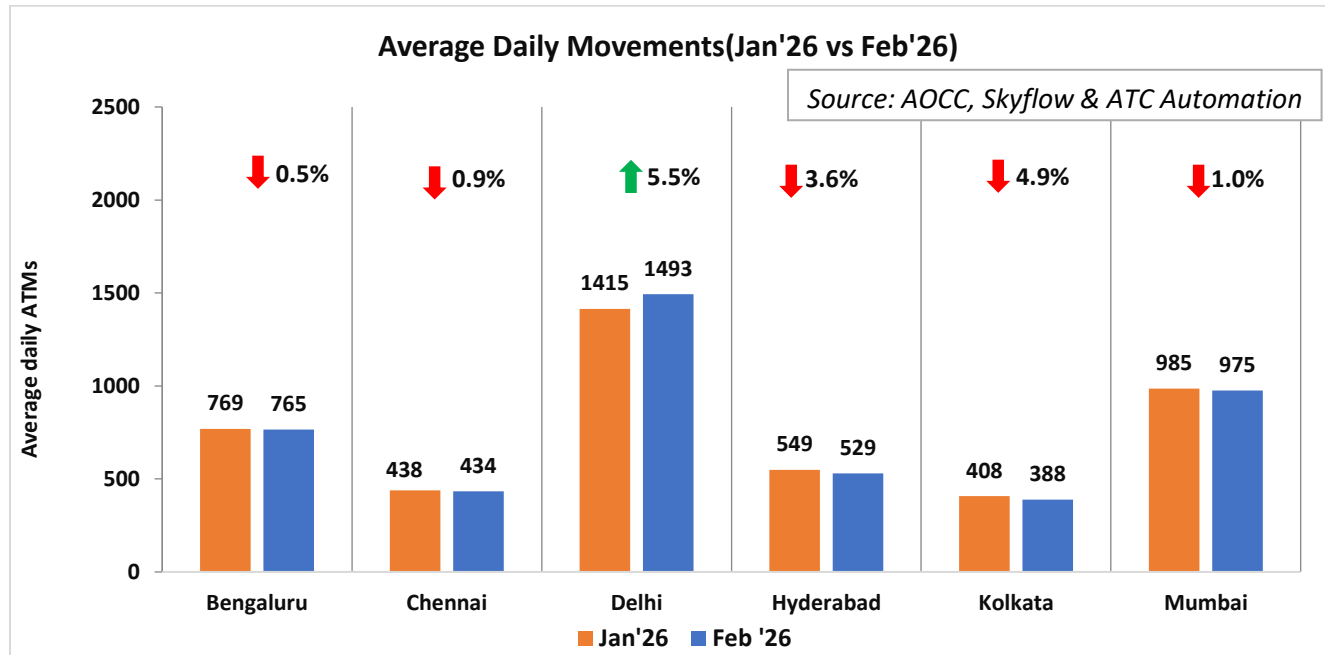


Figure 2: Average Daily Movements (Jan'26 vs Feb'26)

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

Airports\Year	Avg. Daily ATMs (YoY) for six major airports				
	Feb '22	Feb'23	Feb'24	Feb'25	Feb'26
Bengaluru	390	678	697	722	765
Chennai	265	411	406	460	434
Delhi	1006	1306	1329	1400	1493
Hyderabad	324	486	506	604	529
Kolkata	285	392	375	413	388
Mumbai	604	936	968	963	975



Air Traffic Movement for each day in February 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.

