Chapter 11 – Operational Performance

Cabinet Committee on Economic Affairs (CCEA) as well as the Master Restructuring Agreement (MRA) executed between Air India Limited and lender banks fixed the milestones for operational efficiencies to be achieved by the AIL by March 2015. The achievement of targets fixed for Passenger Load Factor, Yield and On Time Performance are discussed below:

11.1   Passenger Load Factor

Passenger Load Factor is revenue passenger kilometers flown as a percentage of seat kilometers available. As per the milestone approved by the CCEA as well as the MRA executed between Air India Limited and lender banks, the Company should achieve the network PLF of 73 *percent* by FY 2015 and 75 *percent* in FY 2020.

Comparison of Passengers Load Factors (PLF) actually achieved vis-à-vis approved TAP/FRP is as follows:

Table 11.1: TAP Target vs Achievement of PLF

(In percentage)

Aircraft Type	2011-12		2012-13		2013-14		2014-15		2015-16	
	T	A	T	A	T	A	T	A	T	A
B-747-400	64.9	70	65.9	71.4	-	75	-	75.7	-	65.0
B-777-200LR	67.9	67.8	69.9	69.2	71.9	69.8	73.9	79.2	74.4	74.0
B-777-300ER	65.1	66.3	67.1	72.9	69.1	73.4	71.1	72	71.6	76.4
B-787-800	69.4	-	71.4	76.3	73.4	71.5	75	71.9	75.0	74.0
A-310-300	-	58.4	-	-	-	-	-	-	0.0	-
A-330-200/300	67.9	61.5	71.9	67.7	75	69.2	-	79.8	-	-
A-340	-	-	66.8	-	70.8	-	74.8	-	75.0	-
Avg. PLF – WB	66		68.7		71.4		73.3	72.3	73.5	74.5
A-319	72.5	74.5	73.2	75.5	74.0	77.1	74.7	79.4	75.2	79.1
A-320	67.5	68.5	68.2	68.7	69.0	74.8	69.7	75.1	70.5	76.6
A-321	70.9	72.4	71.7	75.5	72.4	76.3	73.2	78.7	73.7	78.4
A-320-IS	71.0	-	71.8	-	72.5	-	73.3	-	74.0	-
Avg.PLF-NB	70.0	71.8	70.8	74.0	71.6	76.2	72.5	77.8	73.2	78.0
AVG (WB & NB)	67.6		69.5		71.5		73	74.4	73.4	75.8

*T = Target as per TAP   A = Actual as per TAP team   **-** Indicates fleet not aviable*
Blank indicates data not provided by AIL

It can be seen from the above table that overall target of 73 *percent* by 2015 and 73.4 *percent* by 2016 had been achieved by AIL. However, the target in respect of wide body aircraft had not been achieved as there was shortfall in achievement of individual targets in case of B-777-200 LR and A -330 in the years 2011-12, 2012-13, 2013-14 and 2015-16 and B-787-800 in the year 2013-14, 2014-15 and in 2015-16.

Detailed analysis of PLF on various services on test check basis (both international and domestic services) for the period 2012-13 to 2015-16 revealed the following:

➢ The PLF for First class was below 23 *percent* on the international routes such as Delhi-New York & vv, Amritsar-Delhi–London & vv, Hyderabad-Delhi–Chicago & vv, Riyadh-Mumbai, Riyadh-Calicut, Riyadh-Delhi and Jeddah-Mumbai**.** In 2015-16, Mumbai-Riyadh & vv, Kochi-Riyadh & vv, Delhi-Riyadh & vv, Trivandrum-Riyadh & vv, Mumbai-Jeddah & vv, Kochi-Jeddah & vv, Mumbai-Hyderabad-Jeddah & vv routes belonged to this category.

➢ The PLF in Business class was below 15 *percent* on the International routes such as Kolkata–Yangon & vv, Delhi-Dhaka, Delhi-Kabul, Varanasi-Kathmandu, Chennai -Bangalore-Trivandrum–Mali & vv, Damam-Delhi, Ahmedabad-Mumbai-Muscat, Muscat-Mumbai and in 2015-16 Chennai-Muscat & vv and Mumbai-Muscat & vv.

➢ PLF in Business class in respect of domestic services was very low on routes such as Mumbai -Indore-Delhi & vv, Mumbai-Ahmedabad, Mumbai –Kolkata, Delhi-Vadodara, Delhi -Jammu- Srinagar, Delhi -Pune, Chennai-Kochi, Chennai –Hyderabad and Chennai -Mumbai. In 2015-16 Mumbai- Kochi & vv, Mumbai-Rajkot & vv and Calcutta – Durgapur –Delhi & vv belonged to this category.

Management stated (10 February 2016) that even though the schedule of operations were finalised and announced, the short term changes in the scheduled operations were necessitated due to engineering and operational requirements. These changes in turn necessitate a change in aircraft and day to day changes to ensure scheduled operations. Because of this, planned aircraft would be substituted with aircraft having business class or higher capacity in business class with insufficient time to maximise the passenger carriage which results in lower PLF. Further deployment of Wide Body aircraft on domestic legs of International flight to offer a seamless product to long haul international passengers results in lower PLF due to lack of demand during certain period to utilise the full wide body capacity.

MoCA in its reply (06 September 2016) stated that

1. AIL achieved the network yield vis-a-vis the target set as per TAP/FRP.

2. There was improvement in performance of PLF in 2015-16 as compared to 2014-15 on overall combined basis and for combined Business class in services on India-USA sector.

3. Proposal to convert the first class to Business class was not considered in view of the cost implications, time involved in grounding of aircraft and time required for obtaining certification.

The reply of MoCA is silent on PLF and on the improvement in PLF of first class on the India-USA sector. Further, the change in deployment of planned aircraft on domestic as well as international sector were necessitated due to failure of the company to adequately address the issues related to Engineering and Operational requirements which resulted in grounding of aircraft, as discussed in Chapter 5. Thus, the fact remains that the lesser occupancy in first class with inability to convert these seats to Business class and the non-availability of narrow body aircraft which compelled AIL to divert wide body aircraft on the routes planned for narrow body aircraft resulted in lower PLF apart from increased cost of operations.

11.2   Network Yield

Network Yield is revenue earned per passenger kilometer. TAP targets relating to yield indicated that the Company would achieve average network yield of ₹3.76 (WB-3.36 and NB-4.39) in FY 2015. In addition, the milestones approved by CCEA and the MRA executed between Air India Limited and lender banks stated that AIL should achieve network yield higher of that envisaged in the Financial Restructuring Plan or five *percent* points less than the Network Yield of market leader in the domestic and international market by the Fiscal Year ending on 31 March 2013. AIL was also expected to acheive target of three *percent* points less than the Network Yield of market leader in the domestic & international market during and from the Fiscal Year ending on 31 March 2013.

