
# Final Investigation Report on Serious Incident: Airprox

## Between
## AeroLogic, Boeing, B77F, German, DAALJ (BOX622)
## and
## Air Arabia, Airbus, A320-214, United Arab Emirates, A6AOS (ABY405)
## On
## 04 May 2025 in Mumbai FIR (INDIA)

**AIRCRAFT ACCIDENT INVESTIGATION BUREAU**
**MINISTRY OF CIVIL AVIATION**
**GOVERNMENT OF INDIA**

# *FOREWORD*

*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/Incident 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 evidence collected during the investigation, an opinion obtained from the experts. Consequently, the use of this report for any purpose other than for the prevention of future accidents or incidents could lead to erroneous interpretations.*

*Unless otherwise indicated, all times in this report are stated in Coordinated Universal Time (UTC).*

*For reasons of data protection and simplification of the text, this report uses exclusively generic masculine.*

*Note 1:*
*Figures used in this report are taken from different sources and are adjusted from the original for the sole purpose of improving the clarity of the Report. Modifications to images used in this report are limited to cropping, magnification or addition of text boxes, arrows or lines.*

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# GLOSSARY

| | |
|---|---|
| AAI | Airports Authority of India |
| ANS | Air Navigation Services |
| ATC | Air Traffic Control |
| ATPL | Airline Transport Pilot License |
| BSNL | Bharat Sanchar Nigam Limited |
| CCWS | Common Controller Work Station |
| CHQ | Corporate Headquarters |
| CNL | Cancel |
| CNS-OM | Communication, Navigation and Surveillance-Operations and Maintenance |
| CPDLC | Controller-Pilot Data Link Communications |
| DVR | Digital Voice Recorder |
| EDDF | Frankfurt Am Main Airport |
| EPABX | Electronic Private Automatic Branch Exchange |
| FIR | Flight Information Region |
| FL | Flight Level |
| FPL | Flight Plan |
| FPS | Flight Progress Strip |
| HF | High Frequency |
| Hrs | Hours |
| Kts | Knots |
| MATS | Manual of Air Traffic Services |
| MCT | Muscat Control |
| MNT | Mach Number Technique |
| MPL | Multi-Crew Pilot License |
| NM | Nautical miles |
| NOTAM | Notice to Airmen |
| OCC | Oceanic Control Center |
| OJT | On Job Training |
| OJTI | On Job Training Instructor |
| OMSJ | Sharjah International Airport |
| OPKC | Karachi Jinnah International Airport |
| OSS | Operational Support Specialist |
| SOP | Standard Operating Procedure |

| | |
|---|---|
| SRA | Safety Risk Assessment |
| TCAS | Traffic alert and Collision Avoidance System |
| UTC | Universal Time Coordinated |
| VABF | Mumbai Flight Information Region (FIR) |
| w.r.t. | With Respect To |

# SYNOPSIS

| | | |
|---|---|---|
| Date and time of serious incident | 04 May 2025, at 21:00 UTC (02:30 IST, 01:00 Local Muscat) | |
| Type of Occurrence | Airprox (Loss of Longitudinal Separation) | |
| Place of incident | Mumbai FIR (OCC-sector North) near Waypoint PARAR | |
| Applicable Standard | 10 minutes longitudinal separation at same Flight Level based on MNT as per LOA between Muscat Control and Mumbai OCC | |
| | **Aircraft1** | **Aircraft2** |
| Operator | Air Arabia | AeroLogic |
| Flight Number | ABY405 | BOX622 |
| Type of aircraft | A320-214 | B77F |
| Registration | A6AOS | DAALJ |
| Flight Rule | IFR | IFR |
| Sector | OMSJ-VABB | EDDF-VABB |
| Route | MIXOL-A777-VAXIM-PARAR-N571 | NOLSU-P307-VAXIM -PARAR-N571 |
| Phase | Cruise | Cruise |
| Type of Flight | Scheduled | Scheduled |
| Persons on Board | 166 | 02 |

***Brief resume of Circumstances*:**

The serious incident occurred during night time hours at 02:30 AM local time in India and 01:00 AM local time in Muscat (21:00 UTC). Both aircraft were transiting from Muscat FIR to Mumbai FIR via waypoint PARAR, En-route to their destination at Mumbai.

ABY405 was ahead of BOX622, with both scheduled to operate on the same route but at different flight levels at waypoint PARAR, which lies on the Muscat/Mumbai FIR boundary (refer Fig: 01).

Approximately 20 minutes prior to the incident, Muscat Control verbally relayed aircraft estimates via the hotline, including ABY405 at FL370 and BOX622 at FL350, along with estimates for other aircraft.

However, both aircraft crossed PARAR and entered Mumbai FIR at the same flight level (FL350), with a 3-minute interval. The succeeding aircraft, BOX622, maintained a higher ground speed, approximately 40 Kts faster than ABY405 reducing separation. As per standard longitudinal separation minima, a 10-minute interval is required between aircraft flying at the same flight level and same speed in Mumbai OCC (North).

To resolve the traffic conflict, Mumbai OCC (North) issued vectors to BOX622 to offset the aircraft laterally and subsequently initiated a level change, ensuring safe separation from preceding, succeeding, and reciprocal traffic in the vicinity.

