



## ***FORWORD***

*In accordance with Annex 13 to the Convention on International Civil Aviation Organization (ICAO) and Rule 3 of Aircraft (Investigation of Accidents and Incidents), Rules 2017, the sole objective of the investigation of an accident shall be the prevention of accidents and incidents and not to apportion blame or liability. The investigation conducted in accordance with the provisions of the above said rules shall be separate from any judicial or administrative proceedings to apportion blame or liability.*

*This document has been prepared based upon the evidences collected during the investigation, opinion obtained from the experts and laboratory examination of various components. Consequently, the use of this report for any purpose other than for the prevention of future accidents or incidents could lead to erroneous interpretations.*

## **ABBREVIATIONS**

|         |   |
|---------|---|
| AAIB    | Aircraft Investigation Bureau                             |
| ACC     | Area Control  |
| APP     | Approach Control  |
| ATC     | Air Traffic Controller                                    |
| ASR     | Approach Control Surveillance Approach Radar              |
| ATPL    | Airline Transport Pilot License                           |
| CCW     | Current Conflict Warning                                  |
| CPL     | Commercial Pilot License                                  |
| DFDR    | Digital Flight Data Recorder                              |
| DME     | Distance Measuring Equipment                              |
| ICAO    | International Civil Aviation Organization                 |
| NM      | Nautical Miles  |
| OCC     | Oceanic Control   |
| PCW     | Predicted Conflict Warning                                |
| RSR     | Route Surveillance Radar                                  |
| STCA    | Short Term Conflict Alert                                 |
| TCAS RA | Traffic Collision Avoidance System- Resolution Advisories |
| TCAS TA | Traffic Collision Avoidance System- Traffic Advisories    |
| UTC     | Co-ordinated Universal Time                               |
| VHF     | Very High Frequency                                       |

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**FINAL INVESTIGATION REPORT ON SERIOUS INCIDENT OF AIRPROX  
BETWEEN M/s AIR ASIA ,IAD811 (A320 AIRCRAFT VT-MLE )AND M/s INDIGO,  
IGO747 (A320 AIRCRAFT VT-IAL) IN MUMBAI AIRSPACE ON 29/01/2021**

|     |                           |                        |                      |
|-----|---------------------------|------------------------|----------------------|
| 1.  | Aircraft Type             | A320                   | A320                 |
| 2.  | Nationality               | INDIAN                 | INDIAN               |
| 3.  | Call Sign / Registration  | IAD811 / VT-MLE        | IGO747 / VT-IAL      |
| 4.  | Owner                     | AAI                    | AIRCRAFT LEASING LTD |
| 5.  | Operator                  | AIR ASIA               | INDIGO               |
| 6.  | Pilot – in –Command       | INDIAN                 | INDIAN               |
|     | Extent of Injuries        | NIL                    | NIL                  |
| 7.  | Co-Pilot                  | INDIAN                 | INDIAN               |
|     | Extent of Injuries        | NIL                    | NIL                  |
| 8.  | Place of Incident         | MUMBAI AIRSPACE        |                      |
| 9.  | Incident Site(Location)   | AREA NORTH CONTROL     |                      |
| 10. | Last point of Departure   | AHEMDABAD              | BANGALORE            |
| 11. | Intended place of Landing | CHENNAI                | VADODARA             |
| 12. | Date & Time of Incident   | 29/01/2021 AT 0554 UTC |                      |
| 13. | Extent of Injuries        | NIL                    | NIL                  |
| 14. | Phase of Operation        | CLIMBING               | CRUISE               |
| 15. | Type of Incident          | AIRPROX                |                      |

(ALL TIMINGS IN THE REPORT ARE IN UTC)

## **SYNOPSIS**

M/s Air Asia, A320 aircraft (Flight No. IAD811 and Registration VT-MLE) operating a scheduled flight from Ahmedabad to Chennai and M/s Indigo, A320 aircraft (Flight No. IGO747 and Registration VT-IAL) operating a scheduled flight from Bangalore to Vadodara were involved in a Serious Incident of Airprox in Mumbai Airspace on 29<sup>th</sup> Jan 2021.

