

**FINAL REPORT OF SERIOUS INCIDENT OF AIR PROXIMITY BETWEEN
M/s AIR INDIA B 787-8 AIRCRAFT VT-ANE AND M/s SESA GOA LTD. P68C
AIRCRAFT VT-TLE AT MUMBAI ON 30th JANUARY 2014.**

1. Aircraft
 Type : B787 (Air India) and P68C (Sesa Goa Ltd.)
 Nationality : INDIAN
 Registration : VT-ANE (Air India) and VT-TLE (Sesa Goa Ltd.)
2. Owner/ Operator : Air India and Sesa Goa Ltd.
3. Pilot – in –Command : ALTP Holder (Air India) & CPL Holder (Sesa Goa)
 Extent of injuries : Nil
4. First Officer : ALTP Holder (Air India)
 Extent of injuries : Nil
5. Place of Incident : CSI Airport, Mumbai
6. Date & Time of Incident : 30th January 2014; 04:37:03 UTC (Approx.)
7. Last point of Departure : CSIA Mumbai for Air India and Juhu for Sesa Goa Ltd.
8. Point of intended landing : Delhi for Air India and Pune for Sesa Goa
9. Type of operation : Schedule Operation for Air India and Non Schedule for Sesa Goa flight
10. Crew on Board : 10 Cabin Crew (Air India) & Nil for Sesa Goa
 Extent of injuries : Nil
11. Passengers on Board : 226 (Air India) & 01 (Sesa Goa)
 Extent of injuries : Nil
12. Phase of operation : Take-off for both Aircraft
13. Type of incident : Air Proximity

(ALL TIMINGS IN THE REPORT ARE IN UTC)

SYNOPSIS:

On 30th January 2014 the Sesa Goa P68C aircraft VT-TLE, under the command of a pilot CPL holder on type took-off from Runway 26 of Juhu Aerodrome at 0429 UTC for Pune. Another B787 aircraft VT-ANE of Air India took off from runway 14 CSIA (Mumbai) Aerodrome for Delhi under the command of a pilot an ATPL holder on type with co-pilot also an ATPL holder on type and 236 passengers including 10 cabin crew on board.

The aircraft VT-TLE after take-off from runway 26 of Juhu aerodrome came in contact with Mumbai Approach Control on 127.9 MHz. The aircraft was given climb to 3000ft and was asked to proceed direct to DOGAP, which was cutting across the take-off path of Runway 14 (runway in use) of CSIA (Mumbai) Aerodrome at approximately 4.5NM from Runway14. The aircraft VT-ANE, after take-off from Runway14 of Mumbai came in contact with Mumbai Approach Control passing 2100 ft at 0435UTC. At that time, VT-TLE was almost crossing the take-off path of Runway14 Mumbai Aerodrome at approx. 4.5NM from Runway14. This prompted the approach controller to expeditiously climb VT-TLE to FL70. Later at time 043620 UTC the approach controller gave VT-ANE a left heading of 360 which was later amended to left heading 340 to avoid traffic. At time 043640 the approach controller restricted VT-TLE to maintain 4000ft and turn left heading 180 and asked VT-ANE to climb to FL140 and expedite passing FL80. At time 043703 the close proximity of both the aircraft generated TCAS RA in VT-ANE. VT-ANE then took evasive maneuver. At time 043721 both aircraft were clear of each other and proceeded to their respective destination.

Ministry of Civil Aviation constituted a committee of inquiry to investigate the cause of the Serious Incident under Rule 11 (1) of Aircraft (Investigation of Accidents and Incidents), Rules 2012 comprising of Sh. N S Dagar, Jt. GM (ATM), AAIB as Chairman and Sh. K. Ramachandran, ASO, AAIB as member.