***Notification:***

The occurrence was classified as a serious incident by AAIB (India), and an investigation was ordered vide No. INV 12012/1/2025-AAIB dated 13 May 2025 under rule 11 (1) of aircraft (Investigation of Accidents and Incidents) rules, 2017. Director General, AAIB appointed Investigator-in-Charge. ICAO, OTSB (Oman), GCAA (UAE), BEA (France), NTSB (USA) and BFU (Germany) were notified on 13th May 2025. Further OTSB, Sultanate of Oman appointed Accredited Representative to participate in the investigation in accordance with ICAO Annex 13 requirements.

# 1. Factual Information

**1.1 History of Flight:**

ABY405:

Air Arabia flight ABY405, an Airbus A320 (Registration: A6-AOS), was scheduled to operate from Sharjah International Airport, UAE, to Chhatrapati Shivaji Maharaj International Airport, India, with an estimated flight time of 2 hours and 26 minutes. The estimated departure time was 19:35 UTC, and the actual departure occurred at 19:56 UTC. The flight was planned via route: A777 → MIXOL → VAXIM → P307 → PARAR → N571 → SUGID. The aircraft was equipped with a Traffic Collision Avoidance System (TCAS).

BOX622:

AeroLogic flight BOX622, a Boeing 777F (Registration: D-AALJ), was scheduled to operate from Frankfurt Airport, Germany, to Chhatrapati Shivaji Maharaj International Airport, India, with an estimated flight time of 7 hours and 41 minutes. The estimated departure time was initially 13:55 UTC, later revised to 14:25 UTC, and the actual departure took place at 14:38 UTC. The flight was planned via route: M677 → KURTU → Q321 → NOLSU → P307 → PARAR → N571 → SUGID. The aircraft was also equipped with TCAS.

The flight paths of both aircraft converged at Waypoint VAXIM, from where they continued on the same route segment (P307 to PARAR and then N571 to SUGID). Between VAXIM and PARAR, both aircraft were under the control of Muscat Control – Sector Alpha. Subsequently, they were handed over to Mumbai OCC (North) via High Frequency (HF) communication.

A NOTAM issued by Karachi FIR (OPKC), No. A0220/25, was effective from 24 April 2025 to 23 May 2025, which led to increased traffic density on the route segment P307–PARAR–N571.

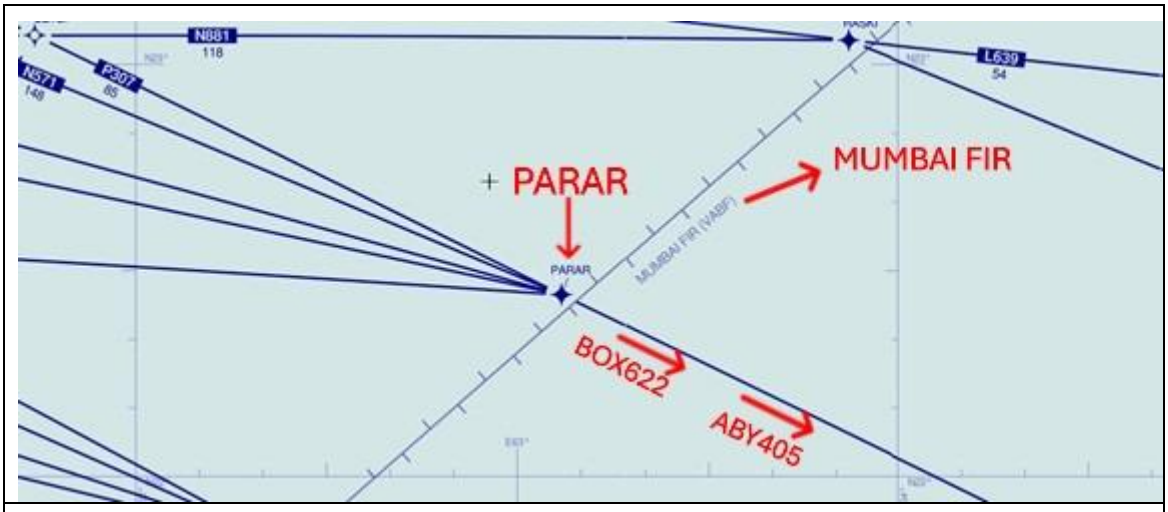


Fig: 01 Aircraft position marked not to scale w.r.t. Waypoint 'PARAR' on Mumbai/Muscat FIR (Map from SkyVector)

### 1.1.1 Sequence of events:

#### 1.1.1.1 Muscat Control (Transferring Unit):

a) ALPHA control, Muscat had 17 Aircraft on Radar with complexity.

b) OJT was in progress at the time of the incident, with both the trainee and instructor present on position.

c) As per report no planner had been scheduled on the roster for that hour and the OJT instructor was looking after planning position in addition to imparting training.

d) As per the daily roster, there was no staffing shortage.

e) At 20:07:00 UTC, the assistant relayed the estimate for ABY405 to VABB as: 'PARAR at 20:57, maintaining FL350'.