Flight IGO747 was maintaining FL380 and it was cleared for direct routing to APANO by the Controller. Flight IAD811 was at FL320 and it had requested for a climb to FL390. Controller cleared the aircraft as requested. After giving the climb, controller shifted his focus towards other traffic.

Routes of both aircraft became reciprocal to each other after some time. IAD811 climbed to FL390, passing through the flight level assigned to IGO747 i.e. FL380. At 0554 UTC, TCAS/RA was triggered on Flight IAD811 whereas, Flight IGO747 got only TCAS/TA.

The minimum separation between aircraft was 4.3 NM laterally when 300 feet vertically and 3.5 NM laterally when vertical separation was 500 feet.

The occurrence was classified as a “Serious Incident” in accordance with the Aircraft (Investigation of Accidents and Incidents) Rules, 2017. DG, AAIB ordered an investigation into this occurrence vide order no: 12011/1/2021-AAIB, dated: 02/02/2021 appointing Ms. Kunj Lata, Assistant Director as Investigator-in-Charge and Mr. Amit Kumar ,Safety Investigation Officer as an Investigator to investigate into the cause of the Serious Incident.

## **1.0 FACTUAL INFORMATION**

### **1.1 History of Flight**

On 29/01/2021, IGO747 was scheduled to operate its flight from Bangalore to Vadodara. It came in contact with Radar controller at 05:47:55 UTC. It was maintaining FL380. Radar controller gave a direct routing to APANO.

IAD811 was scheduled to operate its flight from Ahmedabad to Chennai. At 05:49:47 UTC, aircraft came in contact with Mumbai Radar Controller. At that time, it was maintaining FL320. After identification, aircraft requested for a climb to FL390. Radar Controller approved the requested climb.

After clearing the aircraft for climb, Radar Controller became busy in handling other traffic. On the day of occurrence, the jurisdiction of Area controlled was between the FL150 to FL460. Thus, the Controller had to do surveillance for larger area with more number of traffic in comparison with the post lockdown Area Control.

After some time, the tracks of both aircraft became reciprocal to each other. PCW came on automation system at time 05:53:05 UTC. But, controller didn't react in time to the warning. When IAD811 was at FL371, Controller instructed to stop climb at FL370. But IAD811 continued its climb. By the time CCW was generated and IAD811 reported getting TCAS RA at 05:54:29 UTC.

IAD811 had climbed to FL390, passing through the level assigned to IGO747 which was on reciprocal track. IGO747 reported that they got TCAS TA only.



**Figure : Showing Current Conflict Warning on Automation System**

The minimum separation between both aircraft was recorded as 4.3 NM laterally when vertical separation was 300 feet and 3.5 NM laterally when vertical separation was 500 feet.

**1.2 Injuries to persons-** There were no injuries.

**1.3 Damage to the aircraft-** NIL

**1.4 Other damages-** NIL

**1.5 Personal Information**

Flight Crew of both aircraft held valid licenses and were qualified to operate the flight.

**1.5.1 Pilot-in-Command**

**IAD811**

|                                     |            |
|-------------------------------------|------------|
| Nationality                         | Indian     |
| Date of Joining to the Organization | 05/11/2018 |
| Date of Birth                       | 26/12/1980 |
| License                             | ATPL       |
| Date of Issue                       | 20/05/2014 |
| Valid up to                         | 19/05/2021 |



|   |  |
|---|--|
| Category  | ATPL   |
| Date of Class I Med. Exam.                      | 10/03/2020                                   |
| Class I Medical Valid up to                     | 12/03/2021                                   |
| Date of issue FRTOL License                     | 20/03/2008                                   |
| FRTOL License Valid up to                       | 19/03/2023                                   |
| Endorsements as PIC                             | YES (13/06/2019)                             |
| Total flying experience                         | 5939:47 Hrs                                  |
| Total flying experience on type                 | 1093:29 Hrs                                  |
| Last Flown on type                              | A320   |
| Total flying experience during last 1 year      | 437:51 Hrs                                   |
| Total flying experience during last 6 Months    | 281:26 Hrs                                   |
| Total flying experience during last 30 days     | 63:38 Hrs                                    |
| Total flying experience during last 07 Days     | 17:56 Hrs                                    |
| Total flying experience during last 24 Hours    | 04:39 Hrs                                    |
| Rest period before flight                       | 17:58 Hrs                                    |
| Whether involved in Accident/Incident earlier   | NIL  |
| Date of latest Flight Checks and Ground Classes | Route Check (02/06/2020)<br>AGR (17/08/2020) |