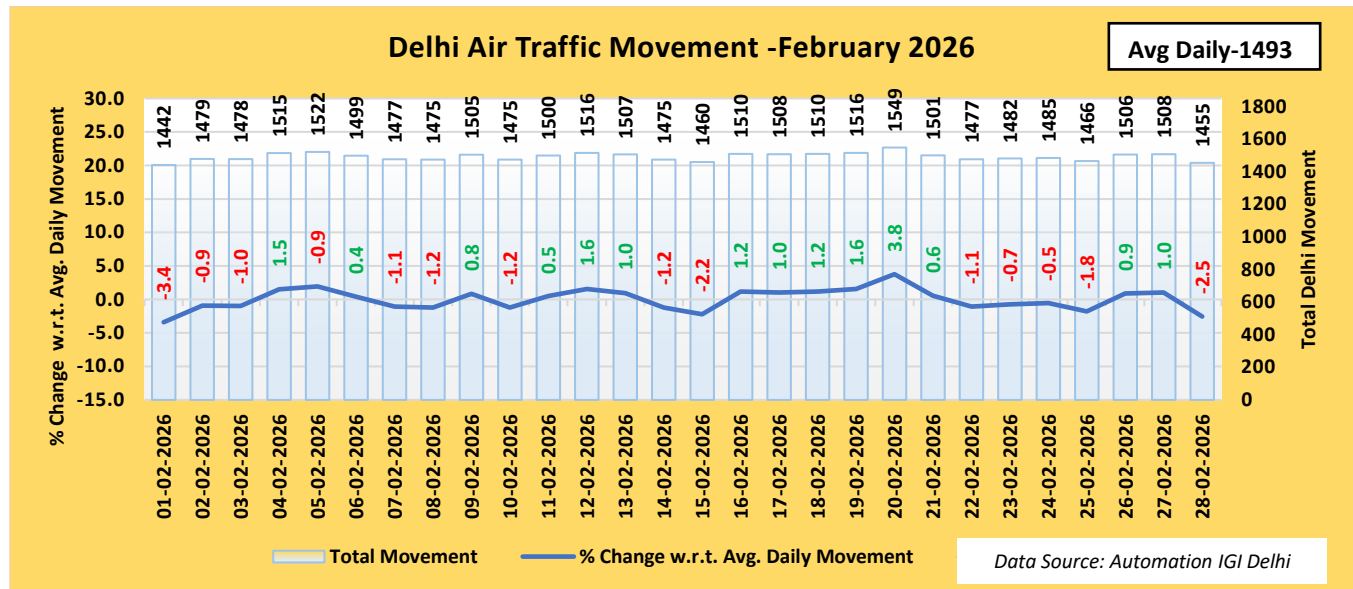


Figure 3: Air Traffic Movement for Delhi –Feb '26

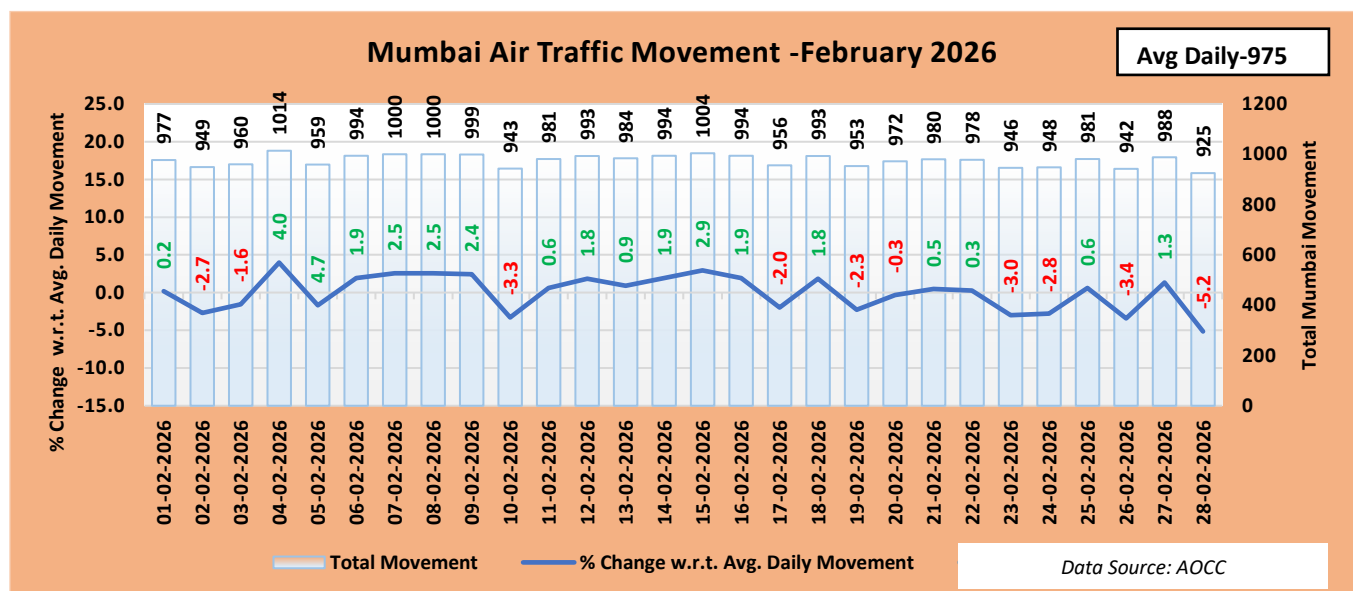


Figure 4: Air Traffic Movement for Mumbai – Feb '26

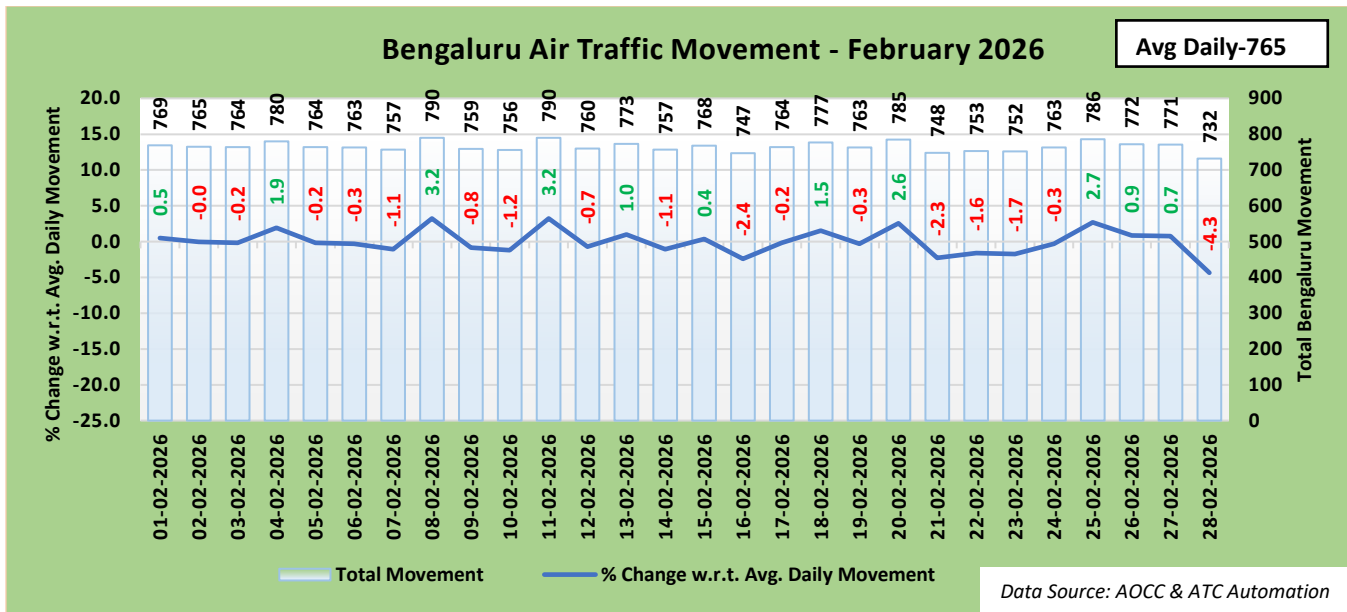


Figure 5: Air Traffic Movement for Bengaluru – Feb'26

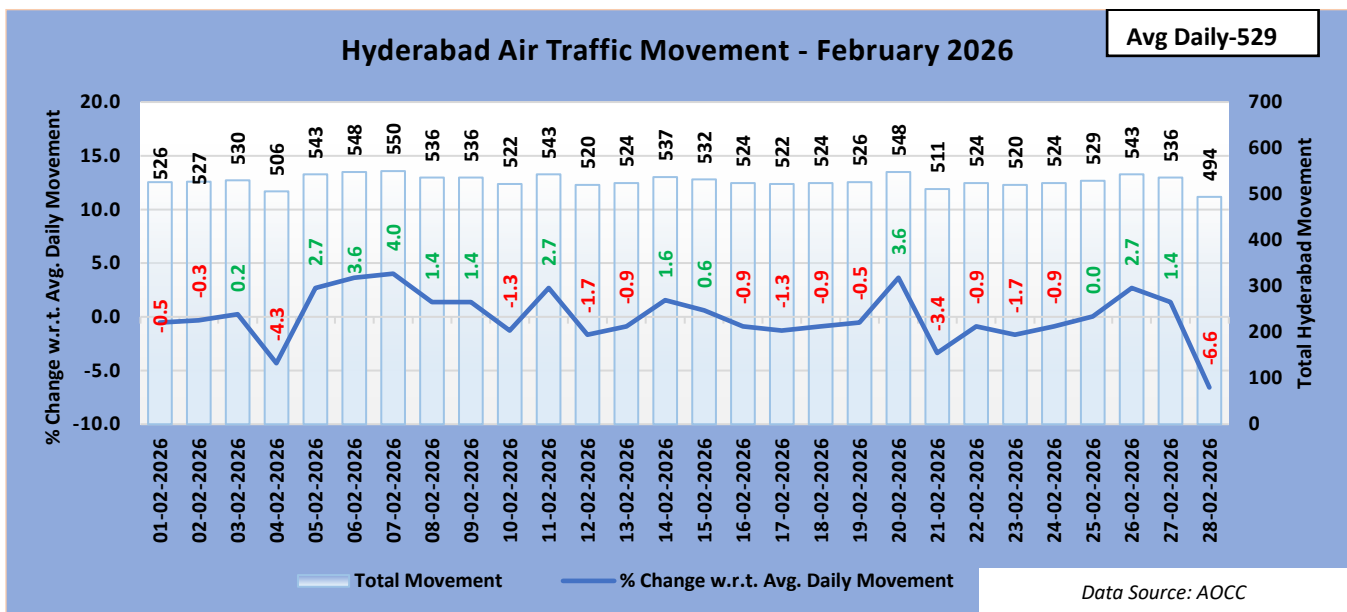


Figure 6: Air Traffic Movement for Hyderabad – Feb'26

It can be concluded from the above charts that the ATM at Delhi, Mumbai, Bengaluru and Hyderabad exceeds the average daily movement for 14 days, 18 days, 11 days and 12 days respectively in the month of February 2026.