f) At 20:36:20, the Mumbai OCC (NORTH) controller coordinated with ALPHA control and requested FL370 for ABY405, to which ALPHA control responded that they would attempt to accommodate the request.

g) At 20:37:23, the Assistant coordinated a level change for ABY405 to FL370, with an updated estimate for PARAR at 20:58, which was subsequently approved by Mumbai OCC (North).

h) At 20:37:53, ABY405 established initial contact with the ALPHA control, maintaining FL350 while flying on route A777.

i) At 20:40:45, the assistants relayed the estimate for BOX622 to VABB: PARAR at 21:00, maintaining FL 350.

j) At 20:41:43, BOX622 established initial contact with the ALPHA control, maintaining FL350 while flying on route P307.

k) At 20:43:34, ABY405, A320 was over VAXIM, maintaining level 350 and traveling at a speed of 495 Kts.

l) At 20:47:35, BOX622, B77L was over VAXIM, maintaining level 350 and traveling at a speed of 537 Kts.

m) Both aircraft, after VAXIM, continued on airway P307.

n) At 20:57:57, ABY405 was over PARAR, maintaining FL350 and traveling at a speed of 492 Kts.

o) At 21:00:57, BOX622 was over PARAR, maintaining FL350 and traveling at a speed of 534 Kts which was higher than ABY405 flying ahead.

p) At 21:22:30, VABB contacted the assistants to confirm the coordinated level for ABY405. The assistants responded, "Let me check,".

q) At 21:30:18, VABB called again, informing MCT that ABY405 had contacted VABB at FL350. Meanwhile, faster traffic, BOX622, was also maintaining FL350, with only a 3-minute separation. The assistants acknowledged with "COPIED."

r) No Flight Level change was entered on the ABY405 planner list.

#### 1.1.1.2 Mumbai Oceanic Control (Accepting Unit)

a) At approximately 21:00 UTC the coordinator received estimates from Muscat control on Hotline. The estimates were-

BOX622, B77L, EDDF-VABB, PARAR 2100Z, F350

ABY505, A320, OMSJ-VABB, PARAR 2058Z, F370

b) The FPS of ABY505 was printed at 2039 UTC and the FPS of BOX622 was printed late at 21:07 UTC.

c) At 20:58 UTC ABY405 checked Way Point 'PARAR' at F350

d) At 21:01 UTC BOX622 checked way point 'PARAR' at F350 relatively faster by 40 Kts with respect to ABY405.

At this time the OCC (North) Mumbai coordinator took a break. Therefore, instead of coordinator the controller was busy in taking and passing estimates from/to Muscat on Hotline and the controller did not observe the conflict either on FPS or in the CCWS. Neither conflict alert was generated in CCWS.

e) At 21:05 UTC approximately once the estimate coordination by Controller was completed, he resumed CCWS monitoring and observed that ABY405 entered PARAR at FL350 instead of FL370 and observed that the standard separation was infringed.

f) At 21:08 UTC, the controller via CPDLC instructed BOX622 to turn left heading 040 and further heading 070 at 2109 UTC to provide minimum separation.

g) At 21:12 UTC BOX622 was initially asked to descend to F330 by the controller on CPDLC once the aircraft was separated from conflicting traffic.

h) At 21:14 UTC, the controller instructs BOX622 to continue descend to F310 and on reaching F310 to proceed direct to waypoint 'SUGID' on CPDLC.

i) At 21:40 UTC BOX622 was changed over to Mumbai Control (133.3 MHz).

j) The Hotline recording was not available.


**Fig: 02 Position of ABY405 and BOX622 (Screen shot of Controller work Position in OCC, by Mumbai ATC)**

### 1.2 Injuries to persons:

There was no injury reported to any occupant on board.

### 1.3 Damage to Aircraft:

There was no damage reported to aircraft.

### 1.4 Other damage:

No other damage reported.

### 1.5 Personnel Information:

#### 1.5.1 Crew Information:

| ABY405 | PIC | FO |
|---|---|---|
| Nationality | Tunisian | Russian |
| Date of Joining Organization | 16.08.2015 | 01.02.2023 |
| Date of Birth | 27.06.1964 | 27.02.2000 |
| License | ATPL | MPL |

| | | |
|---|---|---|
| Date of Issue of License | 22.12.2013 | 21.06.2023 |
| License Valid up to | 16.10.2029 | 20.06.2031 |
| Total flying experience | 7934 Hrs with Air Arabia | 1459 Hrs |
| Total flying experience during last 1 year | 857.53 Hrs | 818 Hrs |
| Total flying experience during last 6 Months | 438.07 Hrs | 369 Hrs |
| Total flying experience during last 30 days | 53.1 Hrs | 77 Hrs |
| Total flying experience during last 07 Days | 15 Hrs | 16 Hrs |

| **BOX622** | **PIC** | **FO** |
|---|---|---|
| Nationality | Dutch | German |
| Date of Joining Organization | 01.04.2020 | 01.12.2020 |
| Date of Birth | 29.05.1968 | 09.12.1979 |
| License | ATPL | ATPL |
| Date of Issue of License | 05.10.2020 | 07.10.2020 |
| License Valid up to | 30.04.2026 | 28.02.2026 |
| Total flying experience | 18407 Hrs | 4366 Hrs |
| Total flying experience during last 1 year | 538 Hrs | 653 Hrs |
| Total flying experience during last 6 Months | 252 Hrs | 284 Hrs |
| Total flying experience during last 30 days | 34 Hrs | 76 Hrs |
| Total flying experience during last 07 Days | 09:48 Hrs | 8:55 Hrs |