### **IGO747**

|                                     |            |
|-------------------------------------|------------|
| Nationality                         | INDIAN     |
| Date of Joining to the Organization | 17/02/2012 |
| Date of Birth                       | 22/06/1981 |
| License                             | ATPL       |
| Date of Issue                       | 28/07/2020 |
| Valid up to                         | 27/07/2025 |
| Category                            | PIC        |
| Date of Class I Med. Exam.          | 25/02/2020 |
| Class I Medical Valid up to         | 06/03/2021 |
| Date of issue FRTOL License         | 05/11/2017 |
| FRTOL License Valid up to           | 04/11/2022 |
| Endorsements as PIC                 | 13/02/2012 |

|   |  |
|---|--|
| Total flying experience                         | 8486:02 Hrs  |
| Total flying experience on type                 | 8205:38 Hrs  |
| Last Flown on type                              | 28/01/2021   |
| Total flying experience during last 1 year      | 226:27 Hrs   |
| Total flying experience during last 6 Months    | 149:26 Hrs   |
| Total flying experience during last 30 days     | 31:24 Hrs  |
| Total flying experience during last 07 Days     | 09:08 Hrs  |
| Total flying experience during last 24 Hours    | 02:14 Hrs  |
| Rest period before flight                       | 13:05 Hrs  |
| Whether involved in Accident/Incident earlier   | Crew was not involved in any Accident/ incident in the last one year |
| Date of latest Flight Checks and Ground Classes | ALRC-13/12/2020 and Annual Refresher-03/07/2020                      |

### **1.5.2 Co-Pilot**

#### **IAD811**

|                                     |               |
|-------------------------------------|---------------|
| Nationality                         | Indian        |
| Date of Joining to the Organization | 31st May 2019 |
| Date of Birth                       | 14/10/1989    |
| License                             | ATPL          |
| Date of Issue                       | 30/06/2020    |
| Valid up to                         | 29/06/2025    |
| Category                            | ATPL          |
| Date of Class I Med. Exam.          | 25/05/2020    |
| Class I Medical Vaid up to          | 24/05/2021    |
| Date of issue FRTOL License         | 17/12/2008    |
| FRTOL License Valid up to           | 16/12/2023    |
| Endorsements as PIC                 | NA            |
| Total flying experience             | 2558 hrs      |
| Total flying experience on type     | 514 Hrs       |
| Last Flown on type                  | A320          |

|   |  |
|---|--|
| Total flying experience during last 1 year      | 407:20                                       |
| Total flying experience during last 6 Months    | 276:38                                       |
| Total flying experience during last 30 days     | 55:27  |
| Total flying experience during last 07 Days     | 22:10  |
| Total flying experience during last 24 Hours    | 06:44  |
| Rest period before flight                       | 15:59  |
| Whether involved in Accident/Incident earlier   | NIL  |
| Date of latest Flight Checks and Ground Classes | Route Check (14/12/2020)<br>AGR (26/05/2020) |

### **IGO747**

|  |            |
|--|------------|
| Nationality                                  | INDIAN     |
| Date of Joining to the Organization          | 30/09/2015 |
| Date of Birth                                | 31/05/1982 |
| License                                      | CPL        |
| Date of Issue                                | 13/10/2018 |
| Valid up to                                  | 12/10/2023 |
| Category                                     | FO         |
| Date of Class I Med. Exam.                   | 10/02/2020 |
| Class I Medical Vaid up to                   | 23/02/2021 |
| Date of issue FRTOL License                  | 13/10/2018 |
| FRTOL License Valid up to                    | 12/10/2023 |
| Endorsements as PIC                          | NA         |
| Total flying experience                      | 3533:52    |
| Total flying experience on type              | 3258:33    |
| Last Flown on type                           | 27/01/21   |
| Total flying experience during last 1 year   | 349:21     |
| Total flying experience during last 6 Months | 196:18     |
| Total flying experience during last 30 days  | 27:40      |
| Total flying experience during last 07 Days  | 13:06      |
| Total flying experience during last 24 Hours | 1:59       |
| Rest period before flight                    | 26:00      |