**Note: Due operational constraints faced by Indigo.*

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 February 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.

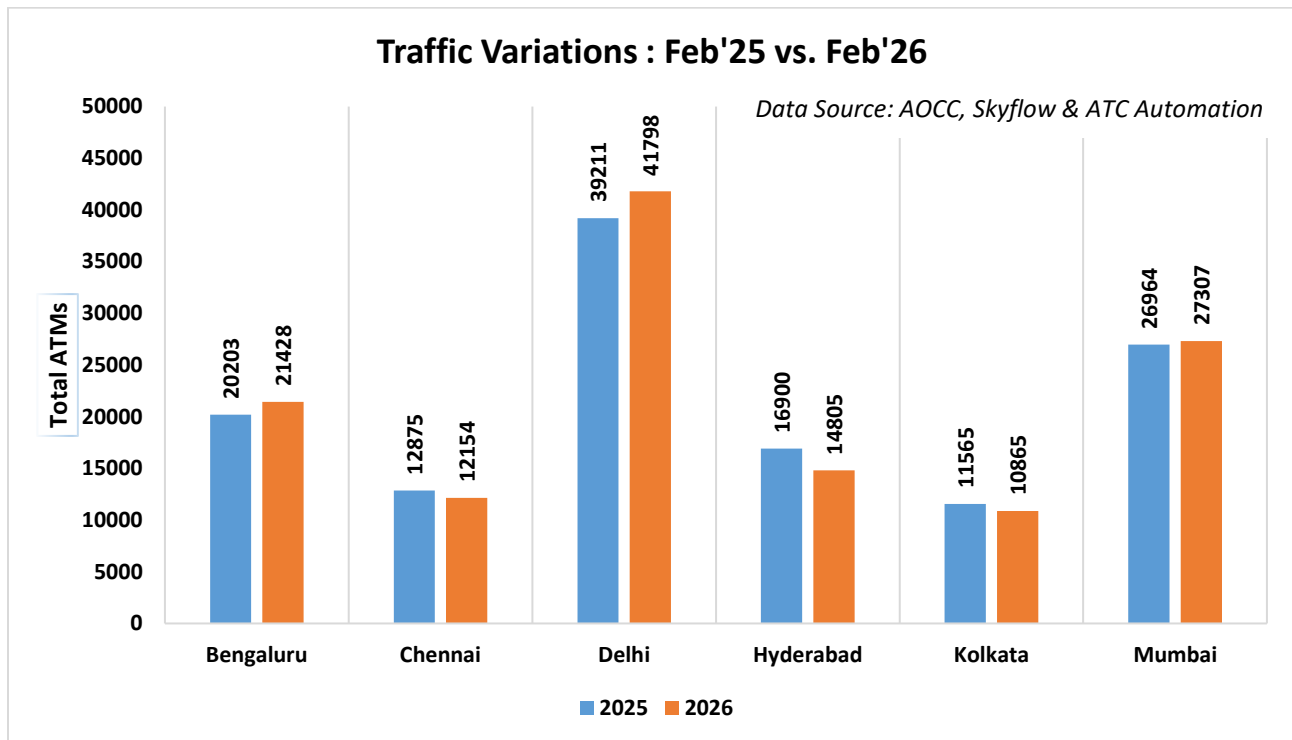


Figure 7: Traffic Variation (YoY)

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

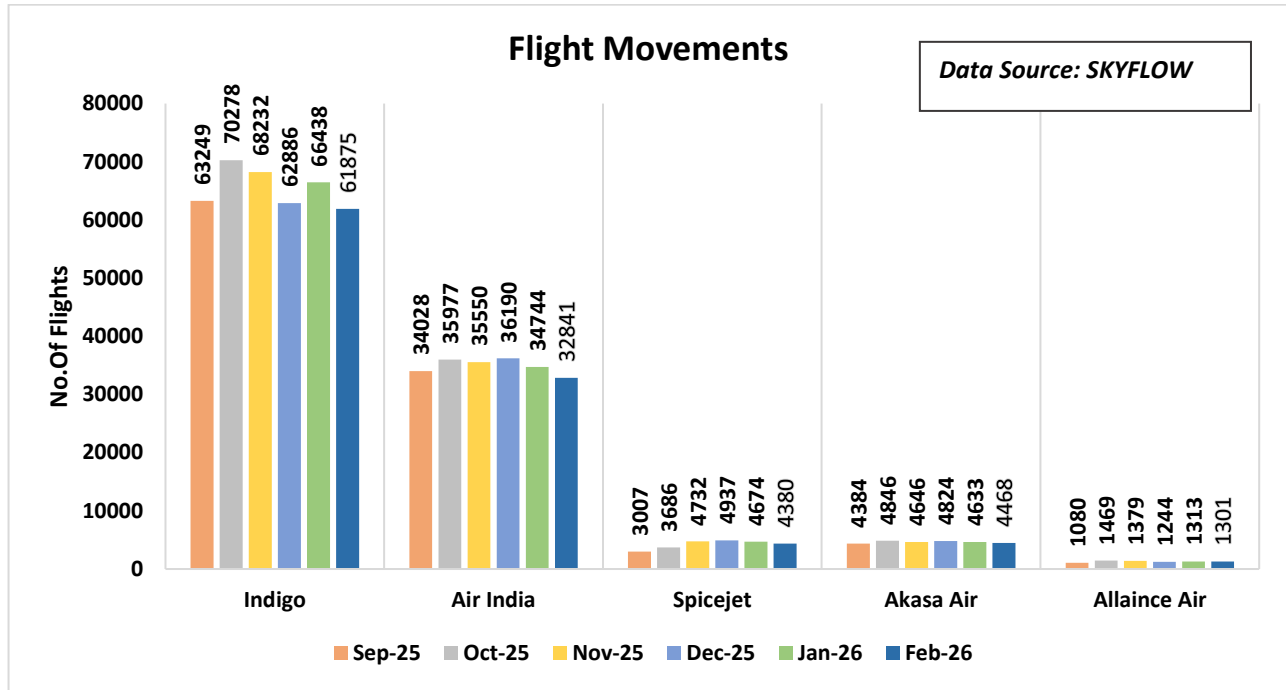


Figure 8: Flight Movements –Airlinewise

Inference:

1. Indigo, Air India, Spicejet, Akasa Air and Alliance Air have recorded a decrease in the monthly average(28 days) Flight movement in Feb'26 as compared to Jan'26.