### 1.5.2 ATCO Information:

| **ATCO1 - ALPHA control, Muscat** | |
|---|---|
| Age (Years) | 39 YEARS |
| Station and Unit | ATC (Area ATCO) |
| Date of Issue & Date of validity of License | 10.05.2015 / 31.05.2030 |
| Date of Medical Validity | 21.12.2026 |
| Last date of Proficiency check | 21.10.2024 |
| Total experience | 10 Years |

| **ATCO2 - Mumbai OCC (North)** | |
|---|---|
| Age (Years) | 39 YEARS |
| Station and Unit | VABB / OCC |
| Date of Issue & Date of validity of License | 24.07.2024 / 14.05.2046 |
| Date of Endorsement in License | 24.07.2024 |
| Date of Medical Validity | 20.08.2026 |
| Last date of Proficiency check | 18.03.2025 |
| Total experience | 14 years |

### 1.6 Aircraft Information:

Both aircraft were Airworthy. All pertinent documents/certificates for the aircraft's operation were valid as of the serious incident date.

| BOX622 | |
|---|---|
| Aircraft Model | B77F (777F6N) |
| Aircraft Serial No. | 37710 |
| Year of Manufacturer | 2009 |
| Registration Marks | D-AALJ |
| Nationality | Germany |
| Name of Owner | UMB Bank NA Trustee |
| Certificate of Registration issued on | 03.03.2021 |
| Certificate of Airworthiness issued on | 25.10.2017 |
| Airworthiness Review Certificate validity | 19.10.2025 |
| Last Major Inspection | C3-, C4-, C8-, C17-, Check 25.01.2024 |
| MEL detail | Revision 22, dated 15.12.2024 |
| Last transponder/ Radio check | MPD Task 34-020-00 last perf. 21.03.2025 |
| Aircraft total hours on the day of incident | 73758:19 Hrs |

| ABY405 | |
|---|---|
| Aircraft Model | A320-214 |
| Aircraft Serial No. | 7767 |
| Year of Manufacturer | 2017 |
| Registration Marks | A6-AOS |
| Nationality | UAE |
| Name of Owner | HSBC Middle East Leasing Partnership |
| Certificate of Registration issued on | 02.07.2017 |
| Certificate of Airworthiness issued on | 29.06.2017 |
| Airworthiness Review Certificate validity | 28.06.2025 |
| Last Major Inspection | *Last A- Check carried on 12.04.2025<br>*Last 6-year check carried out on 22.05.2024 |
| MEL detail | Revision#39 Dated 05.01.2025<br>TR 01 Dated 19.03.2025 |
| Last transponder/ Radio check | 18.07.2023<br>(Functional check of ATC antennas) |
| Aircraft total hours as on the day of incident | A/C Hrs: 32423:08 |

### 1.7 Meteorological Information:

The weather as per the satellite images provided by the meteorological department during the time of serious incident depicted no significant cloud cover. (Fig: 03)