|   |  |
|---|--|
| Whether involved in Accident/Incident earlier   | Crew was not involved in any Accident/ incident in the last one year |
| Date of latest Flight Checks and Ground Classes | ALRC-29/01/2021 and Annual Refresher-16/07/2020                      |

### 1.5.2 ATC Controller

|   |  |
|---|--|
| License                                 | ADC/APP (Procedural) combined                    |
| Date of Issue                           | 26/12/2019                                       |
| Validity                                | Valid  |
| Endorsements                            | Aerodrome Control<br>Approach Control Procedural |
| Medical Validity                        | Valid  |
| Unit and Date of Last Proficiency Check | ADC/APP(P) on 08/09/2020                         |
| Involved in Accident/Incident in Past   | Nil  |
| Last Duty Performed                     | 20/02/2021                                       |
| Fatigued Factor                         | Nil  |

### 1.6 Aircraft Information

#### VT-MLE

|                        |                   |
|------------------------|-------------------|
| Aircraft Model         | Airbus A320 – 214 |
| Aircraft S. No.        | 3306              |
| Year of Manufacturer   | 25.10.2007        |
| Name of Owner          | AAI               |
| C of R                 | 03.01.2020        |
| C of A                 | 01.01.2020        |
| Category               | Normal            |
| C of A Validity        | Valid             |
| A R C issued on        | 02.01.2021        |
| ARC valid up to        | 03.02.2022        |
| Maximum Takeoff weight | 73500 Kg          |

|  |                                       |
|--|---------------------------------------|
| Last major inspection  | 12 Yearly Check done on<br>26.12.2019 |
| List of Repairs carried out after last major inspection till date of incidence | NIL (Since induction to AAI)          |

### VT-IAL

|  |   |
|--|---|
| Aircraft Model   | Airbus A320-232   |
| Aircraft S. No.  | 5992  |
| Year of Manufacturer   | 2014  |
| Name of Owner  | AIRCRAFT LEASING LIMITED                                |
| C of R   | 4490/4  |
| C of A   | 6599  |
| Category   | Normal  |
| C of A Validity  | Valid   |
| A R C issued on  | 29.02.2020  |
| ARC valid up to  | 04.03.2021  |
| Aircraft Empty Weight  | 41176.295 Kg  |
| Maximum Takeoff weight   | 77000 Kg  |
| Last major inspection  | 6000 Hrs/4500 FC/ 20 Months<br>Inspection on 20.12.2020 |
| List of Repairs carried out after last major inspection till date of incidence | NIL   |

### 1.7 Meteorological Information

| TIME (UTC) | WINDS (DEG/KTS) | VISIBILITY (METER) | DP/TEMP | QNH (Hpa) | COULD                     |
|------------|-----------------|--------------------|---------|-----------|---------------------------|
| 0530       | 030/03          | 2500               | 27/13   | 1015      | FU, NO SIGNIFICANT CHANGE |
| 0600       | 330/05          | 2500               | 28/13   | 1015      | FU, NO SIGNIFICANT CHANGE |

## 1.8 Aids to Navigation

All Automation Systems, VHF channel and ATS surveillance system at Mumbai Airport were reported to be working normal.

Incident took place in Area North Control on freq 132.7 Mhz. It is called as Mumbai control/ Radar and has alternate frequency of 120.5 Mhz.

## 1.9 Communication

A positive two way communication was always maintained between ATC unit and involved aircraft.