Comparison of network yield actually achieved vis-à-vis envisaged TAP-FRP is indicated below:

Table 11.2: Achievement of Yield vis-à-vis Targets in TAP

(In ₹- Revenue per KM)

Aircraft Type	2011-12		2012-13		2013-14		2014-15		2015-16	
	T	A	T	A	T	A	T	A	T	A
B-747-400	2.91	2.91	3.06	3.55	3.21	3.61	3.37	4.37	3.38	4.17
B-777-200 LR	3.21	3.1	3.37	3.49	3.54	3.52	3.55	4.66	3.55	3.87
B-777-300 ER	2.7	2.87	2.84	3.1	2.98	3.32	3.13	3.5	3.14	3.46
B-787-800	3		3.15	4.1	3.31	3.35	3.48	3.38	3.49	3.38
A-310-300	3.28	2.75	3.45	-	3.55		3.55	-	3.55	-
A-330-200/300	2.92	2.85	3.06	3.58	3.22	3.34	3.38	3.21	3.39	-
A-340	3	-	3.15	-	3.31	-	3.48	-	3.49	-
Wide Body Yield	2.89		3.06		3.23		3.36	3.49	3.36	3.46
A-319	5.04	5.48	5.14	6.05	5.24	6.33	5.35	6.1	5.37	5.72
A-320	4.07	4.76	4.15	5.77	4.23	5.52	4.32	5.04	4.34	4.53
A-321	3.88	4.66	3.96	5.99	4.04	6.21	4.12	5.31	4.14	4.64
A-320-IS	3.81	-	3.92	-	4.04	-	4.16	-	4.18	-
Narrow Body Yield	4.24	4.95	4.3		4.36	6.09	4.39	5.46	4.40	4.87
Wt. Avg AI	3.46		3.53		3.64		3.76	4.27	3.75	4.00

T= Target as per the approved TAP/FRP, A= Actuals   - Indicates fleet not aviable
Blank indicates data not made available by AIL

AIL achieved the overall target for Network Yield prescribed in TAP in 2014-15 and 2015-16. However individual targets were not achieved in case of B-777-200LR in 2011-12 and 2013-14, A-330 in 2011-12 and 2014-15 and in case of B-787-800 in 2014-15 and 2015-16.

As stated in the MRA, network yield should be higher of FRP or five *percent* less than that of the market leader. The AIL Management did not compare the network yield with market leader in its report to the Oversight Committee.

Management confirmed (10 February 2016) achievement of network yield vis-a-vis the target set as per TAP/FRP and stated that yields depend on market conditions (i.e. market size and capacity deployed) and capacity deployment was again based on optimising of resources

available with the airline. Certain routes reflected lower yields due to deployment of higher capacity aircraft and the need to fill up this increased capacity especially during lean seasons through lower fares, in order to optimise revenue.

MoCA in its reply (06 September 2016) while confirming that airline had achieved the target as per TAP/FRP but did not reply on the failure to compare the network yield with market leader.

The reply has to be viewed against the fact that it was the non-availability of narrow body aircraft which constrained AIL to divert wide body aircraft on routes planned for narrow body aircraft, resulting in lower yields apart from increasing the cost of operations.

11.3   On Time Performance

On Time Performance (OTP) is a measure of reliability and is a key performance indicator for an airline. A flight is normally considered to be 'on time' if it departs within 15 minutes of its scheduled departure time.

The corporate OTP target of AIL is to ensure that 90 *percent* of flights depart within 15 minutes of schedule. As per the milestone approved by the CCEA as well as the MRA executed between Air India Limited and Lender's Bank, the Company should achieve an overall OTP of 85 *percent* in 2012-13 and 90 *percent* by 2013-14. The actual on time performance of AIL during the period 2011-12 to 2015-16 was as indicated below:

Chart 7: OTP of AIL for the period 2011-2016
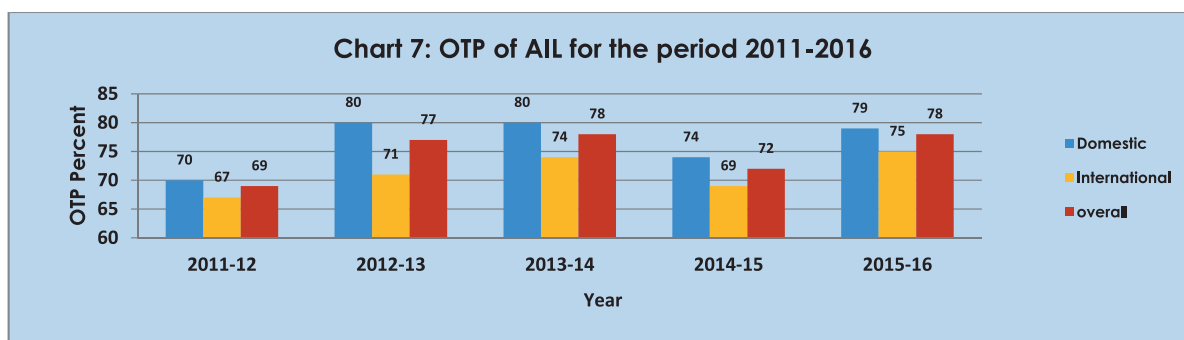
Note: 2011-12 data is from October 2011-March 2012
Source: Data received from Integrated Operations Control Centre (IOCC)

As can be seen from the table above, the targets of 85-90 *percent* in OTP had not been achieved. While OTP had improved over 2012-13 and 2013-14, it declined sharply in 2014-15 to an overall 72 *percent*, with international OTP at a low of 69 *percent*. The overall OTP rose to 78 *percent* in 2015-16 with domestic OTP at 79 *percent* and international at 75 *percent*.

In order to analyse the poor performance of AIL on OTP, Audit reviewed the OTP of AIL at Mumbai and Delhi airports for the year 2014-15. The OTP at these airports were selected for review on account of the following:

- Delhi is the busiest airport for AIL flights besides being its hub. Mumbai is the second busiest airport and together they cater to 39 *percent* of the flights AIL operates. OTP in these airports therefore had the most significant impact on overall OTP of the airline.

11.3.1   OTP of AIL vis-a-vis other scheduled domestic Airlines at Delhi and Mumbai airport during FY 2014-15 and FY 2015-16

OTP of scheduled domestic airlines are recorded by the operators of Delhi and Mumbai airports. The performance of AIL vis-à-vis other airlines is indicated in the graph below:

Chart 8: OTP of AIL as against other scheduled domestic airlines at Mumbai and Delhi airport for 2014-15

Chart 8A: OTP of AIL vis-a vis other scheduled domestic airlines at Mumbai and Delhi airport for 2015-16
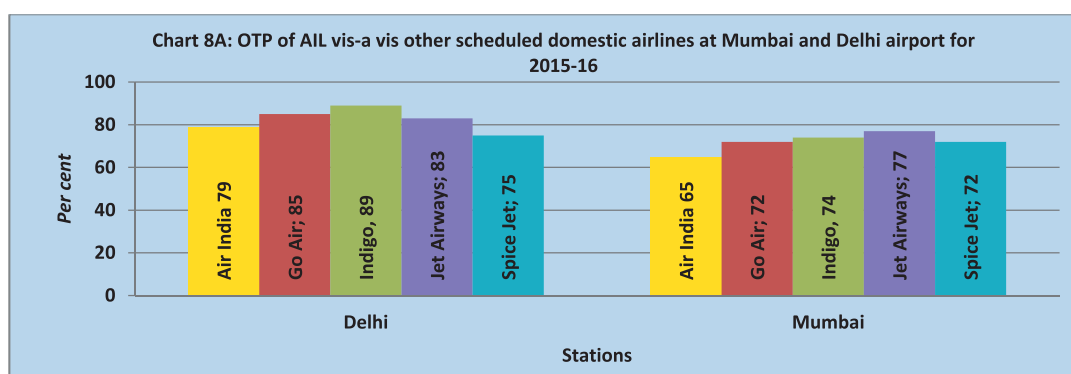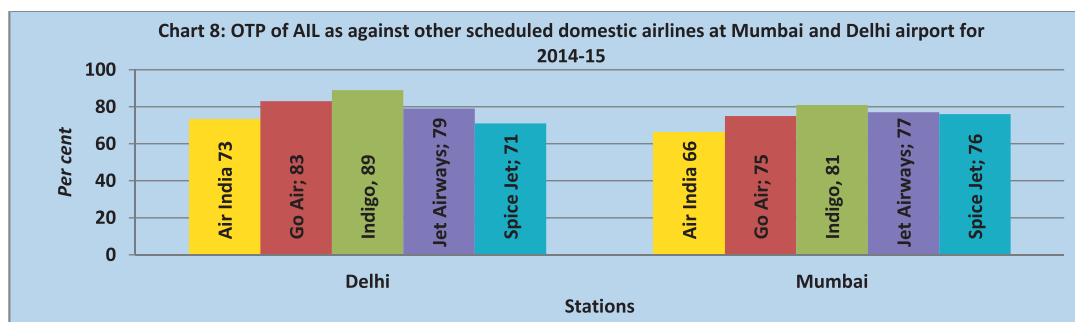
Source: Delhi and Mumbai Airport Operator's website

As can be seen, the performance of AIL had been lower than that of other domestic carriers. While AIL recorded the lowest OTP in Mumbai, it ranked just below the worst performer in Delhi in both FY 2014-15 and FY 2015-16.