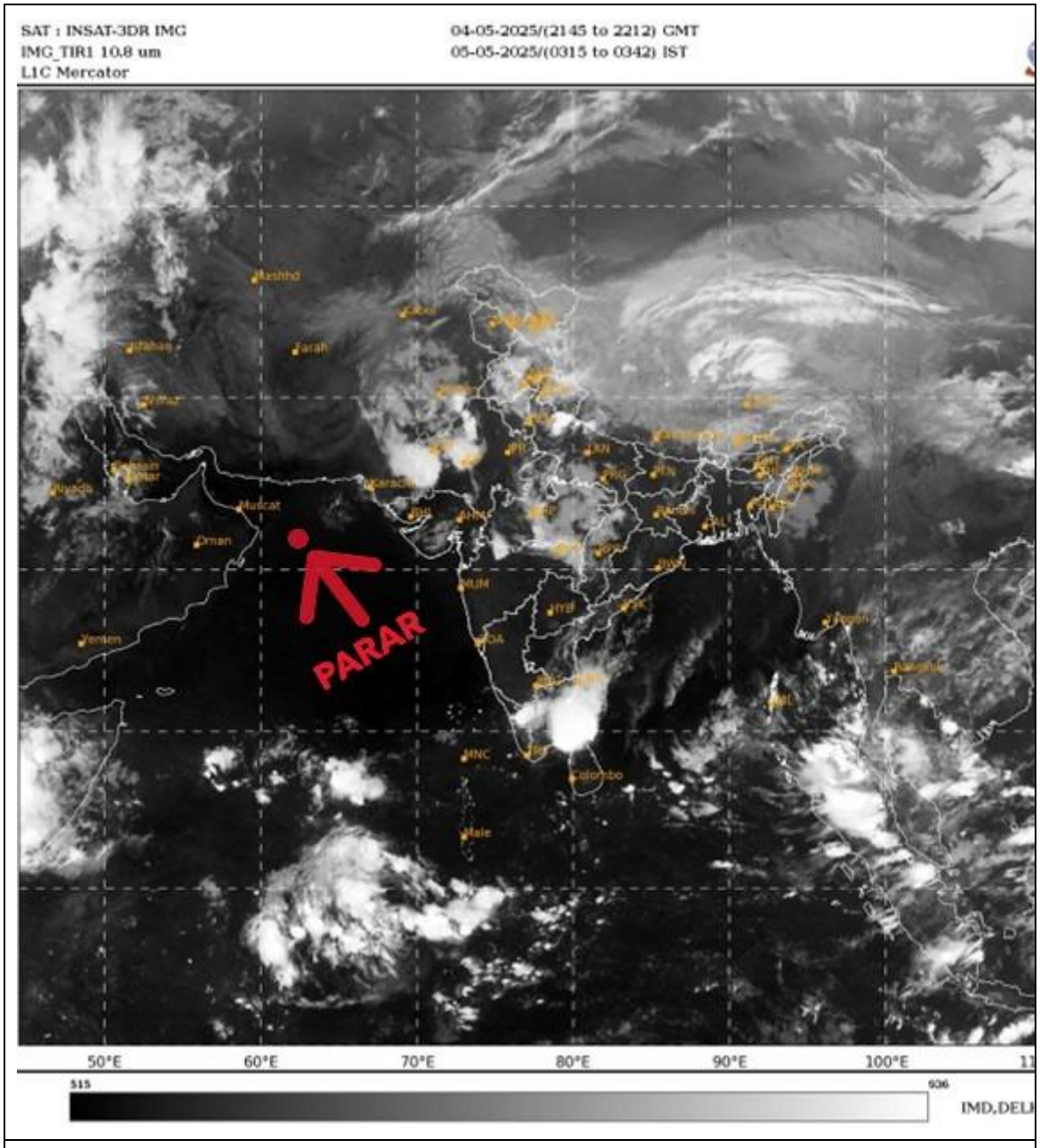


**Fig: 03 Satellite image (Waypoint 'PARAR' marked on image from Aviation Meteorological office, Mumbai)**

### 1.8 Aids to Navigation:

The aircraft were operating over an oceanic area. Surveillance services in the Muscat FIR were being provided by Muscat Control. Procedural control was being provided in Mumbai FIR near Waypoint 'PARAR'. All Navigational aids in Muscat Control were serviceable except 'SUR VOR'. All Navigational aids at Mumbai airport were serviceable.

### 1.9 Communications:

Until waypoint 'PARAR' both aircraft were in contact on VHF with Muscat surveillance control. Thereafter they were in contact with Mumbai OCC (North) through HF. BOX622 later was also on CPDLC in contact with Mumbai OCC (North). The exchange of Messages with Mumbai for deviation and descend given by OCC North, Mumbai is as follows.

| Time UTC | Message | UNIT |
|---|---|---|
| 2107z | ATC COMM Established with VABF | |
| 2108z | Turn left heading 040 due TRAFFIC | VABF Accepted |
| 2109z | Heading 070 | VABF Accepted |
| 2111z | Descend to reach FL330 by 2115z | VABF Accepted |
| 2113z | Continue descend to FL310 due TRAFFIC | VABF Accepted |
| 2114z | Reaching FL310 proceed DCT SUGID | VABF Accepted |

### 1.10 Aerodrome Information:

Not relevant to the serious incident.

### 1.11 Flight Recorders:

As per FDR data for BOX622 the track followed by the aircraft was as shown in Fig: 04. The deviation was due to instruction given by ATC Mumbai OCC (North) to resolve conflict. The Controller took BOX622 left of track to provide standard separation from ABY405 and other preceding and succeeding aircraft. He descended BOX622 to F310 and directed it to proceed direct way point 'SUGID'.