Relevant portion of tape transcript of Area North (Freq 132.7 Mhz)  
is as below:

| TIME (HHMMSS) | FROM   | TEXT  |
|---------------|--------|---|
| 054741        | IAD811 | MUMBAI GOODMORNING IAD811 .   |
| 054744        | RSR    | IAD811 GOOD MORNING IDENTIFIED LEVEL 320.                           |
| 054749        | IAD811 | LEVEL 320, 12 MILES SHORT OF SG RELEASED BY AHMEDABAD.              |
| 054752        | RSR    | ROGER IDENTIFIED BREAK BREAK IGO747 PROCEED DIRECT APANO.           |
| 054755        | IGO747 | NAMASKAR.   |
| 054757        | RSR    | IGO747 DIRECT APANO.  |
| 054800        | IGO747 | IGO747 ROGER DIRECT APANO.  |
| 054804        | IAD811 | MUMBAI REQUEST IAD811 HOW DO YOU READ.                              |
| 054947        | IAD811 | MUMBAI IAD811 GOOD MORNING.   |
| 054950        | RSR    | IAD811 GOOD MORNING IDENTIFIED.                                     |
| 054953        | IAD811 | IAD811 REQUESTING FINAL LEVEL 390.                                  |
| 054955        | RSR    | IAD811 CLIMB TO LEVEL 390.  |
| 054959        | IAD811 | CLIMB TO LEVEL 390 IAD811.  |
| 055053        | RSR    | IGO747 REPORT IN CONTACT WITH AHMEDABAD ON 123.75                   |
| 055058        | IGO747 | CALL YOU IN CONTACT IGO747.   |
| 055100        | RSR    | CONFIRM & REPORT WHEN READY FOR DESCEND TO REACHLEVEL 160 BY APANO. |
| 055105        | IGO747 | WILCO CALL YOU READY FOR DESCEND IGO747 TO REACH 160 BY APANO.      |
| 055332        | RSR    | IGO747 MAINTAIN LEVEL 380.  |
| 055334        | IGO747 | IGO747 MAINTAIN LEVEL 380 MONITORED TRAFFIC POSITION ONE O'CLOCK.   |

|        |         |   |
|--------|---------|---|
| 055340 | RSR     | IAD811 STOP CLIMB 370   |
| 055342 | UNKNOWN | ROGER.  |
| 055344 | RSR     | IGO747 TURN LEFT HEADING 300.                                     |
| 055346 | IGO747  | LEFT HEADING 300 IGO747 & WHAT LEVEL IS THE TRAFFIC CLIMBING SIR. |
| 055351 | RSR     | RIGHT NOW IS STOPPING LEVEL 370.                                  |
| 055354 | IGO747  | CONFIRM IS CLIMBING LEVEL 375.                                    |
| 055358 | RSR     | IAD811 STOP CLIMB LEVEL 380 CORRECTION 370.                       |
| 055402 | UNKNOWN | GARBELED.   |
| 055403 | RSR     | IGO747 TURN LEFT HEADING 290.                                     |
| 055406 | UNKNOWN | GARBELLED.  |
| 055411 | RSR     | IAD811 TURN LEFT HEADING 160.                                     |
| 055414 | IAD811  | LEFT HEADING 160 IAD811.  |
| 055424 | RSR     | IAD811 STOP CLIMB STOP CLIMB.                                     |

### 1.10 Aerodrome Information

Mumbai Airport is known as Chhatrapati Shivaji Maharaj International Airport, Mumbai. Its IATA code is BOM and ICAO code is VABB.

Mumbai Air Traffic controlling unit is divided mainly into Tower, Approach, Area, Oceanic etc. which are operational for 24x7 hrs.

Further, Area control is divided into Area North ACC (N), Area South ACC(S) and Area West ACC(W).

ACC(N) covers the area denoted as U1, in the figure given below.

ACC(S) covers the area denoted as U2 and U2+U3, in the figure given below.

ACC(W) covers the area denoted as U4 and U4+U3. in the figure given below.