MoCA informed (06 September 2016) that Air India had taken several steps to improve the OTP like recruitment of operating crew both for cockpit and cabin, grounding of classic aircraft in phased manner, leasing of new A-320 aircraft and review of the block timing.

While efforts taken by management to improve the OTP are appreciated, OTP of AIL for 2015-16, was still lower as compared to other domestic carriers at Delhi and Mumbai airports as shown in the above graphs.

11.3.2   Delay codes assigned by AIL to analyse OTP

AIL assigns codes to categorise delays in order to identify the reasons for such delay. The delay codes are recorded in the 'On Time Performance Delay Code Handbook' and cover codes 1 to 99, as summarised below:

Table 11.3 Delay codes of OTP in AIL

Code	Description	Controllable /NonControllable
01 to 10	Specific delays	Entirely within the control of AIL (excluding 51 to 54 which are Beyond the control of AIL)
11 to 20	Passenger and baggage	
21 to 30	Cargo and mail	
31 to 40	Aircraft and ramp handling	Can be controlled by AIL through better planning.
41 to 50	Technical and aircraft equipment	
51 to 54	Damage to aircraft	
55 to 60	EDP/ automated equipment failure	
61 to 70	Flight operations and crewing	
71 to 80	Weather	Beyond the control of AIL
81 to 84	Air-Traffic flow management restrictions	
85 to 90	Airport and government authorities	
91 to 94 and 95 to 96	Reactionary	Partially controllable by AIL: Improvement can be done through better management.
93	Reactionary:- Delays attributed to delayed arrival of the aircraft from previous sector(s)	Partially controllable by AIL: Improvement can be done through better management of departure of aircraft from previous locations due to controllable delays at previous sector to avoid late arrival of aircraft at next location.
97 to 99	Miscellaneous	Beyond the control of AIL like industrial action political agitation etc.

	Within control of AIL		Beyond control of AIL		Partially controllable

11.3.3   Analysis of OTP of AIL flights in Delhi-Mumbai-Delhi Sector

Audit carried out an OTP analysis (Annexure-10 and 11) on the basis of the delay codes, for 50 *percent* of the domestic flights of AIL in the Delhi-Mumbai-Delhi (domestic) sector for a period of one year (2014-15). Eight out of 15 Delhi-Mumbai flights and seven out of 13 Mumbai-Delhi flights were studied. These flights showed a low OTP for periods ranging between five to twelve months.

(A) The results of the analysis for 2014-15 are indicated in the charts (9 and 10) below:

Chart 9: Reasons for delay at Delhi airport

Chart 10: Reasons for delay at Mumbai Airport
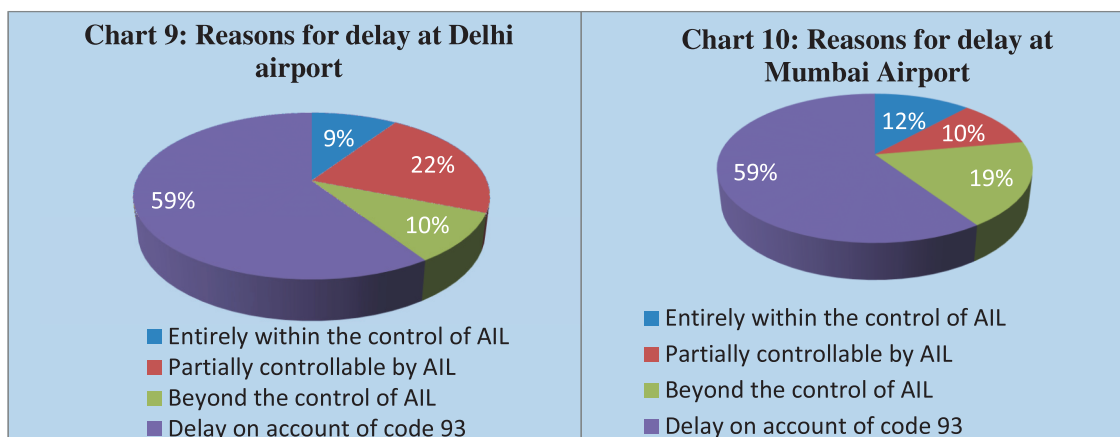
The following facts emerge from the charts for 2014-15 above:

- Nine *percent* of the delay at Delhi airport and 12 *percent* of the delays at Mumbai airport was entirely within the control of AIL. Another 22 *percent* of delays in Delhi and 10 *percent* of delays in Mumbai were partially attributable to AIL.

- Significant reason for delays (representing more than half the delays i.e. 59 *percent*) were delayed arrival of the aircraft from previous sector(s).

Similar OTP analysis (Annexure-10A and 11A) for the year 2015-16 was carried out in audit. The results of the analysis for 2015-16 are indicated in the charts (9A and 10A) below:

Chart 9A : Reasons for delay at Delhi Airport 2015-16

Chart 10A: Reasons for delay at Mumbai Airport 2015-16
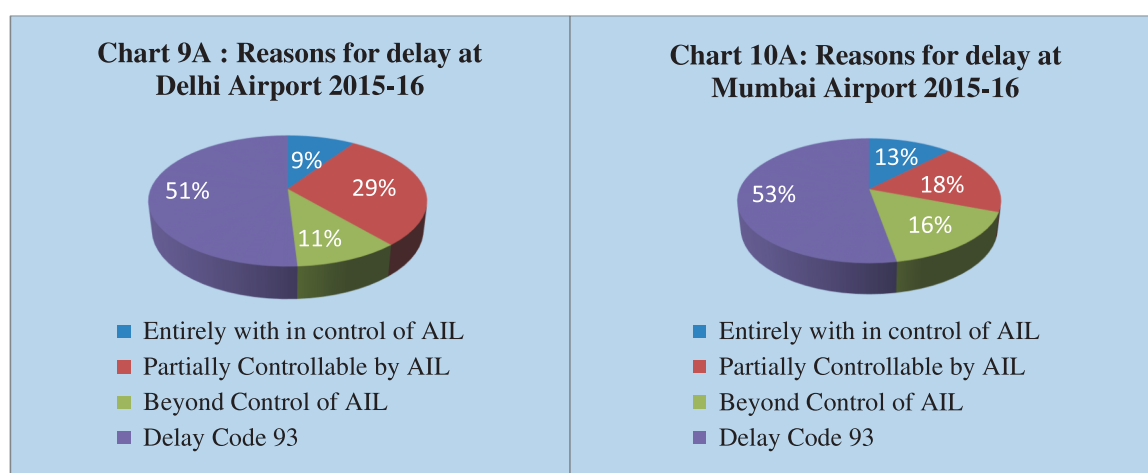
The above charts and information in Annexures (10A and 11A) indicate that delay percentage within control of AIL remained almost same in 2015-16 as compared to 2014-15. However, there was significant increase in delays which were partially attributable to AIL as 29 *percent* of delays in Delhi and 18 *percent* of delays in Mumbai were partially attributed to AIL. A case in point was Delhi- Mumbai AI-317 (having an OTP of 40 *percent* in 2015-16) where half of the delays (62 out of 125 delays) were due to waiting for crew from other AIL flights. Similarly Mumbai – Delhi flight AI-310 (having an OTP of *62 percent* in 2015-16) was delayed 35 times (out of 79 delays) waiting for crew.