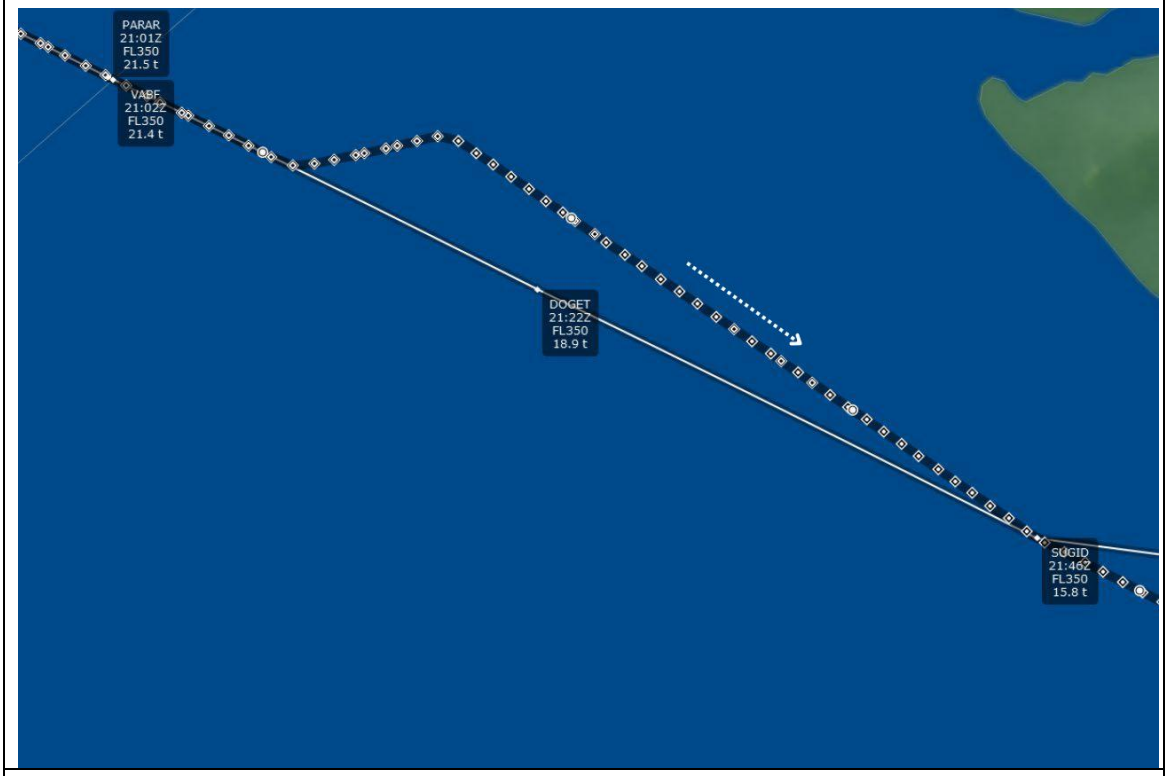


**Fig: 04 Dotted track given by Mumbai OCC (North) descending to FL310. Solid track is the filed route which was supposed to maintain FL350by BOX622 . (Data from Aerologic safety management)**

### 1.12 Wreckage and Impact Information:

Not relevant with respect to this investigation.

### 1.13 Medical and Pathological Information:

No adverse observations were reported.

### 1.14 Fire:

There was no fire.

### 1.15 Survival Aspects:

The serious incident was survivable.

### 1.16 Tests and Research:

Nil

### 1.17 Organizational and management information:

#### 1.17.1 Aerologic GmbH:

AeroLogic is jointly owned by Deutsche Post AG and Deutsche Lufthansa AG through their subsidiaries DHL Express and Lufthansa Cargo. It specializes in air cargo services, including international freight, express deliveries, and specialized handling.
Headquarters: Located in Germany.

#### 1.17.1 Air Arabia:

Air Arabia is an Emirati low-cost airline in United Arab Emirates (UAE). The airline operates scheduled services to 170 destinations in the Middle East, North Africa, the Indian subcontinent, Central Asia, and Europe. There are also operating bases in Ras Al Khaimah and Abu Dhabi as well as in Alexandria and Casablanca.

#### 1.17.3 Muscat Control Area:

The Muscat Area Control Center (ACC) is a facility responsible for controlling air traffic within the Muscat Flight Information Region (FIR). It provides an area control service within the Sultanate of Oman airspace. Muscat APPROACH/SURVELLIANCE is included within the same location. The airspace under the jurisdiction of Muscat ACC is sub-divided into seven sectors, which work in close liaison to spread the workload of the ATCOs.

#### 1.17.4 Airports Authority of India:

The Airports Authority of India (AAI), a statutory body under the Ministry of Civil Aviation, is responsible for creating, upgrading, maintaining, and managing civil aviation infrastructure in India, including airports and air traffic management services.

Mumbai Control is a unit of the Airports Authority of India (AAI), responsible for managing air traffic within the Mumbai Flight Information Region (FIR). It operates 24/7 and provides air traffic control services, including surveillance control.

#### 1.17.4.1 Coordinator in OCC, Mumbai

a. Separate Logbook(s) have been provided in the OCC (North) and OCC (South) sectors for Coordinator's role.
b. The deployment of Coordinator in Mumbai OCC happens on a need basis when traffic demand in the OCC sector is on the higher side.
c. Sector controller is overall responsible towards meeting the objective of ATS in his area of responsibility. The coordinator’s role is towards providing assistance to the sector controller. However his duties are not defined in MATS II, Enroute.
d. As the deployment of coordinator is on demand basis, it is observed that the taking over in the logbook is not executed meticulously.
e. The overall responsibility lies with the Sector Rated Controller.

### 1.17.4.2 Non-generation of Conflict Alert at OCC Mumbai

It was noted that no conflict alert was triggered by the system despite the loss of separation. Review suggested that the Flight Plan (FPL) of aircraft BOX622 may not have been present in the system, although automation was reportedly functioning normally. The following observation were made-

a. Automation system had received multiple messages (FPL/CHG/CNL) related to FPL of BOX622. This went into an error queue. It appears that the controller working at OSS position failed to realize the CNL message and deleted the other messages assuming that there is already a plan in the system. An alert for conflict was not generated in the absence of the FPL.

b. In the existing automation system messages often get stuck in the error queue. Resultantly, while clearing these messages, at times, some unwanted errors/mistakes creeps in.