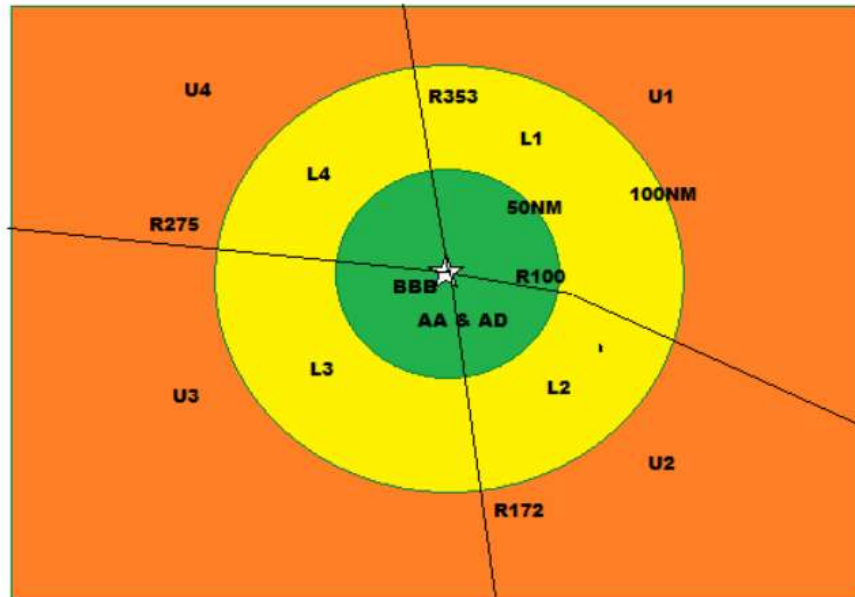
Wherein, lateral limit of various units are as given below:

U1: from radial 353 to radial 100 clockwise,

U2: from radial 100 to radial 172,

U3: from radial 172 to radial 275,

U4: from radial 275 to radial 353.



**Figure : Showing Area sector jurisdiction**

Mumbai Area also has Lower Area Control (LAC). This is to minimize the heavy traffic in Area Control.

LAC jurisdiction over Mumbai Controlled airspace is defined as given below:

- (a) Lateral limit: 100 NM around BBB;
- (b) Vertical limits: FL 145 / FL 245 (up to 50 NM around BBB) FL 070 / FL 245(from 50 NM to 100 NM).

The bifurcation listed above was Pre Pandemic 2020. But, now LAC control has been withdrawn temporarily. This was done due to restricted man power and less movement.

Thus, on the date of incident there was no LAC and Area Control North was controlling traffic from FL150 to FL460 and area covered comprised of sector U1 and U4 i.e. R275 to R100 clockwise from BBB. This increased the surveillance area.



## **1.11 Flight Recorders**

- a) Flight data recorders were installed on both aircraft.
- b) DFDR data was made available to investigation team.
- c) CVR data of IAD811 reveals that the flight had readback correctly to the instructions given by Controller.
- d) DFDR data of IGO747 revealed that aircraft experienced TCAS TA only.
- e) At 0554 UTC, IGO747 got TCAS TA. At this time it was at 37980 ft. Controller had instructed the aircraft to maintain FL380.
- f) At 05:54:55 UTC, TCAS TA warning on IGO747 was over.
- g) IAD811 got TCAS RA when it was climbing for FL390 as instructed by the Controller.
- h) At 05:54:16 UTC, IAD811 got TCAS RA when it was at 38008 ft.
- i) At 05:54:32 UTC, IAD811 was clear of conflict. When it was clear of conflict the altitude of the aircraft was 38396 ft.

## **1.12 Wreckage and Impact Information**

There was no damage.

## **1.13 Medical and Pathological Information**

Not applicable

## **1.14 Fire**

Nil

## **1.15 Survival Aspects**

The incident was survivable.

## **1.16 Tests and Research**

Nil

## **1.17 Organizational and Management Information**

### **Airports Authority of India**

Airports Authority of India (AAI) is a Public Sector Unit working under the Ministry of Civil Aviation, Government of India. AAI is responsible

for creating, upgrading, maintaining and managing civil aviation infrastructure in India. It provides Communication Navigation Surveillance / Air Traffic Management (CNS/ATM) services over Indian airspace and adjoining oceanic areas.