A significant reason for delay, (representing more than half of the delays in 2015-16) was delayed arrival of the aircraft from previous sector(s).

(B) Considering the large effect of Code 93 - Delayed arrival of aircraft, Audit analysed these delays by studying the reasons for delayed arrival of the aircraft. For this purpose, Audit tracked the aircraft registration throughout their rotations on a daily basis to arrive at the reasons for delay in the previous sector(s). The analysis was done for the year 2014-15. The delays were traced to their origin and reasons for the same recorded as per the delay codes explained at Para 11.3.2 above. The results of this analysis are summarised in the chart below:
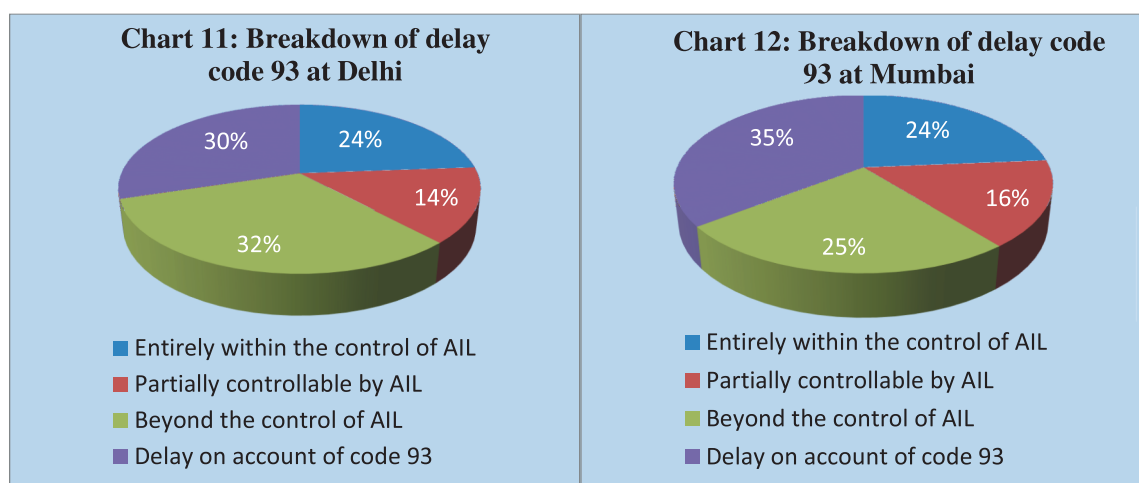
The following issues emerge from the analysis:

- 24 *percent* of the delays (in both ex-Mumbai and ex-Delhi sectors) indicated under code 93 were within the control of AIL in a previous sector.
- Another 14 *percent* of delays in Delhi and 16 *percent* of delays in Mumbai were partially controllable by AIL in a previous sector.

Results of similar analysis[63] for the year 2015-16 are summarized in charts given below:
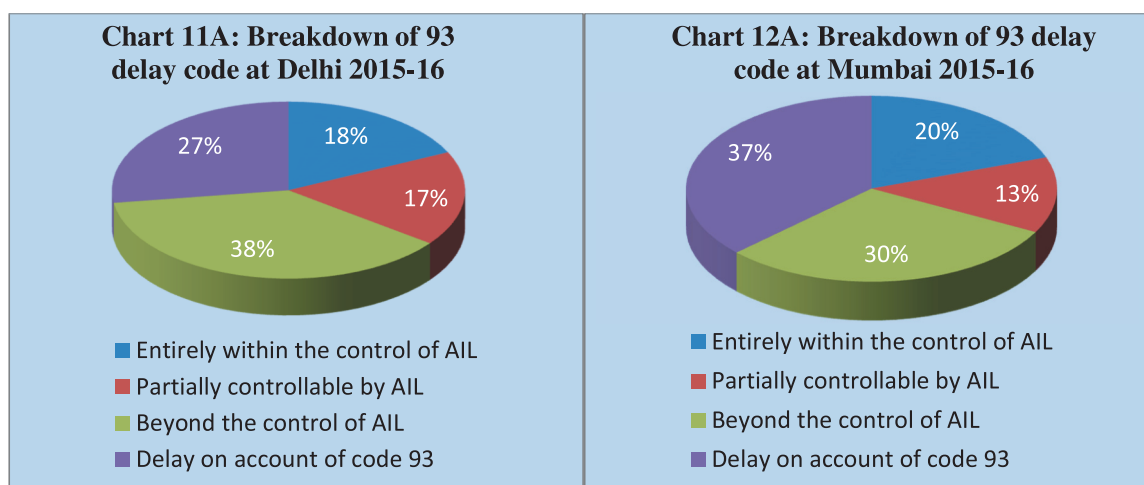

- As can be seen from the charts, 18 *percent* of the delays in ex-Delhi sectors and 20 *percent* in Ex-Mumbai sectors indicated under code 93 were within the control of AIL in a previous sector.

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[63] *Reasons for delays in relating to cases of Code 93 -Delayed arrival of aircraft were analysed to verify actual reason of delay in departure from previous airport.*
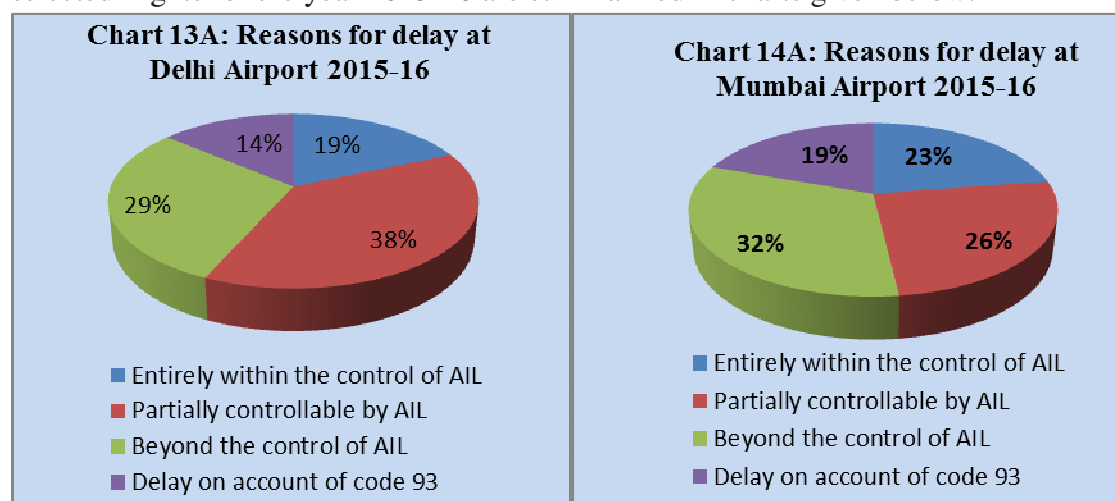
- Another 17 *percent* for Delhi and 13 *percent* for Mumbai were partially controllable by AIL in a previous sector.