C. सी.एटीएफएम पोस्ट ऑपरेशन - सीडीएम विश्लेषण

ATFM Post Operations – CDM Analysis

I. परिचय/Introduction

Analysis Period 1st – 28th February '26

Back Ground During the above mentioned period, **Eight(8)** ATFM measures were applied for **Chennai Airport**, **Two(02)** ATFM measures were applied for **Delhi Airport**, **Fourteen(14)** ATFM measures were applied for **Mumbai Airport** due to the following reasons as illustrated in the bar chart below:–

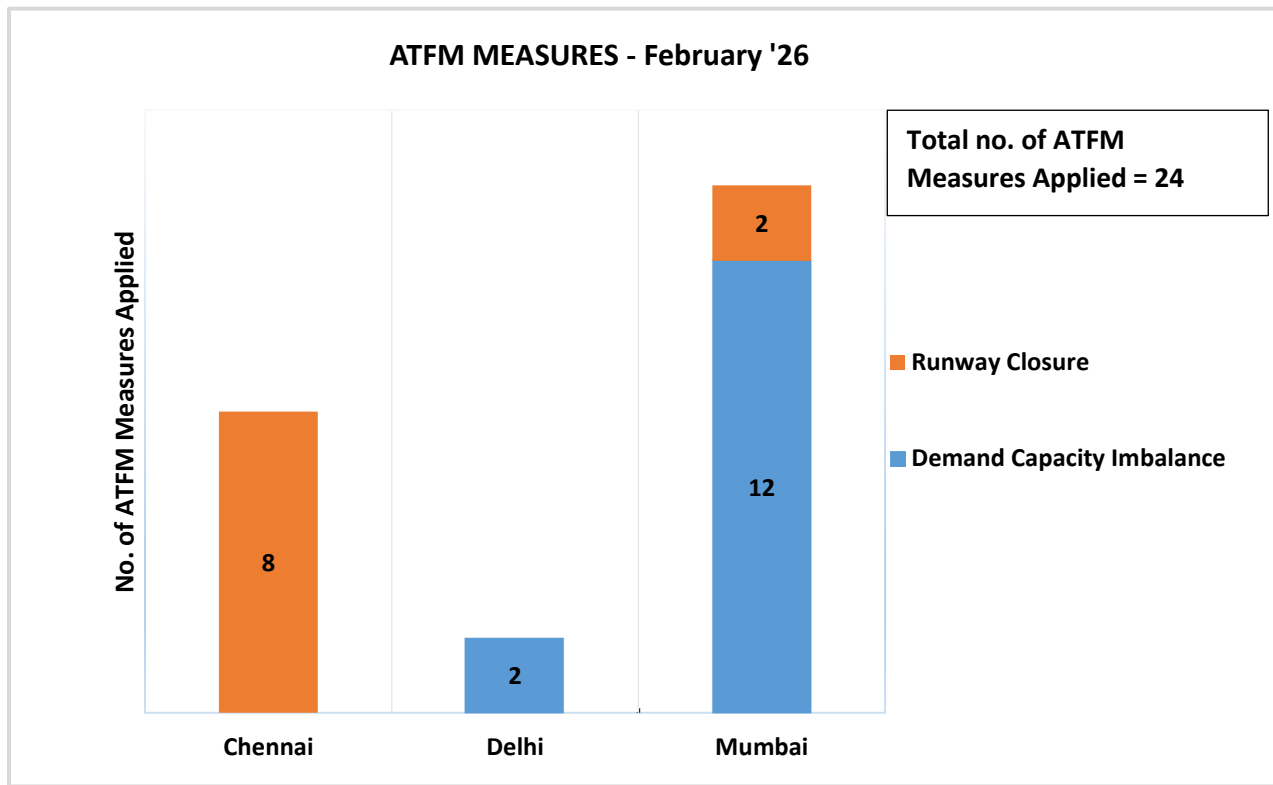


Figure 9: ATFM Measures –February '26

II. एटीएफएम मेजर्स का अवलोकन/ATFM Measures Overview

Constrained Airport	Chennai	Delhi	Mumbai
Number of ATFM measures applied	8	2	14
Average ATFM Ground delay(in min) due to measures*	25.6	15.2	31.4
Maximum ATFM Ground delay(in min) due to measures	51	27	76
% Compliance	99.2	98.9	98.2

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

Total Arrivals	1445
Total International Arrivals(exempted)	404
Total affected flights in scenario (Domestic Arrivals)	1041
Total Domestic Arrivals with zero ATFM delay	25
Total Domestic Arrivals with ATFM delay	1016

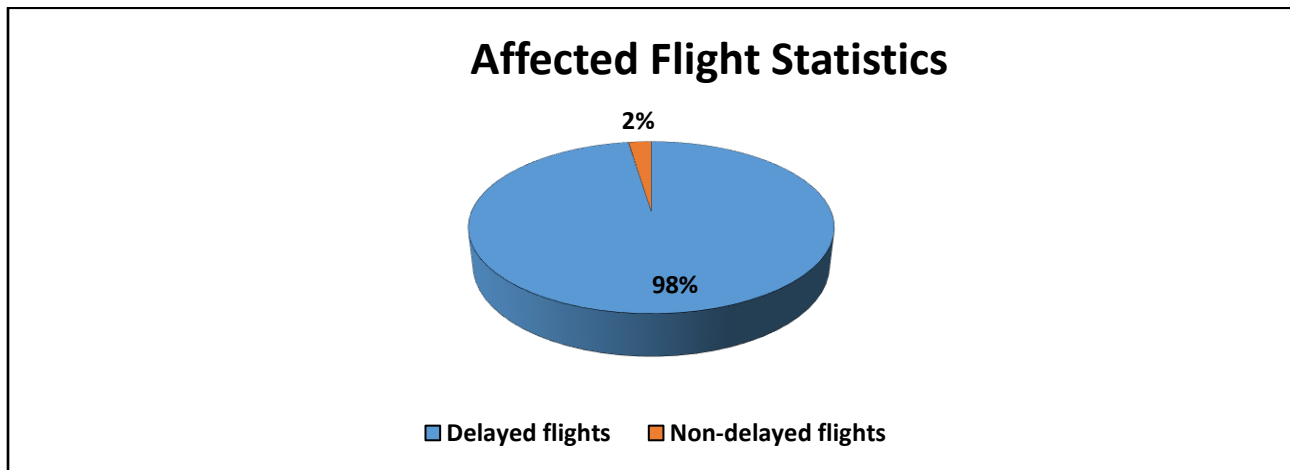


Figure 10: Affected Flight Statistics –February '26

III. समग्र अनुपालन/Overall Compliance

Total arrivals	1445
Domestic arrivals	1041
Flights with complete data (ATOT)	1032
Flights with incomplete data	0
Flights Not Operated	09
Compliant*	1017
Non-Compliant	15