### **Air Asia (India) Ltd**

Air Asia Berhad of Malaysia whose headquarters is at Kuala Lumpur, Malaysia opened a low cost airlines in joint venture with TATA Sons, India. In India, Air Asia is also known as TATA Singapore. Its hubs are at Bangalore and Delhi.

M/s AirAsia (India) Ltd is a Scheduled Operator, with a permit number S-26, valid upto 06 May 2024, operating Airbus A320-200 series aircraft.

### **Indigo**

Indigo is an Indian Airlines based in Gurugram. It has a fleet of Airbus A320 and ATR. Training facility of Indigo for flight crew is at Gurugram, Haryana. It has a fleet of Airbus A320 ceo, A320 neo, A321 neo and ATR72. It is having 260 aircraft operational in 63 Domestic destination and 24 International destination.

#### **1.18 Additional Information**

Nil

#### **1.19 Useful or Effective Investigation Techniques:**

Nil

## **2.0 ANALYSIS**

The incident occurred on 29/01/2021 between Flight IAD811 (Type: A320, Registration: VT-MLE) and Flight IGO747 (Type: A320-Neo Registration: VT-IAL) in Mumbai Area North. The incident took place at 0553 UTC.

On the day of incident, IAD811 was scheduled to operate its flight from Ahmedabad to Chennai. It was going North to South of Mumbai and overflying BBB (VOR Mumbai). The flight was following route as “AAE W97 QQZ W77 SG/N0450F380 W77 BBB/N0447F390 Q9 OPAMO”.

IGO747 was scheduled to operate its flight from Bangalore to Vadodara. It was going from South to North of Mumbai and was overflying BBB. The flight was following the route as “DCT VAGPU Q8 BBB/N0451F370 W12”.

At 05:47:41 UTC, IAD811 came in contact of Radar Controller over reporting point ‘SG’. That time it was at FL320. At 05:49:53 UTC, Flight crew of IAD811 requested a climb to FL390. Radar Controller approved the requested level i.e. “*Climb to Level 390*”.

At 05:47:55 UTC, IGO747 came in contact of Radar Controller. It was maintaining FL380. Controller instructed to route direct to reporting point APANO. After this controller got busy with other traffic in his jurisdiction.

Most of the flights which goes from Ahmedabad to Southern India follow the route via Bhavnagar. IAD811 usually files Flight plan as “AAE - SG – DOGAP – PUN – EPKOS”. But, on the day of incident IAD811 was on different route i.e. “AAE – SG – IGBAN”. “SG – IGBAN” is a STAR route, means normally aircraft landing at Mumbai follow this route. Thus, any aircraft on this route is normally a descending traffic and which are supposed to land at Mumbai.

Due to change in routing of IAD811 and direct routing of IGO747 to APANO, heading of both aircraft became reciprocal to each other.

At 05:53:10 UTC, Predicted Conflict Warning (PCW) came on automation system. At that time there was enough lateral separation. When PCW came IAD811 was at FL365 and it was climbing for FL390. But, Controller did not respond to the visual warning (Yellow).



**Figure: At 05:53:10 UTC, Predicted Conflict Warning got generated on Automation System.**

At 05:53:32 UTC, Controller instructed IGO747 to maintain FL380. IGO747 readback as “*IGO747 maintain level 380 monitored traffic position one o’clock*”. Despite traffic information given by IGO747, controller did not react on resolving the conflicting traffic.

Due to controller’s previous experience, he presumed that IAD811 will be routing via “DOGAP-PUN”. Due to which controller perceived that IAD811 is not immediate traffic to IGO747. Controller advised IGO747 to maintain the level instead of giving avoiding heading to IAD811 to resolve the traffic. But, on the day of incident IAD811 was routing via “SG-IGBAN”. Thus, after getting traffic information from IGO747 also controller did not react presuming that it is a landing traffic to Mumbai and will descend.

At 05:53:40 UTC, Controller realized the situation and asked IAD811 to stop climb at FL370 by giving instruction as “*IAD811 stop climb level 380 correction 370*”. By that time IAD811 was already at FL371 and was climbing. Although the flight crew acknowledge as “*Roger*” but did not stop his climb.