(C) The consolidated *percent* after incorporating the analysis of delay in earlier station, the overall delays during 2014-15 in the selected flights, categorised into those within the control of AIL and those partially within the control of AIL and those beyond the control of AIL as indicated in the chart below:

Chart 13: Reasons for delay at Delhi Airport

Chart 14: Reasons for delay at Mumbai Airport
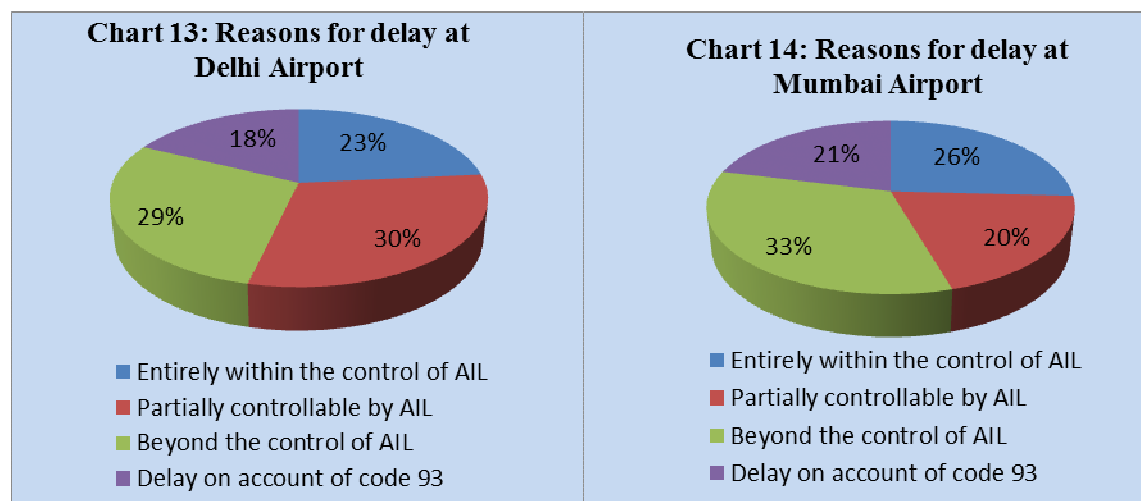
The chart indicates the following:

➢ 23 *percent* of the delays in Delhi and 26 *percent* of the delays in Mumbai airport were entirely attributable to AIL. Another 20 *percent* to 30 *percent* of the delays were partially controllable by AIL.

➢ The significant balance of reactionary delays due to late arrival of aircraft (code 93) was on account of non-operation of scheduled aircraft and insufficient ground time availability.

Similarly the consolidated position of delay after including delays in earlier sector for selected flights for the year 2015-16 are summarized in charts given below:

Chart 13A: Reasons for delay at Delhi Airport 2015-16

Chart 14A: Reasons for delay at Mumbai Airport 2015-16

The Charts for 2015-16 indicate that:

➢ 19 *percent* of the delays in Delhi and 23 *percent* of the delays in Mumbai airport were attributable entirely to AIL. However delays which could be partially controllable by AIL increased significantly to 38 *percent* at Delhi and 26 *percent* at Mumbai.

➢ This analysis indicate that considerable improvement in OTP, could be achieved by AIL through better operational management.

Management stated (February 2016) that:

- If there was a primary delay in departure of the aircraft it would affect the subsequent flights which are termed as reactionary delays and that breaking down these delays and re-apportioning them as controllable might not be justified.
- Airline operation was a network operation and at times incoming crew of a flight were required to operate another aircraft for another flight on arrival. Similarly passengers arriving on a particular flight were sometimes required to be connected to another outbound flight. Delay to incoming flight could have a reactionary effect on another outbound flight on account of aircraft, crew, passengers etc.
- Sometimes reactionary delays could occur even without a primary delay. This occured when a flight departed on time but reached its destination late because of delay en-route due to ATC, airport congestion, weather clearance etc.
- Management pointed out that scheduled aircraft or crew might not be available on the day of operation which led to disturbance in scheduled rotation of aircraft as well as departure times.

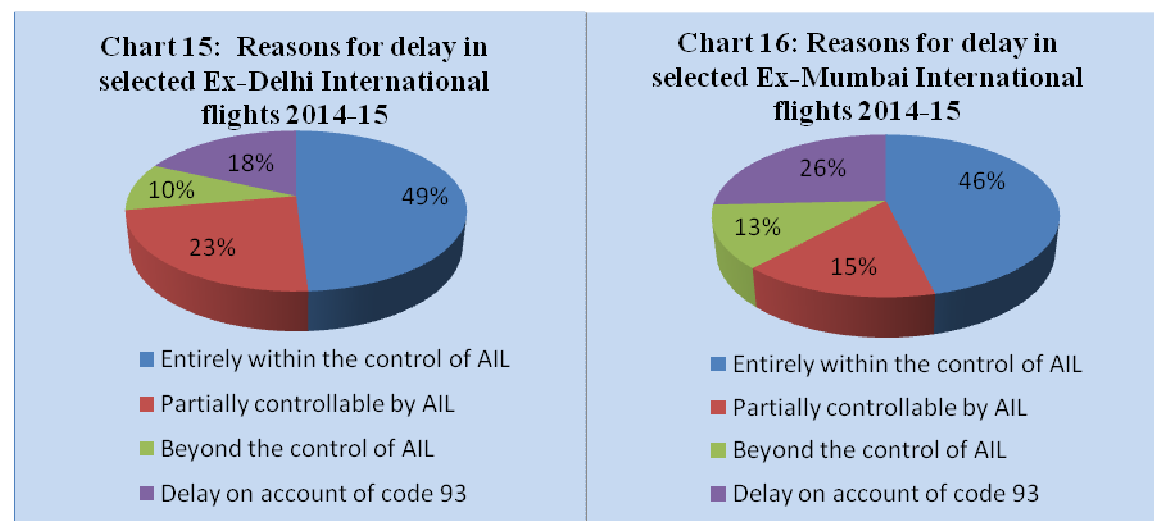The reply of the Management needs to be viewed in the following context:

i) AIL had suggested to the Oversight Committee (monitoring TAP) that its OTP target needs to be reduced, citing its status as a network carrier. This, however, had not been agreed to by the Oversight Committee (August 2013, January 2014 and March 2015). It was therefore important that the factors affecting OTP within the control of AIL were addressed for a better OTP achievement of the airline.

ii) The audit analysis of reactionary delays (delay code 93) had considered only cases of delay which were either entirely or partially controllable by AIL. The proportion of primary delays at 24 *percent* indicates that considerable improvement in OTP could have been effected by better operational management of AIL.

iii) As stated by the Management, primary delays had a cascading effect on subsequent flights. If primary delays were controlled by the airline across the network, reactionary delays could be significantly reduced leading to better OTP.

MoCA did not offer any reply (06 September 2016).

11.3.4	OTP analysis (2014-15) of AIL flights in Delhi and Mumbai Airports: International Sector

AIL operated an average of 40 international flights from Delhi and 13 from Mumbai. Audit analysed the OTP of 50 *percent* (19 ex-Delhi and seven ex-Mumbai flights) of these flights. The flights with lower OTP operating to major international destinations were selected for the audit analysis**.** It was seen that selected flights showed low OTP for period ranging from 5 to 12 months. Thus the delays were persistent and not cyclic.

The delays in ex-Delhi and ex-Mumbai international flights were allocated to the delay codes (as explained at para 11.3.2) and classified as those entirely within the control of AIL, those partially within the control of AIL, those beyond the control of AIL and reactionary delays due to late arrival of aircraft. The results (Annexure-12 and 13) are shown in the chart below:

Chart 15: Reasons for delay in selected Ex-Delhi International flights 2014-15

Chart 16: Reasons for delay in selected Ex-Mumbai International flights 2014-15

As seen from the chart, delays within the control of AIL were more significant (nearly half) in case of international flights. The reactionary delays were large for two ex-Mumbai flights (Flight no AI-983 Mumbai–Dubai and AI 985 Mumbai -Muscat). These delays were again analysed after considering the aircraft rotation and analysis of delay in arrival of the aircraft for the earmarked international flight. It was noticed that a part of these reactionary delays were also attributable to AIL.