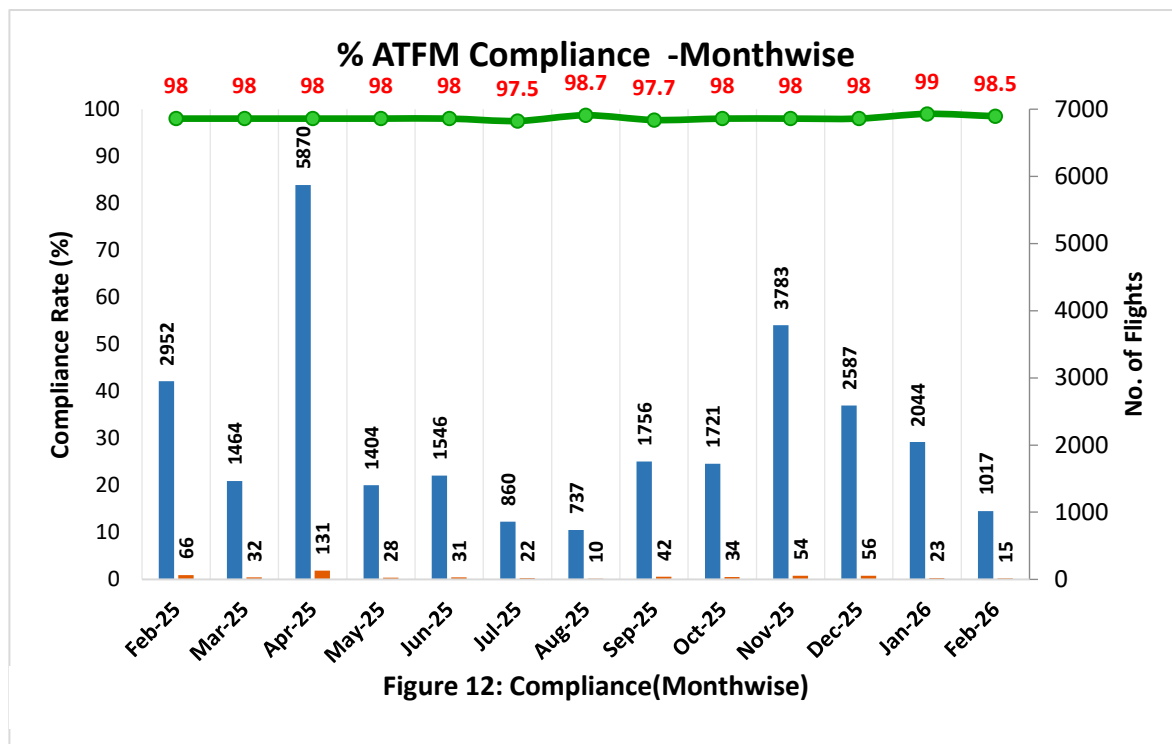
*Total No. of Revised CTOTs issued = 359 (Compliance calculation for flights which were issued revised CTOT is w.r.t. new CTOT issued)



Figure 11: Overall Compliance – February '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, 98.5% arrivals are compliant for the month of February 2026.



Inference

1. Out of the total arrivals captured(1445 flights) during the CDM scenario for the constrained Airports, 72% of flights i.e. domestic arrivals(1041 flights) were candidates for ground delay(participating).
2. Out of these Domestic Arrivals(1041 flights), 98% (1016 flights) are assigned ATFM ground delay.
3. Out of the total arrivals captured(1445 flights) to the constrained Airport during the ATFM scenario, 70% of flights(1016 flights) were assigned ATFM Ground Delay.



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

MUMBAI FIR (99%)	Compliant	Non Compliant	% Compliant
Ahmedabad	33	0	100%
Amravati	2	0	100%
Aurangabad	5	0	100%
Mumbai	33	1	97%
Vadodara	8	0	100%
Bhopal	5	1	83%
Hirasar, rajkot	7	0	100%
Indore	17	0	100%
Jabalpur	1	0	100%
Jamnagar	8	0	100%
Kandla	2	0	100%
Navi Mumbai	1	0	100%
Nagpur	19	0	100%
Nasik	3	0	100%
Pune	8	0	100%
Solapur	2	0	100%
Surat	4	0	100%
Udaipur	7	0	100%
KOLKATA FIR (99%)	Compliant	Non Compliant	% Compliant
Prayagraj	2	0	100%
Ayodhya	2	0	100%
Siliguri	15	0	100%
Varanasi	17	0	100%
Bhubaneswar	27	0	100%
Kolkata	71	1	99%
Durgapur	5	0	100%
Darbhanga	2	1	67%
Deoghar	2	0	100%
Gorakhpur	5	0	100%
Guwahati	19	1	95%
Jharsuguda	2	0	100%
Patna	16	0	100%



Ranchi	7	0	100%
Raipur	13	0	100%
Rewa	1	0	100%
DELHI FIR (98%)*	Compliant	Non Compliant	% Compliant
Amritsar	14	0	100%
Adampur	1	0	100%
Chandigarh	9	0	100%
Dehradun	6	0	100%
Delhi	150	3	98%
Hindon	0	1	0%
Gwalior	1	1	50%
Jodhpur	4	1	80%
Jaipur	18	0	100%
Jammu	7	0	100%
Lucknow	20	0	100%
Srinagar	6	0	100%
CHENNAI FIR (99%)	Compliant	Non Compliant	% Compliant
Hal Bangalore	5	1	83%
Bangalore	94	0	100%
Vijayawada	8	0	100%
Coimbatore	29	0	100%
Kochi	40	0	100%
Calicut	2	0	100%
MOPA Goa	28	0	100%
Dabolim Goa	38	1	97%
Hubli	2	0	100%
Shamsabad, Hyderabad	55	1	98%
Begumpet Hyderabad	1	0	100%
Vijaynagar	1	0	100%
Madurai	18	0	100%
Mangalore	10	0	100%
Chennai	42	1	98%
Port Blair	12	0	100%
Pondicherry	2	0	100%
Tuticorin	8	0	100%
Tirupati	2	0	100%



Tiruchirappally	5	0	100%
Thiruvananthapuram	8	0	100%

**FIR wise compliance rate (decimals rounded off to nearest integer value).*

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(98.5%) for the month are highlighted in red.