Controller tried to resolve the traffic by giving headings but this response

was too late to resolve the conflicting traffic. At 05:54:10 UTC, Current Conflict Warning (CCW) came on Automation System. At 05:54:16 UTC, TCAS RA was triggered on IAD811 Automation System when it was at 38008 ft. Controller was still trying to resolve the traffic by giving avoiding traffic to both aircraft. At 05:54:29 UTC, aircraft reported getting TCAS RA. At the time of TCAS RA, IGO747 was maintaining FL380. IGO747 later reported that they got only TCAS TA.



**Figure: At 05:54:10 UTC, Current Conflict Warning got generated.**

At 05:54:55 UTC, IAD811 reported clear of traffic. It was at 38396 ft when the conflicting traffic was resolved. IAD811 climbed through the level of IGO747 which was maintaining FL380.



**Figure: At 05:54:55 UTC, Clear of Conflict.**

Minimum separation recorded was 4.3 NM laterally while vertical separation was 300 ft when IAD811 was below IGO747 and 3.5 NM laterally while vertical separation was 500 feet when IAD811 was above IGO747.

### **3.0 CONCLUSION**

#### **3.1 Finding**

1. Flight crew of both aircraft were having valid license to fly the aircraft.
2. No snag were reported by both aircraft.
3. Radar controller was qualified to perform its duty on Area Control unit.
4. All communication and Automation System were working normal.
5. Controller and flight crew were not fatigued.
6. The incident took place in Area North Control, Mumbai.
7. Jurisdiction of Area North on the day of incident was from FL140 to FL460.
8. Earlier to pandemic Area North was controlling from FL250 to FL460. Thus, on the day of incident controller was providing separation to larger area.
9. Both flights were overflying Mumbai.
10. IGO747 was maintaining FL380 as instructed by ATC.
11. IGO747 was proceeding direct to APANO.

12. IAD811 came in contact with ATC and requested for a climb to FL390, The request was approved by ATC.
13. Flights which overfly from North to South normally overfly through Bhavnagar.
14. IAD811 as per the past experience of Controller follows route “SG-DOGAP-PUN-EPKOS”. But, on the day of incident it filed a different route i.e. “SG-IGBAN”.
15. “SG-IGBAN” is a STAR route. Flights on this route are descending which are landing at Mumbai.
16. While routing IAD811 and IGO747 came on reciprocal tracks and were approaching to each other.
17. At 05:53:10 UTC, PCW was generated on Automation System. That time IGO747 was maintaining FL380 and IAD811 was at FL365.
18. Controller did not react on time as he was thinking that on STAR route the traffic will descend.
19. Controller had preconceived mind of regular routing of IAD811 but on the day of incident aircraft was following different route. Thus, controller did not realize the current scenario i.e. failed to evaluate the present situation under his preconceived mind.
20. At 05:54:10 UTC, CCW was generated on Automation System.
21. By this time Controller realized the situation and asked IAD811 to stop Descent at FL370. At that time IAD811 was already at FL371 and was in climbing phase.
22. IAD811 did not stop its descent and reported getting TCAS RA at 05:54:29 UTC.
23. At 0554 UTC, IGO747 got only TCAS TA.
24. IAD811 reported clear of conflict at 05:54:44 UTC. It climbed till FL390.
25. The minimum separation between both aircraft was recorded as 4.3 NM laterally while 300 feet vertical when IAD811 was below IGO747 and 3.5 NM laterally when vertical separation was 500 feet when IAD811 was above IGO747.

### **3.2 Probable Cause**

- (i) Loss of situational awareness by Controller.
- (ii) Evaluation of the present situation under the influence of preconceived mind by the concerned controller.

### **3.3 Contributory factor**

Larger area for surveillance and providing separation.

### **4.0 SAFETY RECOMMENDATIONS**

1. It is recommended that suitable corrective training may be imparted to involved Radar Controller giving emphasis on situational awareness and importance of warning generated on Automation System .
2. It is recommended that Airports Authority of India may reassess the volume of traffic in all sectors which were withdrawn due to less number of traffic during the lockdown and may implement sectors as before pandemic.



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