Audit observed that, crew related problems were a major reason for delay at Delhi. A case in point was the Delhi-Sydney-Melbourne flight, AI-302 (having an OTP of 48 *percent* in 2014-15) had been delayed 93 times (out of 182 delays) due to crew. In some cases, flights were delayed waiting for passenger and crew from other connecting AIL flights which were delayed. An example was the Delhi-Hong Kong flight, AI-310 (having an OTP of 49 *percent* in 2014-15) which was delayed 47 times (out of 108 delays) awaiting passenger and crew from other AIL flights.

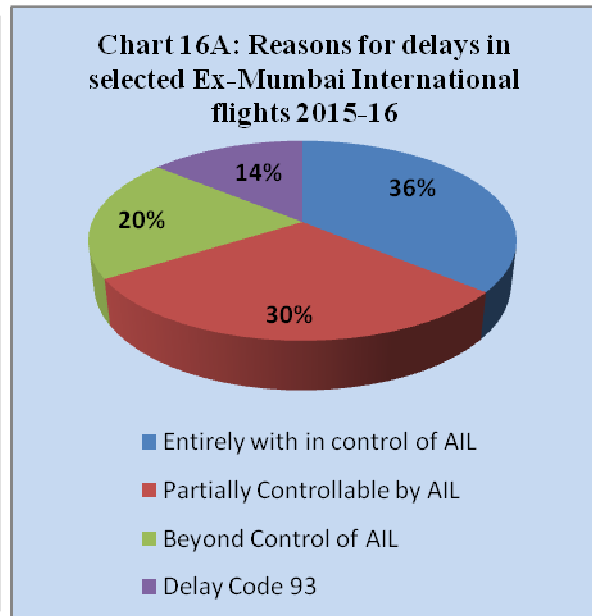Management did not specifically respond to the observation.

MoCA replied (06 September, 2016) that:

- Air India flight AI-983 Mumbai-Dubai and AI-985 Mumbai-Muscat operate at the end of the day and have to absorb all accumulating/cascading delays of the day.

- Pattern of operation of Delhi-Sydney-Melbourne flight had been amended to take care of crew related delays. There were two different types of aircraft deployed on this route resulting in high delays and Air India was attempting to address this issue.

The reply of MoCA regarding flights AI 983 Mumbai –Dubai and AI 985 Mumbai –Muscat needed to be viewed in the light of the fact that a part of the reactionary delays of these flights were also attributable to AIL. While efforts being taken by management to improve

the operations of Delhi-Sydney-Melbourne flight are appreciated, persistent delays point to need for continuous corrective action by the airline for improving On-time Performance.

11.3.5 OTP analysis (2015-16) of AIL flights in Delhi and Mumbai Airports: International Sector

Chart 15A: Reasons for delays in selected Ex-Delhi International flights 2015-16

- 17%
- 32%
- 16%
- 35%

■ Entirely with in control of AIL
■ Partially Controllable by AIL
■ Beyond Control of AIL
■ Delay Code 93

Chart 16A: Reasons for delays in selected Ex-Mumbai International flights 2015-16

- 14%
- 36%
- 20%
- 30%

■ Entirely with in control of AIL
■ Partially Controllable by AIL
■ Beyond Control of AIL
■ Delay Code 93
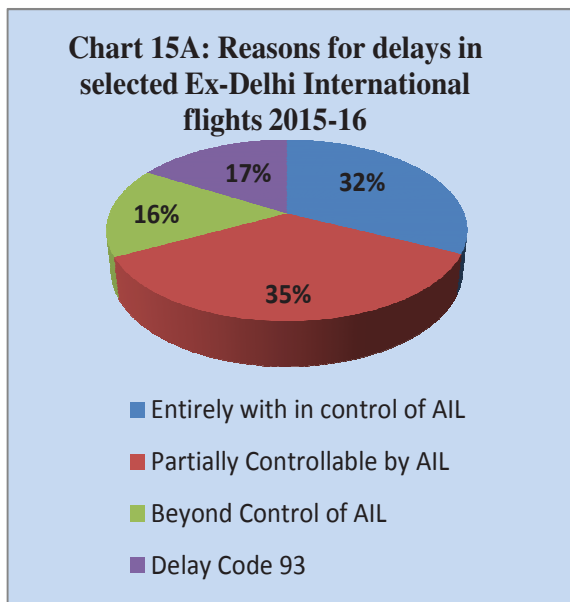
As seen from the charts above and information in Annexure-12A and 13A, delays within the control of AIL were again significant (nearly one third) in case of international flights in 2015-16. The reactionary delays were again high for two ex-Mumbai flights (Flight no AI 983 Mumbai –Dubai and AI 985 Mumbai -Muscat) in 2015-16 as well. These delays were analysed after considering the aircraft rotation in previous sectors.The analysis indicates that part of these reactionary delays were fully or partially attributable to AIL.

Delays partially within the control of AIL increased significantly in 2015-16 (constituting nearly one third of delays) both in Delhi and Mumbai. A case in point is Delhi-Hong Kong AI-310 flight (having an OTP of 52 *percent* in 2015-16) which was delayed 81 times (out of 101 delays) due to waiting for passengers and crew. Similarly Mumbai-Abu Dhabi AI-945 flight (having an OTP of 58 *percent* in 2015-16) was delayed 89 times (out of 153 delays) due to waiting for crew from other incoming AIL flights.

11.4 Cancellation of flights

Cancellation of flights cause inconvenience to passangers and inversely impact the brand image of the airline. Summary of reasons for cancellation of flights at Delhi and Mumbai stations for the year 2014-15 is as follows:

Table 11.4 Reasons for cancellation in Mumbai and Delhi

Reason for Cancellation	Station	
	Delhi	Mumbai
Aircraft maintenance	142	107
Crew	30	20
Scheduling Constraint	27	27
Weather	31	6
Commercial	7	4
Miscellaneous	27	17
Other	21	8
Total	**285**	**189**

Source: Data received from AIL/IOCC

From the information in the table above it was observed that almost 50 *percent* of flights were cancelled due to aircraft problems followed by crew related problems at Delhi airport. At Mumbai airport, major reason for flight cancellation was aircraft related problems.

In 2015-16 also aircraft maintenance and crew related problems were the main reasons for cancellation of flights as shown in table given below:

Table 11.4A Cancellation reasons in Mumbai and Delhi 2015-16

Reason for Cancellation	Station	
	Delhi	Mumbai
Aircraft Maintenance	81	62
Crew	45	38
Scheduling Constraint	4	6
Weather	22	6
Commercial	3	1
Miscellaneous	16	8
Other	43	16
Total	**214**	**137**

Source: Data received from AIL/IOCC

It was also observed in audit that although these flights were not operated, they were not categorised as cancelled by the Integrated Operation Control Centre (IOCC).

Management in its reply (February 2016) stated that flights were not treated as cancelled in the IOCC data because they were treated as combined operations. MoCA replied (06 September 2016) that flights are combined as part of rescheduling when a combinable load existed in order to save costs and resources. Because the passengers of two combined fights were taken into one, treating the other flight as cancelled would result in cancellation of booking. In view of the above, Air India did not treat such as cancelled.

The reply is not acceptable as audit observation was on the reporting of number of cancelled flights and not on how the passenger booking was handled. If two scheduled flights were combined, then in place of two scheduled flights only one was operated and the other flight would invariably be treated as cancelled.

11.5   Rescheduling of flights

Schedules for flights, both domestic and international, were prepared on half-yearly basis which are approved by Director General of Civil Aviation (DGCA). These schedules could be altered during actual operation by the airlines. A flight could be rescheduled more than three days in advance by the Market Planning Department of AIL. The responsibility of re-scheduling flights within three days to one day of its original flight schedule, was with the Integrated Operation Control Centre (IOCC). Such re-scheduling needed to be approved by DGCA/airport operator.