1. FACTUAL INFORMATION

1.1 History of the flight

On 30.01.2014 Air India B787 aircraft VT-ANE was scheduled to operate flight AIC116D (Mumbai - Delhi) under the command of a pilot an ATPL holder and qualified on type. The aircraft took off from runway 14 of CSIA Aerodrome at 0434 UTC. The weather at the time of take-off at Mumbai was fine with visibility 2200 meters, winds 040°/04kts. The aircraft received TCAS RA at about 04:37:03 UTC. The aircraft followed RA and resumed its climb after it was clear of traffic at 04:37:21 UTC in the jurisdiction of Approach Control at Mumbai Aerodrome. As per the PIC after take-off from Mumbai at around 900 feet the PIC tried to contact tower approach control at 127.9 MHz, however there was no response. Thereafter at around 3000 feet TA advisory came and subsequently RA alert came ON before the pilot can inform the ATC. Descent RA was followed by the PIC and subsequently ATC was informed. The controller then gave VT-ANE further left turn in order to avoid the traffic.

Sesa Goa P68C aircraft VT-TLE registered under Private category filed the flight plan to Mumbai ATC to operate Mumbai – Pune from Juhu Aerodrome under the command of a pilot qualified on type. The flight was under VFR rules and after take-off from Runway 26 of Juhu aerodrome came in contact with approach control at 127.9 MHz. The controller gave instructions to pilot to proceed to DOGAP and climb to 3000ft, the route which is generally given to the helicopters taking off from Juhu aerodrome. The given route was cutting across the take-off path of Runway 14 (runway in use) of CSIA (Mumbai) Aerodrome at approximately 4.5NM from Runway14 from where the Air India aircraft VT-ANE took-off. Subsequently at time 043703 the close proximity of both the aircraft generated TCAS RA in VT-ANE and at time 043721 both aircraft were clear of each other and proceeded to their respective destination. As per the statement of the Approach controller he misjudged the aircraft VT-TLE which was VFR traffic as helicopter and gave routing as per routing given to helicopters.

There was no injury to any of the person on board on both the aircraft and there was no fire.

1.2 Injuries to persons.

INJURIES	CREW	PASSENGERS	OTHERS
FATAL	Nil	Nil	Nil
SERIOUS	Nil	Nil	Nil
MINOR/NONE	02+10 (Air India) + 01 (Sesa Goa)	226 (Air India) 01 (Sesa Goa)	Nil

1.3 Damage to aircraft: Nil

1.4 Other damage: Nil

1.5 Personnel information:

1.5.1 ATC Controller: Approach Controller

Following are the qualifications and training details :

1. Approach Controller

- a) Double Banking start :
 - i) ADC/SMC/ASMGCS: 16.12.2007
 - ii) ACC: 15.04.2008
 - iii) OCC : 22.05.2009
 - iv) ADS/CPDLC : 01.04.2011
 - v) ARSR : 16.09.2008
 - vi) ASR : 01.11.2010
- b) Date of Rating :
 - i) ADC/SMC/ASMGCS : 28.03.2008
 - ii) ACC : 12.08.2008
 - iii) OCC : 24.09.2009
 - iv) ADS/CPDLC : 23.01.2012
 - v) ARSR : 22.07.2009
 - vi) ASR : 24.04.2012

C) Previous Rating

At Calcutta TWR, ACC

At Ahmadabad TWR/APP, ACC, ASR & ARSR

1.6 Aircraft information:

The Boeing B787-8 Dreamliner is a long range civil transport aircraft which is equipped with two high bypass turbofan model GEnx 1B70 engines manufactured by GE (General Electric). The maximum operating altitude is 43,000 feet and maximum takeoff weight is 227930 Kgs. The aircraft length is 57 meters, wingspan is 60 meters and height of this aircraft is 17 meters.