### 1.17.4.3 Estimates exchanged beyond sector at OCC (North), Mumbai

The OCC North controller was exchanging estimates that were not relevant to his designated sector, potentially contributing to distraction from main responsibilities. It was observed that during that period-

a. U5 sector (waypoint RASKI) working in ACC was working from OCC.

b. A common Hotline with Muscat is being used both for waypoint RASKI, PARAR and TOTOX, and at times estimates for all these three points were occasionally passed at one time at one position, only.

### 1.17.4.4 Unavailability of recording of Hotline at OCC (North), Mumbai

Hotline with Muscat was working normal during the period of serious incident however it was observed that the recording of the hotline communication between Muscat and OCC (North) during the serious incident period is not available. To this discrepancy it was observed that-

a. The intimation of non-availability of input audio was communicated telephonically by equipment room to the exchange personnel.

b. EPABX facility at ATS complex, Mumbai was replaced between 26-04-2025 and 06-05-2025, during which recording of intercoms and hotlines were affected intermittently.

c. As the audio channels (including Muscat lines) for recording is received from the EPABX, Equipment room duty officer closely followed up telephonically with the exchange staff for early restoration of audio channels.

d. For complaints and rectification of hotlines/ operational telephones, complaints were lodged through telephone calls and were not recorded at the receiving end.

**1.17.4.5 SOP for Recording of Hotline- CHQ, AAI**

a. CNS Manual VOL VII Part 1 – Chapter 4 defines various maintenance schedule for operation and maintenance of Digital Voice recorder (DVR) which includes Daily Channel Checks for Recording also. This maintenance schedule enables to identify unavailability of recording promptly **to initiate rectification measures within minimum time**. Pre-commissioning Check list of DVR ( given in CNS Circular 12/2021) includes the requirement of "availability of SOP for maintenance" . The SOP for maintenance also includes the procedure to be followed for rectification of fault in recording system .

b. In the case of hotlines, each ATS positions are provided with sufficient number of STD/ISD phones, mobile phones as per AAI Telecom Policy as backup to hotlines to provide seamless communication. For the rectification of hotlines, the Annexure-3.A of CNS Circular 09/2023 "Guidelines to Deal with Communication link Unserviceability" is in place.

c. In cases of planned maintenance of equipment, it is ensured that either one of the DVR servers is available for recording. Additionally in case of trans-installation of the equipment from old building to the new building it is ensured that the recording is not hampered by providing additional equipment and parallel operation is being carried out before commissioning of the equipment at the new location.

**1.17.4.6 Letter of Agreement:**

The Letter of Agreement was signed between Republic if India, AAI, Mumbai OCC and Sultanate of Oman, PACA, Muscat ACC on 02. February 2016 and was effective from 15 February, 2016.

Para G 1.1 of agreement states – the minimum longitudinal separation shall be:

a) 10 minutes time based separation shall be applied between aircraft operating at the same cruising level on the same ATS route in the same direction, provided that the preceding aircraft is maintaining a true Mach Number equal to or greater than that maintained by the following aircraft. Or

b) Between 9 and 5 minutes inclusive, provided that: the preceding aircraft is maintaining a true Mach Number greater than the following aircraft in accordance with the following:

- 9 minutes if the preceding aircraft is Mach 0.02 faster than the following aircraft;
- 8 minutes if the preceding aircraft is Mach 0.03 faster than the following aircraft;
- 7 minutes if the preceding aircraft is Mach 0.04 faster than the following aircraft;
- 6 minutes if the preceding aircraft is Mach 0.05 faster than the following

aircraft;

- 5 minutes if the preceding aircraft is Mach 0.06 faster than the following aircraft;

When using the Mach-number speed control, pilots concerned shall be instructed to report their assigned Mach-number to the accepting unit upon initial contact.

**1.18 Additional information:**

1.18.1 OPKC NOTAM:

GG VABBYNYR
241248 OPKCYNYX
(A0220/25 NOTAMN
Q)OPXX/QRACD/IV/NBO/W /000/999/2945N06905E999
A) OPKR OPLR B) 2504241230 C) 2505232359EST
E) PAKISTAN AIRSPACE NOT AVBL FOR INDIAN REGISTERED ACFT AND ACFTOPERATED/OWNED OR LEASED BY INDIAN AIRLINES/OPERATORSINCLUDING MILITARY FLIGHTS.
F) GND G) UNL

Fig: 05 NOTAM

As per above NOTAM - From 24 April 2025, 1230 UTC until 23 May 2025 (extendable), all Indian civil and military flights (including leased or operated by Indian operators) are prohibited from entering Pakistan's airspace.

**1.19 Useful or effective investigation techniques:**

Not relevant to this investigation.

# 2. Analysis

### 2.1 General

The airprox serious incident involved two aircraft, ABY405 (Air Arabia A320) and BOX622 (AeroLogic B777F), both operating on converging tracks that merged at waypoint VAXIM and continued on the same route segment (P307–PARAR–N571–SUGID). Both were under the surveillance control of Muscat Sector 'ALPHA control' before being handed over to Mumbai Oceanic Control OCC (North). The crew of both aircrafts were appropriately licensed and qualified. The controllers of both transferring and accepting units were trained and had valid licenses.