Audit noticed that a high percentage of AIL flights were rescheduled within the short three day window as seen from the table below:

Table 11.5: Details of rescheduling of flights

Year	Total no. of flights	No. of flights rescheduled	Percentage of flights rescheduled
2012-13	134851	18376	13.62
2013-14	132275	14385	10.87
2014-15	132559	18199	13.73
2015-16	124285	21555	17.34

Source: AIL/ IOCC
Figures for 2012-13 to 2014-15 include services of AIL + 9I i.e. Alliance Air figures for 2015-16 indicate for AIL only.

As seen from the above table, the percentage of re-scheduling has increased since 2014-15. Audit analysed the reasons assigned by IOCC for re-scheduling. It was noticed that some of the reasons for rescheduling were within the control of AIL while others were beyond their control as given below:

Table 11.6: Reasons for re-scheduling of flights

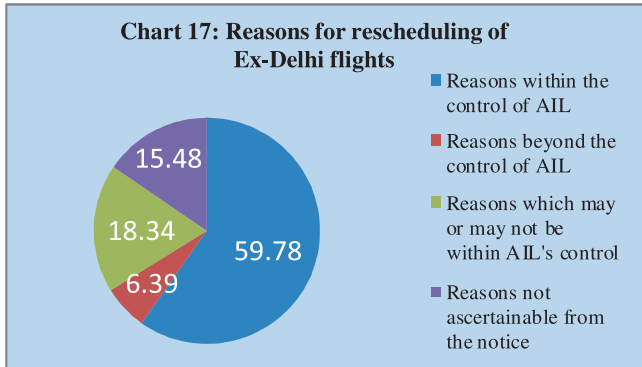| Reasons within control of AIL	Reasons beyond control of AIL	Reasons which may or may not be within AIL's control
• Planned aircraft maintenance • Cabin/cockpit crew constraints • Aircraft defects • Scheduling constraints • Operational reasons • Marketing/commercial issues • Ground crew/others • Aircraft and ramp handling • Passenger and baggage handling	• Weather • Air traffic flow management restrictions • Airport related problems • Government requirements • Un-scheduled requirement	• Reactionary reasons • Reactionary to technical * change • Miscellaneous

*Aircraft is grounded due to technical reasons and aircraft equipment defects resulting in consequent delays subsequent flight operations

Audit analysed the reasons for re-scheduling of ex-Delhi and ex-Mumbai flights during 2014-15 and 2015-16 the results for which are given in the succeeding paragraphs.

11.5.1 Analysis of rescheduling of Ex-Delhi Flights

Audit noticed that the reason for re-scheduling had been recorded as 'miscellaneous' in 61 *percent* of the cases in the report generated by IOCC. In order to appreciate the actual reasons for rescheduling, Audit studied the re-scheduling notices issued by IOCC which recorded the actual reasons. These analysis indicate that, for the year 2014-15 nearly 59.78 *percent* of the

Chart 17: Reasons for rescheduling of Ex-Delhi flights

- 59.78 — Reasons within the control of AIL
- 6.39 — Reasons beyond the control of AIL
- 18.34 — Reasons which may or may not be within AIL's control
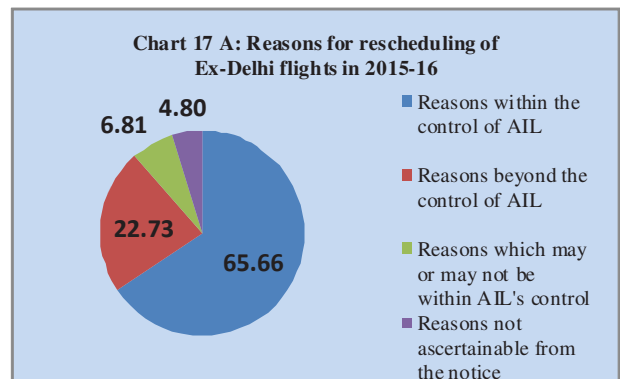- 15.48 — Reasons not ascertainable from the notice

re-scheduling was on account of reasons within the control of AIL as shown in the chart alongside.

An analysis of these 59.78 *percent* of cases of rescheduling indicated that planned aircraft maintenance accounted for the bulk of the rescheduling with its share of 15.81 *percent*. The other reasons for re-scheduling were cabin crew constraints (9.79 *percent*), cockpit crew constraints (8.21 *percent*), aircraft defects (7.17 *percent*), scheduling constraints (6.13 *percent*), and passenger/baggage handling (2.86 *percent*).
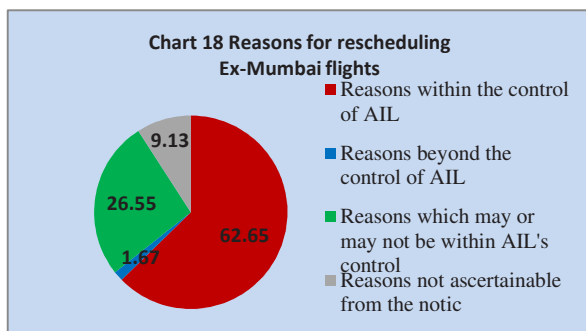
In 2015-16, the reason for re-scheduling had been recorded as 'miscellaneous' in 53.54 *percent* of the cases in the report generated by IOCC. Analysis of these reasons revealed that 65.66 *percent* of the re-scheduling had been due to reasons within the control of AIL (Chart 17 A). A further review of these reasons indicated that planned aircraft maintenance, cockpit crew constraints and scheduling constraints were the most significant reasons accounting for 19.70, 15.37 and 16.84 *percent* respectively.

Chart 17 A: Reasons for rescheduling of Ex-Delhi flights in 2015-16

- 65.66 — Reasons within the control of AIL
- 22.73 — Reasons beyond the control of AIL
- 6.81 — Reasons which may or may not be within AIL's control
- 4.80 — Reasons not ascertainable from the notice

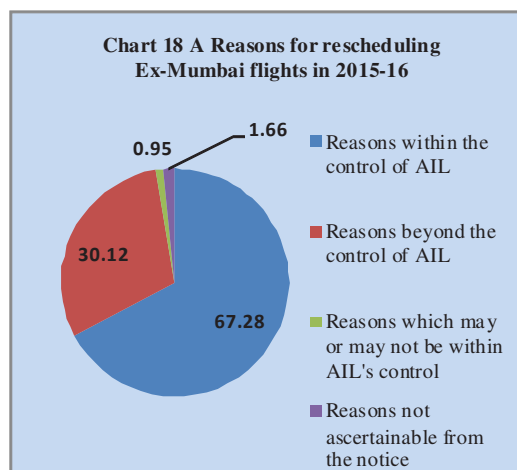### 11.5.2 Analysis of rescheduling of Ex-Mumbai flights

During 2014-15 a significant percentage (40 *percent*) of ex-Mumbai flights had recorded 'miscellaneous' as the reason for re-scheduling. Audit analyzed the reasons of re-scheduling of ex-Mumbai flights for the year. As seen from the chart, 62.65 *percent* of the re-scheduling

Chart 18 Reasons for rescheduling Ex-Mumbai flights

- 62.65 — Reasons within the control of AIL
- 1.67 — Reasons beyond the control of AIL
- 26.55 — Reasons which may or may not be within AIL's control
- 9.13 — Reasons not ascertainable from the notic

had been due to reasons within the control of AIL. A further break-up of these reasons indicated that cockpit crew constraints at 23.6 *percent* was the most significant reason. The other reasons included planned aircraft maintenance (10.69 *percent*), scheduling constraints (10.4 *percent*), aircraft defects primary (6.47*percent*), cabin crew constraints (4.29 *percent*),

passenger and baggage handling (1.35 *percent*).