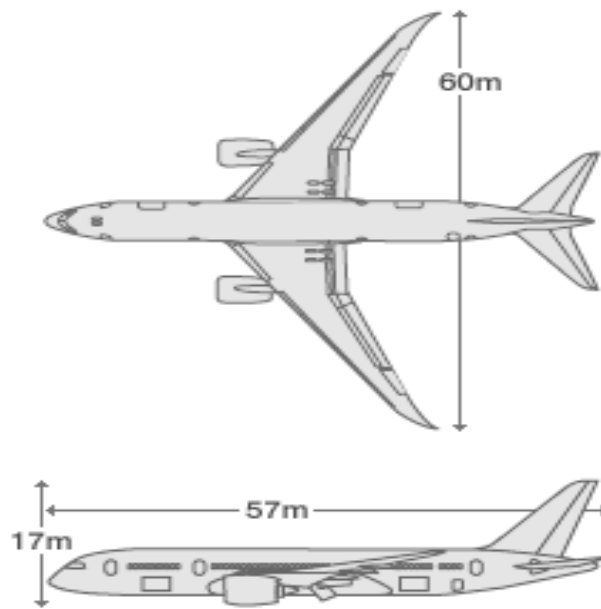


Fig. B787-8 Specifications

B787-8 aircraft, VT-ANE S/No. 36280 was manufactured in 2013. The aircraft is owned and operated by Air India Ltd. Certificate of Registration No.4469, under 'A' Category with sub categories Passenger/Goods/Mail issued in the name of Air India Ltd. on 06/12/2013. The C of A (Certificate of Airworthiness) Number 6578 was issued under "Normal" category sub-division "passenger" for day and night operation under VFR & IFR. C of A was issued by DGCA on 02-12-2013 and was valid upto 01/12/2014 with specifying crew as 11 and passenger capacity of 256.

The Vulcan air P68C is a short range civil transport fixed landing gear aircraft which is equipped with two piston-prop model LYC. IO-360-A1B6 engines manufactured by Lycoming Engines, United States. The maximum operating altitude is 5490 meters and maximum takeoff weight is 2084 Kgs. The aircraft length is 9.55 meters, wingspan is 12 meters and height of this aircraft is 3.4 meters.