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

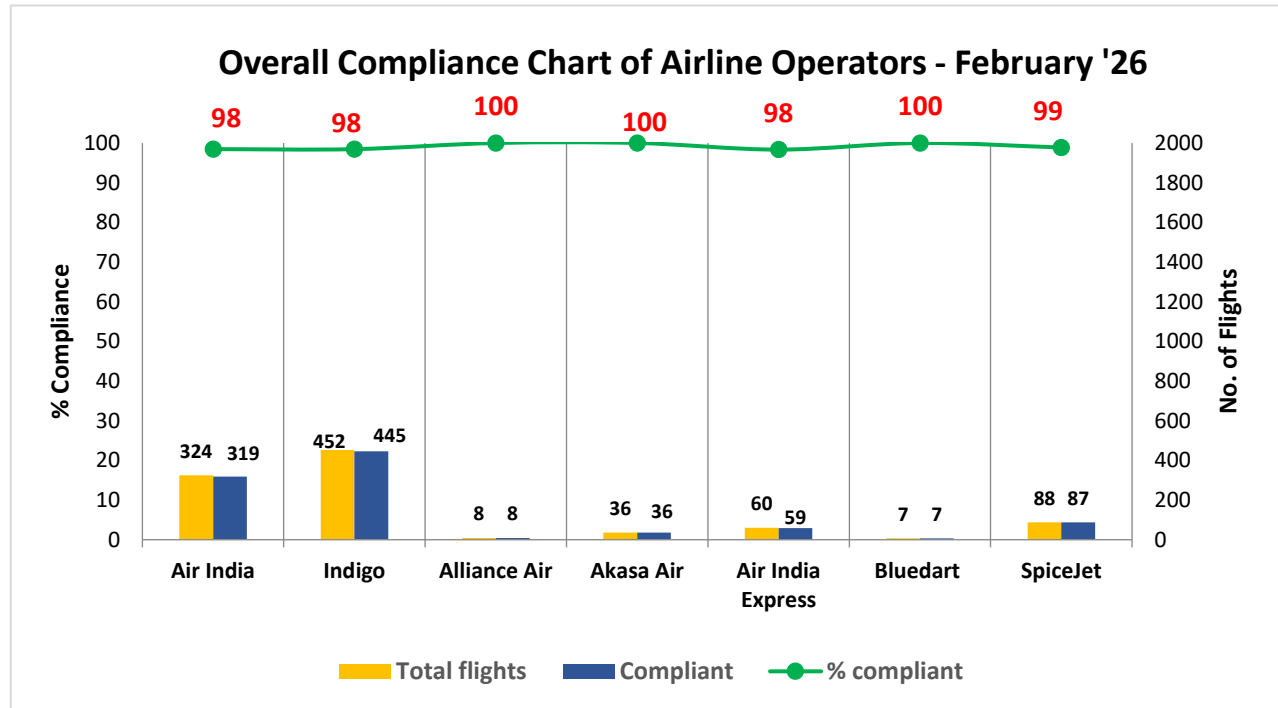


Figure 13: Airline wise Compliance –February '26

Inference

1. Chennai region record the highest compliance of 99% whereas Delhi region has the lowest percentage compliance of 97.5%.
2. Alliance Air, Akasa Air, Spicejet and Blue Dart have a CTOT compliance higher than or equal to the average recorded compliance for the month of February 2026.

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



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

Inference:

1. 62 % of CTOT Non- Compliance was reported by concerned FMPs to be due to coordination failure between FMP and Station.
2. 12 % of the CTOT Non- compliance was due to parking constraints at the concerned station.

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 Chennai, Delhi and Mumbai was 4.9, 16.9 and 13.6 minutes respectively.

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

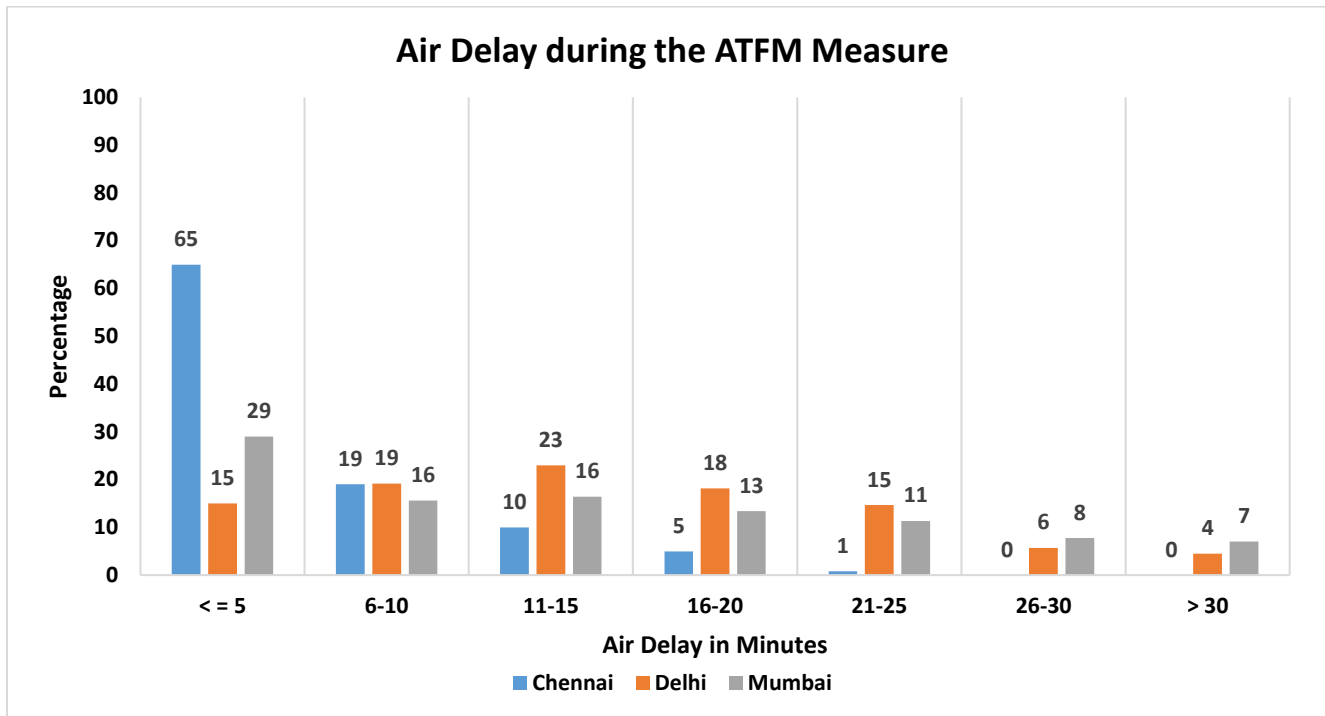


Figure 15: Air Delay distribution during the CDM period

Inference

1. 84% of domestic arriving flights to Chennai had an Air delay of equal to or less than 10 minutes during the CDM period.
2. 34% of domestic arriving flights to Delhi had an Air delay of equal to or less than 10 minutes during the CDM period.
3. 45% of domestic arriving flights to Mumbai 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)= 17035 mins

Total Air Delay (with no ATFM measures) = 20811 mins

Reduction in Air delay due to ATFM measures= (20811-17035) = **3776 mins**

Fuel Saving Calculation:

Total Fuel saved during the ATFM Measure: **3,83,803.826 Kgs**

Total reduction in CO₂ emission : 3.16(KgCO₂/kg fuel)* 3,83,803.826 Kg = 12,12,820.09 Kg

**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)
<i>Average ATFM delay</i>	<i>$\frac{\text{Total monthly ATFM delay (in minutes)}}{\text{Total Domestic Arrivals}}$</i>
<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
<i>Air delay statistics</i>	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 - फरवरी 2026

Compliance by Airlines with Flight Planning Requirements of Common Business rules(CBR)- February 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 –

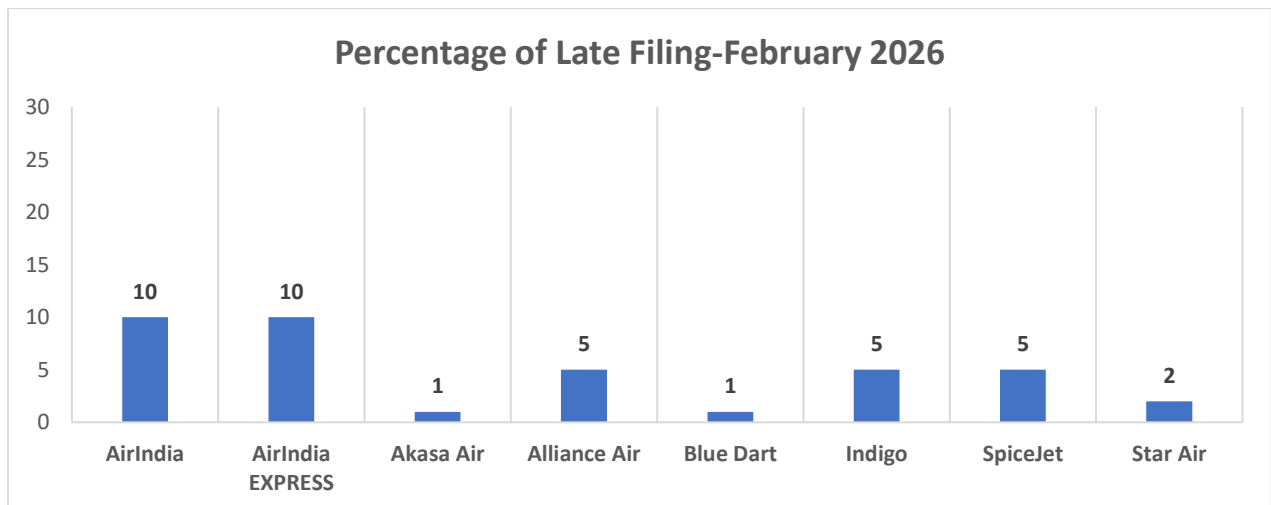
- a) Flight plans shall be submitted at least 3 hours before the estimated off block time (EOBT);
- b) The window for filing FPL is between 3 Hours and 120 Hours (Five days) before the EOBT. Earlier filing of FPL will give a realistic demand data to the CCC and hence the requirement of ATFM measures 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 February 2026 to 28th February 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.