During 2015-16, the reason for re-scheduling had been recorded as 'miscellaneous' in 33.31 *percent* of the cases in the report generated by IOCC. Analysis of reasons revealed that 67.28 *percent* of the re-scheduling has been on account of reasons within the control of AIL (Chart 18 A). A further review indicated that cockpit crew constraints at 39.51 *percent* was the most significant reason. The other reasons included scheduling constraints (10.01 *percent*) & planned aircraft maintenance (6.76 *percent*).

Chart 18 A Reasons for rescheduling Ex-Mumbai flights in 2015-16

- Reasons within the control of AIL
- Reasons beyond the control of AIL
- Reasons which may or may not be within AIL's control
- Reasons not ascertainable from the notice

Audit also noted that out of a total of 6989 flights rescheduled in 2014-15, consisting of 4239 ex-Delhi and 2750 ex-Mumbai flights, 6148 flights, representing 87.97 *percent* pertained to flights of A-320 family aircraft (A 320-1212,A-321-2690 and A-319-2246). 7.28 *percent* of the balance rescheduling, pertained to 787 Dreamliner fleet. Re-scheduling, was thus, more frequent in the narrow body fleet and Dreamliner fleet of AIL. In 2015-16, out of a total of 9857 flights rescheduled consisting of 5640 ex-Delhi and 4217 ex-Mumbai flights, 8752 flights, representing 88.79 *percent* pertained to flight of A-320 family aircraft, 7.5 *percent* of the balance rescheduling, pertained to 787 Dreamliner fleet.

Thus, rescheduling of services were largely within the control of AIL, as seen from the analysis of ex-Delhi and ex-Mumbai flights. It was also noticed that the airline did not have a mechanism to monitor/control rescheduling of its services.

Management in reply (02 February 2016) stated the following:

➢ Flights were re-scheduled when constraints in resources were foreseen for future dates. The passengers were informed regarding the re-scheduling through sms/telephone calls to enable them plan their journey. Hence, rescheduling actually helped the passenger by giving them an update about their flight.

➢ Re-scheduling may not only re-time[64] departure and arrival but also change the aircraft or fleet. Changes in actual operating pattern of aircraft may happen on the day of flight operation due to operational reasons. The 'movement manager' software in IOCC records the new reason over-writing the old one. As such, the accuracy of the assigned reason appearing in the database is limited by the feature of the software application. Besides, human error is not ruled out.

The reply needed to be viewed in the following context:

➢ The flights analysed by Audit had been rescheduled within a window of three days before actual scheduled departure. Re-scheduling with such a short notice to passengers was likely to cause problems for planning their trips and adversely affects the image of the Company.

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[64] *Rescheduling due to change in time as well as change in aircraft or fleet.*

➢ AIL had accepted in reply that the accuracy of the reasons assigned for re-scheduling of flights might not be adequate. Considering the significant number of rescheduling in AIL and the lack of monitoring by the Company, there was an urgent need to ensure correctness of recorded data and suitable action thereon.

MoCA in reply (06 September 2016) informed that steps had been taken to record correct rescheduling code to reduce 'Miscellaneous' (MISC) code and the delays would be reduced with the increased availability of aircraft and crew. The reply of MoCA confirmed the audit contention about significant cases of recording of 'Miscellaneous' code as reason for rescheduling. However reply of MoCA was silent on the non-existence of mechanism to monitor/control rescheduling of its services.

11.6 Market share of AIL vis-à-vis competitors

The slots for domestic operations at domestic airports are distributed to major domestic Airlines. The prominent players in the Indian Domestic sector are Air India, Jet Airways, Indigo. The market share (passenger market share) of the major domestic airlines for the period from 2010-11 to 2015-16 are as given below:-

Table 11.7 Market share of passengers of AIL vis-a-vis competitors (in *percent*)

Airlines	2010-2011	2011-12	2012-13	2013-14	2014-15	2015-16
AIL	17.1	16.5	19.0	19.4	17.9	15.9
Jet Airways	18.4	19.2	19.4	18.6	17.7	18.8
Indigo	17.4	20.0	26.7	29.4	33.6	36.8

It is seen from the above that the market share of both AIL and Jet airlines had gone down in the year 2014-15 while that of Indigo had improved. The passenger market share of AIL decreased from 19.4 *percent* in 2013-14 to 17.9 *percent* in 2014-15 in the domestic sector. It further decreased to 15.9 *percent* in 2015-16.

11.7 International passenger carriage of AIL vis-à-vis competitors

Two Indian carriers, AIL and Jet Airways operate international flights on a network mode. A comparison of passenger carriage data of Air India and Jet Airways during the period from 2009-10 to 2014-15 indicated steady growth of Jet Airways.

Table 11.8 Passenger carriage data of AIL vis-a-vis Jet Airways

Airlines	Number of Passangers						Increase in six years	*Percent* **Increase**
	2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**		
Air India	4901547	4891564	4902524	4499656	5050570	5536428	634881	12.95
Jet Airways	3731947	4616790	5452828	5466421	5772868	6962388	3230441	86.56

Source: AIL

The growth in passenger traffic for AIL was 3.04 *percent* as against 54.69 *percent* of Jet Airways during the period from 2009-10 to 2013-14. The Gulf sector traditionally had been the most profitable sector for AIL. However, it is noticed that Jet Airways had emerged as a major player in this market too with a higher share than Air India. In Oman, where Indigo had commenced operations, it was observed that Indigo had overtaken Air India with its market share increasing significantly from 7.68 *percent* (2011-12) to 19.78 *percent* (2013-14) and to 20.94 *percent* (2015-16).

AIL has stated (02 February 2016) that it has not been able to match the capacity induction rate of Indian and foreign carriers due to which capacity share of AIL had reduced, resulting in declining market share. Now with B-787 aircraft the market share of AIL had increased with combined market share (of AIL and Air India Express ex-India) being 16.85 *percent*.

MoCA (06 September 2016) concurred with the views of management that AIL had not been able to match the capacity induction rate of other private airlines and hence their capacity share had declined. As such AILs capacity declined resulting in declining market share. Further for the international sector MoCA stated that most of the foreign carriers operating to/from India earned major share of their traffic to onward points from their hub airports. As such market share and capacity share on total market basis cannot be a realistic indicator for AILs competitive performance.

The reply corroborated the fact that during 2013-14 to 2014-15 the market share of AIL had reduced from 19.4 to 17.9 and further to 15.9 *percent* in 2015-16 and the passenger share had increased by only 3.04 *percent* compared to Jet airways passenger increase of 54.69 *percent* in 2013-14. Moreover even during 2014-15 though there was an improvement in AIL passenger carriage to 12.95 *percent,* the increase in Jet airways was higher i.e. 86.56 *percent.*

AIL was able to achieve its overall operational milestones of PLF and yield as envisaged in approved TAP. However, AIL was not able to achieve the targeted on time performance (OTP). OTP of AIL improved in 2012-14 over 2011-12 and then declined sharply in 2014-15. In 2015-16, OTP improved to the level of 2013-14.

Audit analysis indicated that nearly 25 *percent* of delays in Delhi-Mumbai-Delhi sector and nearly half the delays in international sector (ex-Delhi and ex-Mumbai) in 2014-15 were within the control of the airline. Similarly in 2015-16, delays within the control of AIL were 19 *percent* to 23 *percent* in Delhi-Mumbai-Delhi sector and nearly one third of total delays in International sector (ex-Delhi and ex-Mumbai). Audit noticed increase in partially

controllable delays both in domestic and International sector. These delays could have been avoided by better planning and co-ordination. Besides poor OTP performance, flights often had to be rescheduled within a short window of three days owing to aircraft and crew related problems, which were within the control of AIL.

The passenger market share of AIL in domestic market decreased from 19.4 *percent* in 2013-14 to 15.9 *percent* in 2015-16, while in international market the percentage of increase in AIL market share was marginal at 12.95 *percent* as compared to increase in carriage of Jet Airways (86.56 *percent*) during 2014-15.