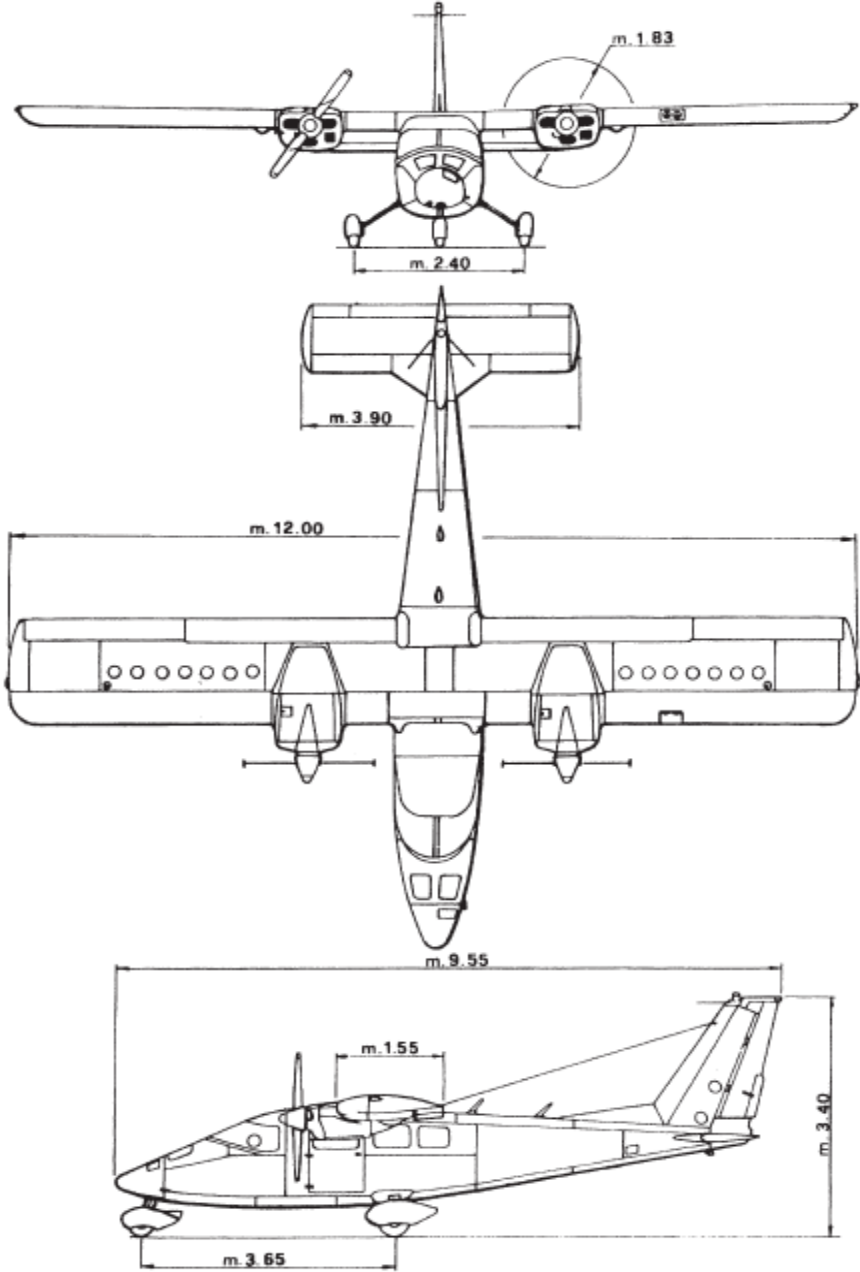


Fig. P68C aircraft Specifications.

P68C aircraft, VT-TLE S/No. C3012 was manufactured in 1999. At the time of Incident the aircraft was owned and operated by M/s Sesa Goa Ltd. Certificate of Registration No.2998/3, issued in the name of Sesa Goa Ltd. on 21/11/2005. However, the aircraft is now owned and operated by M/s Vedanta Limited with Certificate of registration No. 2998/4 issued on 29.10.2015. The C of A (Certificate of Airworthiness) Number 2407/2 was issued under "Normal" category sub-division "passenger" for day and night operation under VFR conditions. C of A was issued by DGCA on 16/11/2012 and was valid upto 15/11/2014 with specifying minimum crew required as 01 and passenger capacity of 06.

Traffic Alert and Collision avoidance System (TCAS):

Boeing B787-8 aircraft are installed with TCAS II that is used for detecting and tracking aircraft in the vicinity of your own aircraft by interrogating their Mode-S transponders. It analyses the replies to determine Range, Bearing and the relative altitude of the intruder. Should the TCAS processor determine that the possible collision hazard exists it issues visual and audio advisories to the crew for appropriate vertical avoidance maneuvers. TCAS II predicts the time to and the separation at the intruder's closest point in approach (CPA) and if the alert safe boundaries are expected to be violated it will issue the traffic advisory to alert the crew that closing traffic is in the vicinity. If the intruder continues to close, TCAS II will issue Resolution Advisory (RA) to obtain or maintain safe vertical separation between the aircraft and the intruder.

P68C aircraft is not equipped with TCAS, however it is equipped with Mode 'C' transponder.

1.7 Meteorological information:

MET Report Mumbai Aerodrome (VABB)

Information: I

Time of Observation: 0410

Date: 30th January, 2014

Wind: 070 degrees 06 knots

Visibility: 2300 meters

Weather: FU (Smoke)

Cloud: NSC (No Significant Cloud)

Temperature: 27 degrees

Dew Point: 09 degrees

QNH: 1006 Hpa

QFE: 1015 Hpa

Trend: NOSIG

1.8 Aids to navigation:

Runway 14 at CSI Mumbai is equipped with Cat I ILS (DME collocated with glide path). Other navigation aids installed include DVOR and DME with Precision and Non Precision approach procedures. The last routine flight calibration of DVOR/DME was done on 16th October, 2012.

1.9 Communications:

During the period of occurrence both the aircraft Air India VT-ANE and VT-TLE were tuned in with ATC on Approach Frequency 127.9 MHz. There was always two way communications between the ATC and both aircraft.

1.10 Aerodrome information:

Chattrapati Shivaji International Airport (IATA: BOM, ICAO: VABB) is the primary international airport of the city Mumbai operated by Mumbai International Airport Limited (MIAL). It operates round the clock and handles around 800 movements in a day.

The elevation of the Aerodrome is 37 ft. The Aerodrome has two intersecting runways RUNWAY 09/27 (3448m x 60m) & RUNWAY 14/32 (2871m x 45m).

The other Navigation aids installed include Cat I ILS DME, DVOR with precision and non-precision approach procedures.