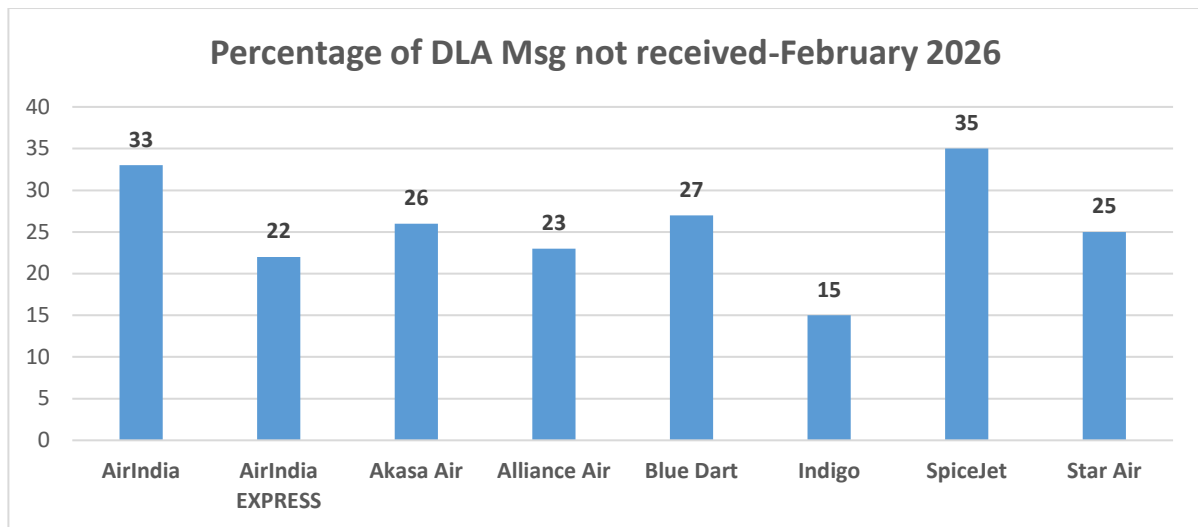
The table below lists number of filed flight plans (FPLs) with less than 3 Hours prior to EOBT:

Name of Airline	Late Filed FPL	Total No. Of FPL	% Delayed Filing
AirIndia	1942	20003	10
AirIndia EXPRESS	1429	13888	10
Akasa Air	35	4727	1
Alliance Air	72	1405	5
Blue Dart	4	624	1
Indigo	3317	63132	5
SpiceJet	220	4717	5
Star Air	31	1381	2
Total no. of FPLs for Scheduled Airlines	7050	109877	6

- 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 February 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	5029	15079	33
AirIndia EXPRESS	2057	9155	22
Akasa Air	834	3194	26
Alliance Air	152	651	23
Blue Dart	120	450	27
Indigo	6457	42955	15
SpiceJet	1149	3290	35
Star Air	111	441	25



- C. For analysis of non-receipt of CNL (cancel) messages for February 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 February 2026:

Name of Airline	CNL message not received	No. of flights annulled
AirIndia	48	52
AirIndia EXPRESS	55	64
Akasa Air	12	12
Alliance Air	87	87
Blue Dart	2	2
Indigo	102	107
SpiceJet	46	54
Star Air	13	14



Annexure-B

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

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

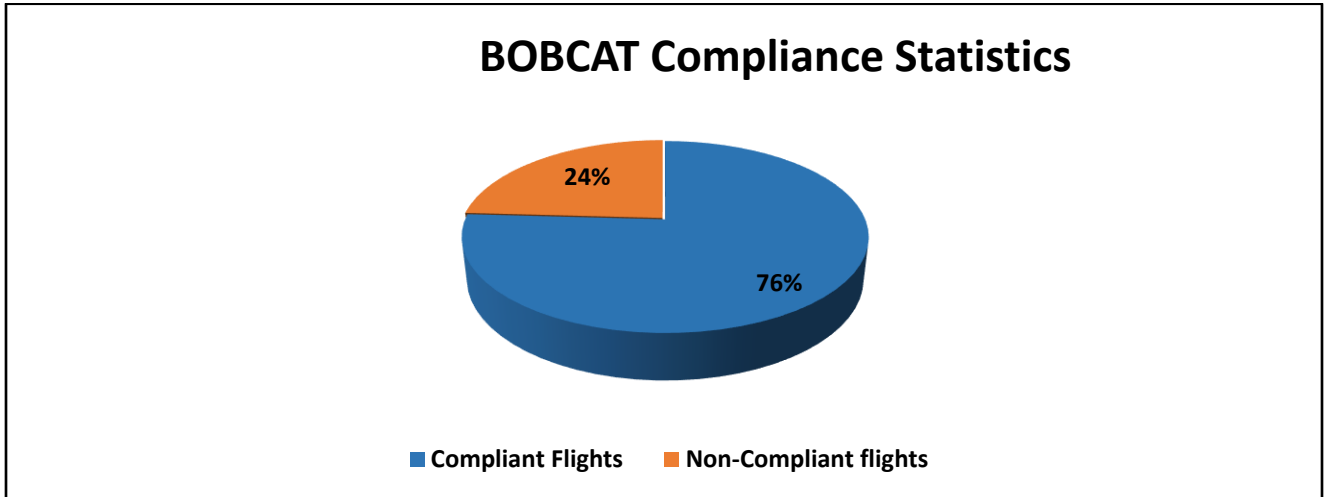
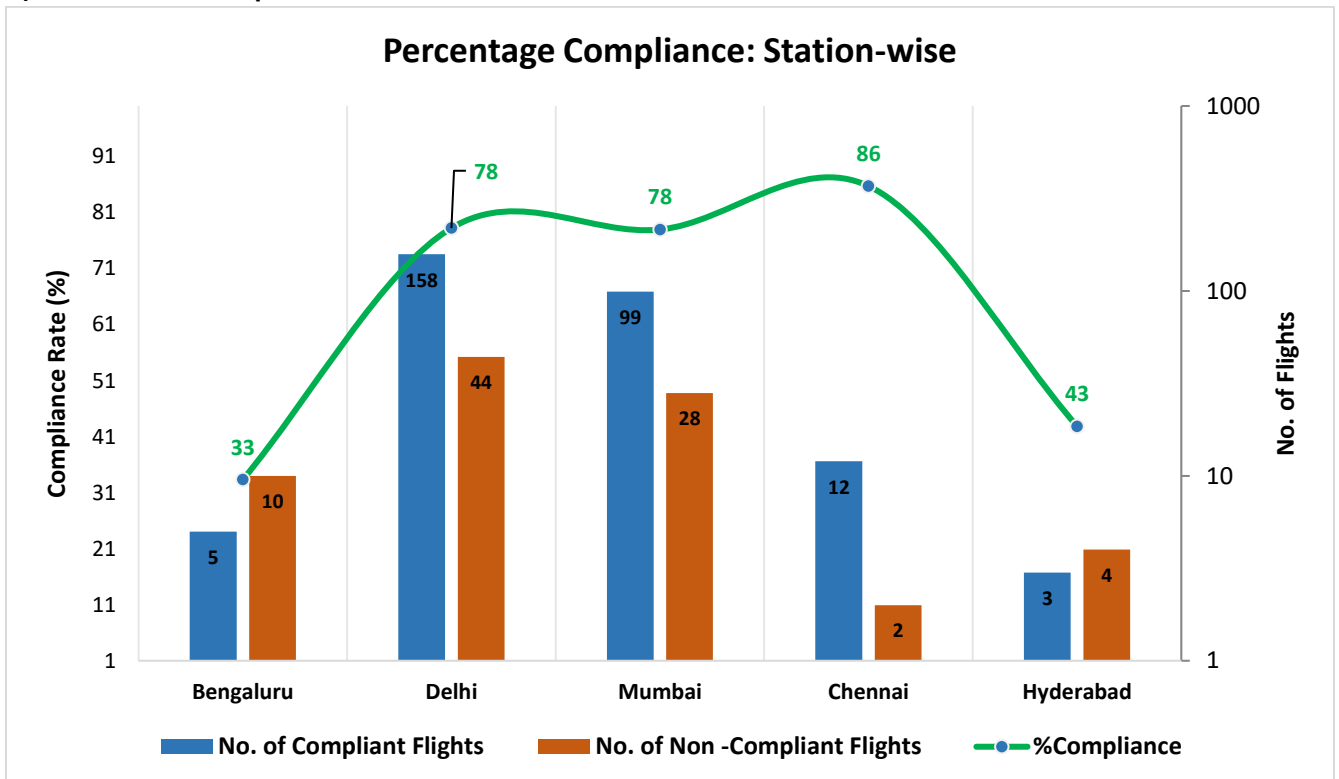
India is also part of BOBCAT reactivation group. Accordingly, AAI has also published AIP supplement 139 of 2025 effective from 04.09.2025 for the reactivation of Bay of Bengal Cooperative Air Traffic Flow Management (BOBCAT) Procedures and Implementation of BOBCAT Services. The cited AIP supplement contains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