### 2.2 Traffic Complexity

During the period in question, OPKC airspace was closed due to a NOTAM (A0220/25), leading to a significant increase in traffic density over the P307–PARAR–N571 route. This increased the workload for both Muscat and Mumbai controllers.

### 2.3 Muscat Control/ Mumbai OCC

a) As specified in the LOA between Mumbai OCC and Muscat ACC para G1.1, the minimum required longitudinal time separation at waypoint PARAR in Mumbai FIR for aircraft at the same flight level equipped with CPDLC is 10 minutes. However, both aircraft passed PARAR eastbound at the same level, with a separation of only 3 minutes, and the slower aircraft was positioned ahead of the faster one.

b) On the eastbound route P307–PARAR–N571, the transferring controller is required to convert 5 NM surveillance-based separation into 10-minute procedural separation prior to the handover at waypoint PARAR. This necessitates additional planning to ensure that traffic is compliant with procedural separation requirements. Such tasks can significantly increase the controller's workload, particularly during periods of high traffic density or operational complexity.

c) The transferring Controller was actively engaged in Planner position in addition to imparting On-Job-Training when the traffic had complexity due to closure of OPKC, which impacted performance and situational awareness. The trainee also failed to notice the coordination failure.

d) At the time of incident in Mumbai OCC, the coordinator was not available due to which the Controller attended and was busy in exchanging estimates on hotline. The estimates also included that of Waypoint RASKI and TOTOX/PARAR. This resulted in accepting controller monitoring the situation of airprox late.

e) In Transferring Unit, no Flight Level change was entered on the ABY405 planner list, as a result, ABY405 remained at its previously coordinated level of FL350, and no warning was generated for the target. Similarly in the Receiving Unit no alert for conflict was generated in the absence of the Flight Plan in CCWS.

f) The controller later realizing the conflict resolved traffic by giving deviation to BOX622 and later descending the aircraft to FL310.

g) At OCC North, Mumbai the FPL was stuck in error queue, due which the FPL was not available in system. Hence no alert was generated.

h) Although the Hotline between Muscat control and OCC North, Mumbai was serviceable but the recording was not available due to replacement of EPBAX facility.

# 3. Conclusion

### 3.1 Findings:

a) Both Controllers that of Muscat control and OCC North, Mumbai were experienced and qualified.

b) All communication link, surveillance equipment and Nav-Aids were serviceable.

c) OPKC Airspace had restrictions as per NOTAM which affected the traffic on this route.

d) The Longitudinal separation applicable in ALPHA control, Muscat under surveillance on route P307 is 5 NM where as it is 10 minutes in Mumbai OCC (North) on route N571.

e) The transferring controller managed the Planner position while also imparting On-the-Job Training (OJT).

f) At the time of serious incident in Mumbai OCC (North), the coordinator was unavailable resulting in the Controller having to attend hotline for exchanging estimates.

g) Recordings of the Mumbai–Muscat hotline was not available.

h) The complaint raised by the Equipment Room about the unserviceability of channels was not recorded by the exchange personnel.

i) In MATS-II, Enroute, CSMI Airport, Mumbai, the duties of Coordinator position are not elaborated.

j) At Mumbai OCC, a common hotline with Muscat is being used for waypoints RASKI, PARAR, and TOTOX. At times, estimates for all three waypoints were passed simultaneously at a single position.

k) At Mumbai OCC, the Flight Plan (FPL) of BOX622 was stuck in OSS position.

### 3.2 Probable Causes:

a) Coordination failure: The transferring controller (Muscat control) missed climbing ABY405 to the coordinated level FL370 prior to transfer due to increased workload.

b) Delayed action: The accepting controller (Mumbai OCC) was engaged in handling estimate coordination over the hotline in the absence of a dedicated coordinator, which led to reduced monitoring of the Controller's Work Position (CCWS) and hence a delayed response in resolving traffic.

### 3.3 Contributory factors:

a) Non-generation of conflict alert in both ATC units.

# 4. Safety Recommendations

a) Air Navigation Services (ANS), Sultanate of OMAN:

During periods of increased traffic complexity due to adverse weather, NOTAM, or other unforeseen situations, the following measures are recommended:

I. All ATC positions should be adequately manned to ensure that the Executive Controller can focus solely on traffic management without distraction, thereby maintaining safety standards.

II. To ensure safety, instructors must not be assigned dual roles during On-the-Job Training (OJT), enabling them to focus solely on both training and the management of air traffic.

b) Air Navigation Services (ANS), Airports Authority of India:

I. At Mumbai (ATC) the hotline communication for Waypoint RASKI and TOTOX/PARAR sectors should be separated and made independent to enable direct coordination of estimates with the respective sector.

II. At Mumbai (ATC) the working position of the OSS should be bifurcated to improve the handling of error queues. This arrangement should remain in effect until the current automation system is upgraded or replaced to minimize the generation of frequent error messages.

III. Directorate of CNS(O&M), CHQ, AAI should issue a SOP mandating the implementation of an alternate recording mechanism in cases where the primary recording system remains unserviceable for an extended period at an ATS facility.

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