Juhu Aerodrome (ICAO: VAJJ) is located in Juhu, Mumbai, India. It is a VFR Airfield with only day operations allowed. The Aerodrome has two intersecting runways RUNWAY08/26 (1143m) and RUNWAY16/34 (731m). The primary RUNWAY is RUNWAY26. The Aerodrome elevation is 20ft. It is used by small General Aviation aircraft and helicopters.

1.11 Flight recorders:

The ATC tape transcript of frequency 127.9TAR (D) from 0430 to 0439 UTC are as under:

TIME (HHMMSS)	FROM	TEXT
042943	VT-TLE	RADAR VLE IS FIXED WING DEPARTURE REQUEST A LEFT TURN AND FURTHER CLIMB
042947	ASRD	ROGER CLIMB 1000 FEET LEFT TURN
042952	VT-TLE	CLIMB 1000 FEET LEFT TURN, SOUTHERLY HEADING CONFIRM
042955	ASRD	AFFIRM
042957	VT-TLE	ROGER VLE IS 1000 FEET AND SQUAWK 0243 HEADING
043002	ASRD	ROGER TURN RIGHT, TURN LEFT PROCEED TO DOGAP NOW CLIMB

		2000 FEET NOW
043008	VT-TLE	LEFT PROCEED TO DOGAP CLIMB TO 2000 FEET VLE
043129	VT-TLE	RADAR VLE 2000 FEET AND DIRECT DOGAP
043133	VT-TLE	REQUESTING 7500 FEET VLE
043137	ASRD	STANDBY AFTER CROSSING, ANOTHER 10 MILES NOW CLIMB 3000 FEET DUE TRAFFIC AND STAND BY FOR FURTHER CLIMB
043142	VT-TLE	CLIMB TO 3700 FEET VLE
043245	ASRD	VIL TRAFFIC CLIMBING FOR 5 MILES AHEAD OF YOU 140 HIS PASSING 34 NOW-- MAINTAIN 3000 FEET ON REACHING, STAND BY FOR FURTHER
043254	VT-TLE	ROGER CONFIRM CALLING VLE
043256	ASRD	AFFIRM AFFIRM
043256	VT-TLE	ROGER VLE WILL MAINTAIN 3000 FEET
043300	ASRD	STAND BY FOR FURTHER CLIMB
043302	VT-TLE	STAND BY FURTHER CLIMB VLE
043527	AIC116D	MUMBAI NAMASKAR AIC116D PASSING 2100
043532	ASRD	116D, VT-TLE CLIMB FL70 EXPEDITE REACHING
043540	VT-TLE	ROGER CONFIRM CALLING VT-TLE
043542	ASRD	AFFIRM CLIMB 70 EXPEDITE REACHING
043545	VT-TLE	CLIMB TO LEVEL 70 WILL EXPEDITE REACHING VLE
043600	AIC116D	AND MUMBAI AIC116D
043608	ASRD	VT-TLE CONTINUE TO DOGAP EXPEDITE REACHING 70
043612	VT-TLE	CONTINUE TO DOGAP WILL EXPEDITE REACHING 70 VLE
043618	AIC116D	MUMBAI AIC116D
043620	ASRD	116D TURN LEFT HEADING 360 CLIMB FL, STAND BY FOR FURTHER

		CLIMB
043627	AIC116D	TURN LEFT HEADING 360 CLIMBING LEVEL 70, AIC116D
043632	ASRD	TURN LEFT HEADING 310, 340 NOW
043635	AIC116D	LEFT HEADING 340 FOR AIC116 AND WE ARE CLIMBING LEVEL 70
043640	ASRD	VT-TLE MAINTAIN 4000 FEET NOW MAINTAIN 4000 FEET AND TURN RIGHT HEADING 180 NOW
043647	VT-TLE	MAINTAIN 4000 AND RIGHT HEADING VLE
043650	ASRD	AFFIRM AND VT TRAFFIC IS JUST CROSSING YOU NOW JUST STAND BY FOR CLIMBING ,AIC166D EXPEDITE TILL PASSING ,CLIMB 140 EXPEDITE 80
043703	AIC116D	AIC116 TCAS RA
043706	ASRD	ROGER, ROGER
043708	ASRD	VT-TLE TURN RIGHT HEADING 180
043712	VT-TLE	RIGHT HEADING 180 SIR VLE
043716	ASRD	AIC116D CLIMB FL 140 AND PROCEED DIRECT TO DOSTO NOW
043721	AIC116D	OK WE ARE CLEAR OF TRAFFIC NOW CLIMBING LEVEL 140 PROCEEDING DIRECT DOTIP AIC116D
043729	ASRD	PROCEED DIRECT TO DOSTO
043731	AIC116D	DIRECT DOSTO AIC116D
043733	ASRD	AFFIRM
043815	ASRD	VLE PROCEED TO DOGAP AND CLIMB FL 70
043820	VT-TLE	CLIMB FL 70 AND PROCEED DIRECT TO DOGAP VLE