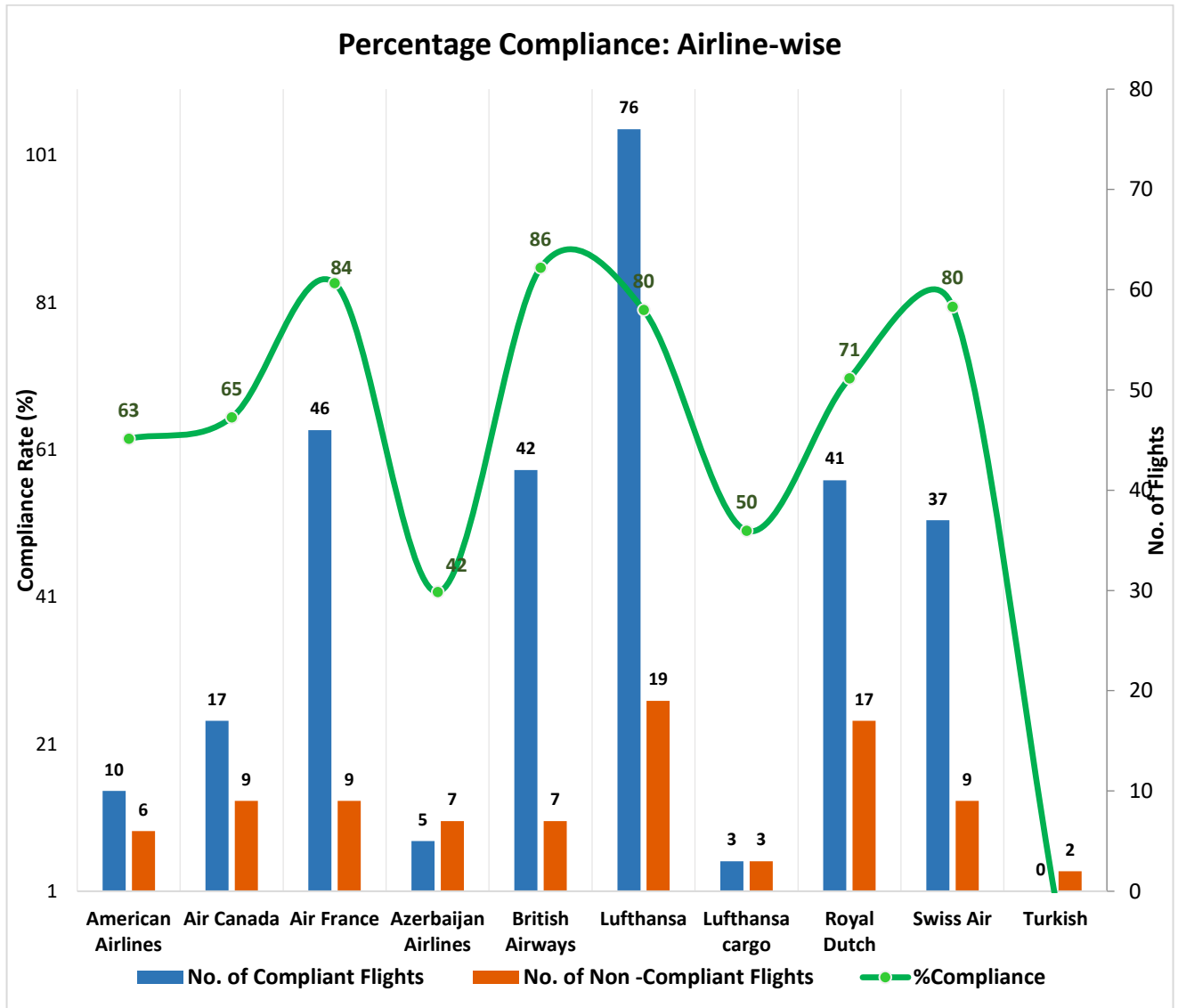
The compliance analysis is performed only for departures from India participating in the BOBCAT. As it is an airspace program the compliance window for the same is from -5 minutes to +5 minutes of the CTOTs issued.

No. of Compliant Flights	No. of Non- Compliant Flight	Total
277	88	365

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



	Bengaluru	Delhi	Mumbai	Chennai	Hyderabad
No. Of Compliant Flights	5	158	99	12	3
No. of Non-Compliant Flights	10	44	28	2	4
Compliance %	33	78	78	86	43

C) Airline wise Compliance:

--END of REPORT--