1.12 Wreckage and impact information.

There was no damage to either of the aircraft or to any ground facilities.

1.13 Medical and pathological Information:

Both the cockpit crew of Air India, pilot of Sesa Goa and all the cabin crew had undergone pre-flight medical check prior to the flight at Mumbai and the same was found to be negative.

1.14 Fire:

There was no fire.

1.15 Survival aspects:

The incident was survivable.

1.16 Tests and research:

Nil

1.17 Organizational and management information:

Air India Ltd. is a scheduled airline with an Airbus fleet of 71 aircrafts and 41 aircrafts of Boeing fleet operating flights on domestic and international sectors. The Airlines Head Quarters is located at New Delhi. The Air operator permit of the Airlines is valid till 30/06/2018. The Company is headed by Chairman & Managing Director assisted by a team of professional of various departments. The Flight Safety Department is headed by Chief of Flight Safety approved by DGCA. The Chief of Safety is an Executive Director who reports directly to the Chairman. M/s Air India has a full established Operations training facility for the pilots. The training facility for the Airbus pilots is set up at Hyderabad and for the Boeing pilots it is in Mumbai. Both the training facilities are headed by the Executive Director Training who reports to Chairman directly. The Engineering training facility is established at Delhi and Mumbai. It is a public sector undertaking under the Ministry of Civil Aviation.

Airports Authority of India (AAI) is a public sector undertaking under the Ministry of Civil Aviation. It was formed by an Act of Parliament and came into existence on 1st April 1995. AAI provides Air Navigation Services in air space measuring 2.8 million square nautical miles which

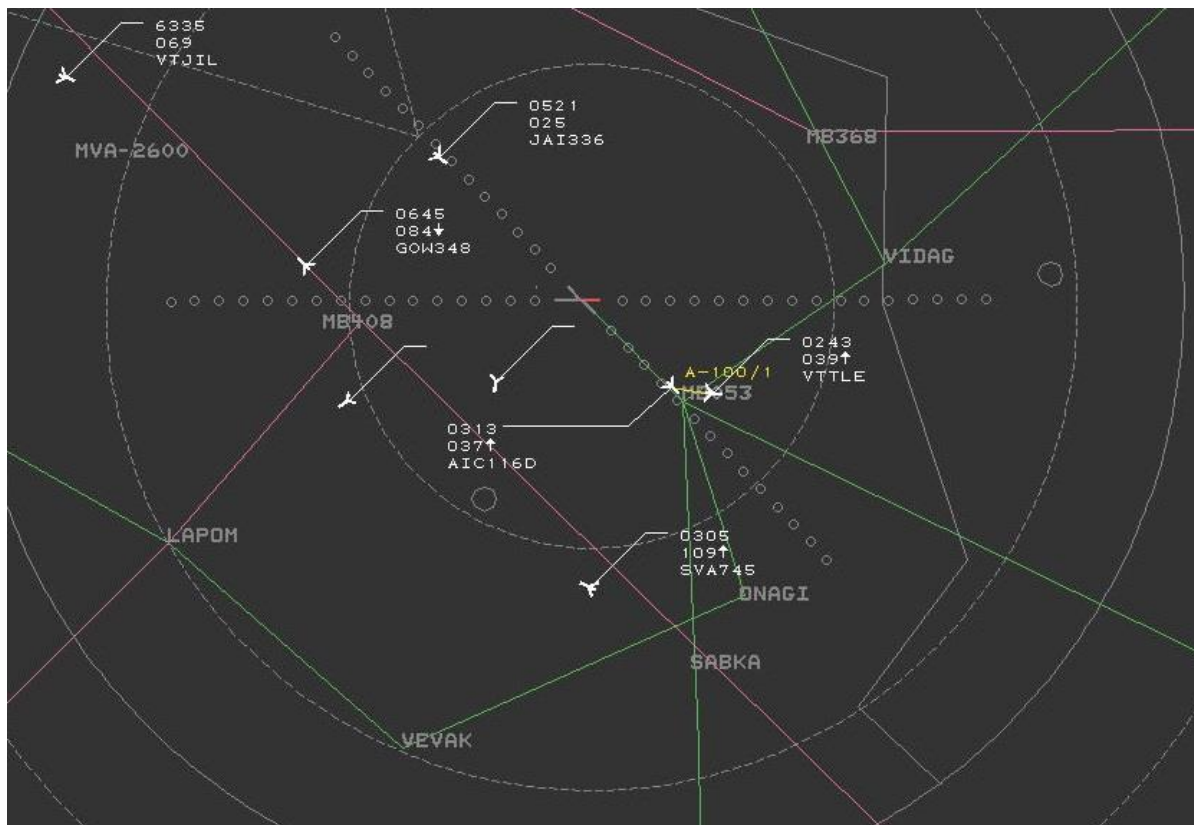
cover entire Indian air space. The Air Traffic Services at Mumbai Aerodrome are provided by AAI which includes Aerodrome Control Tower.

Sesa Goa Ltd. is a natural resource company engaged in exploration, mining and processing of iron ore. The company has been taken over by Vedanta Ltd. The company has only one aircraft P68C registered under “private” category with registration VT-TLE. The aircraft VT-TLE is maintained by Bombay Flying Club.

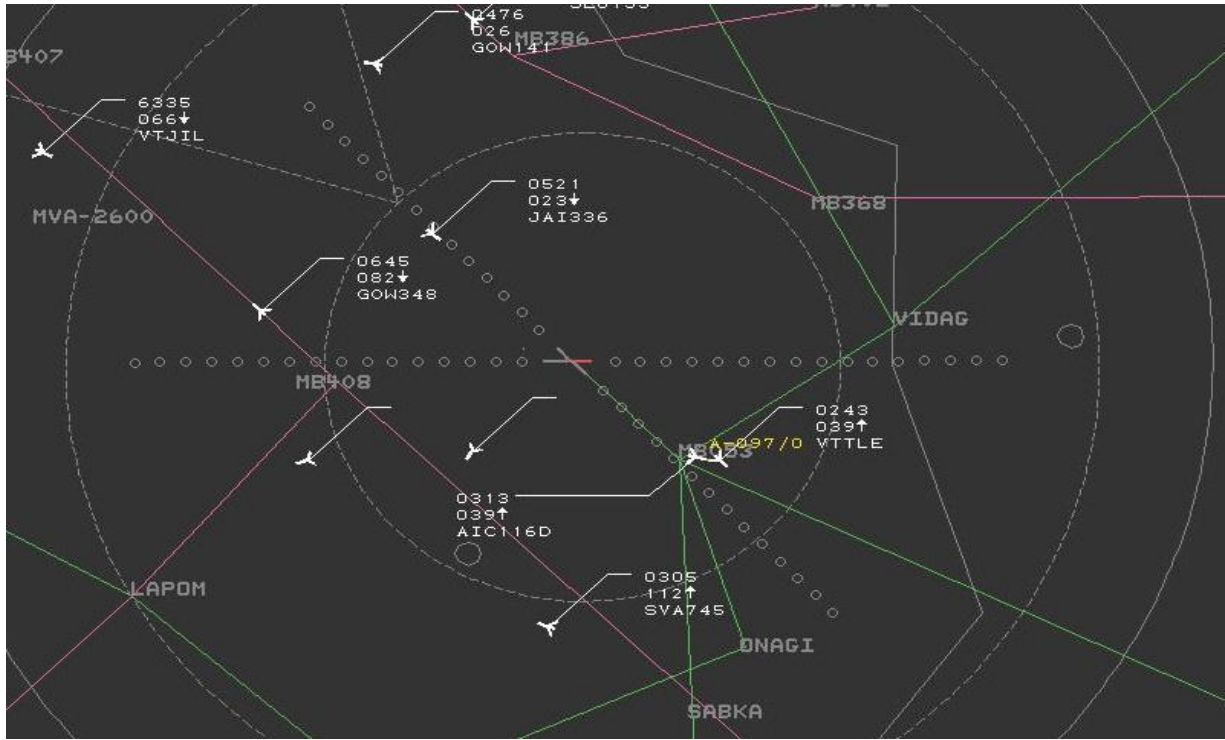
1.18 Additional information:

Zoomed Radar picture of VT-TLE (P68C) Sesa Goa Aircraft & AIC116D (B787) AIC aircraft as displayed in front of controller

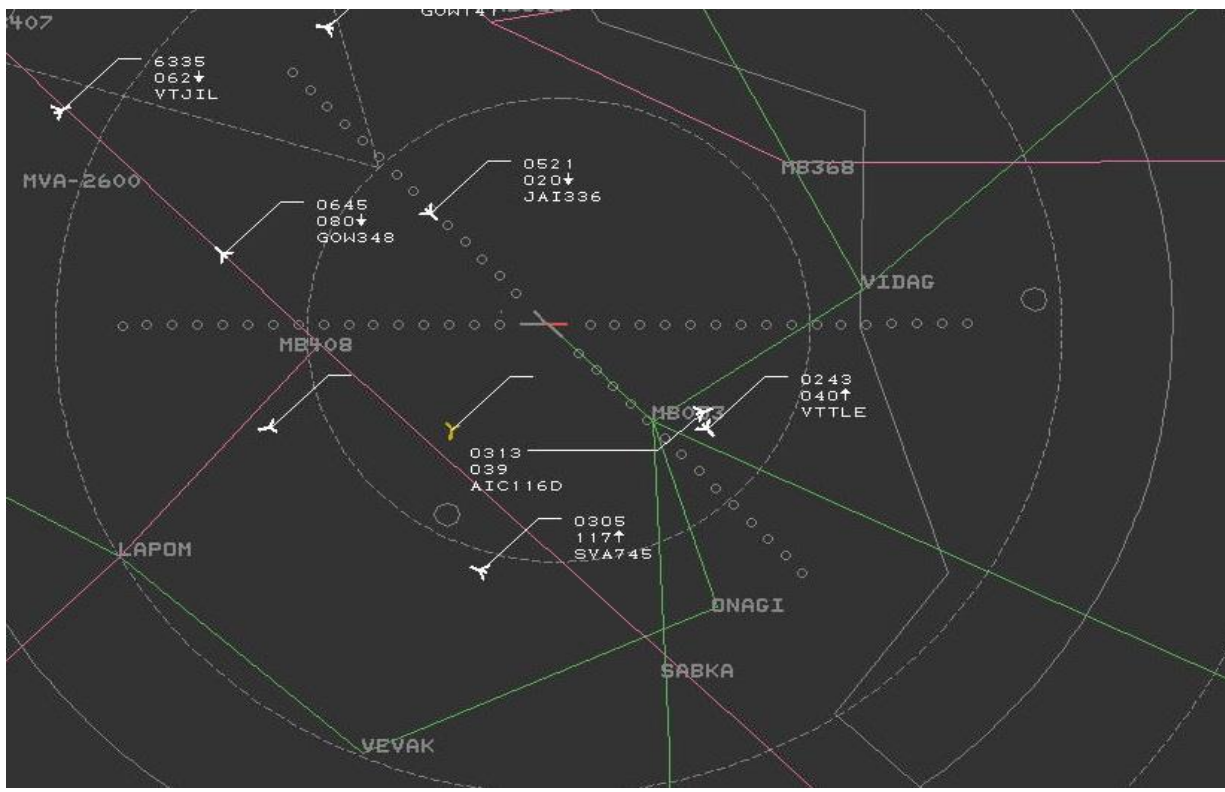
At time 043636



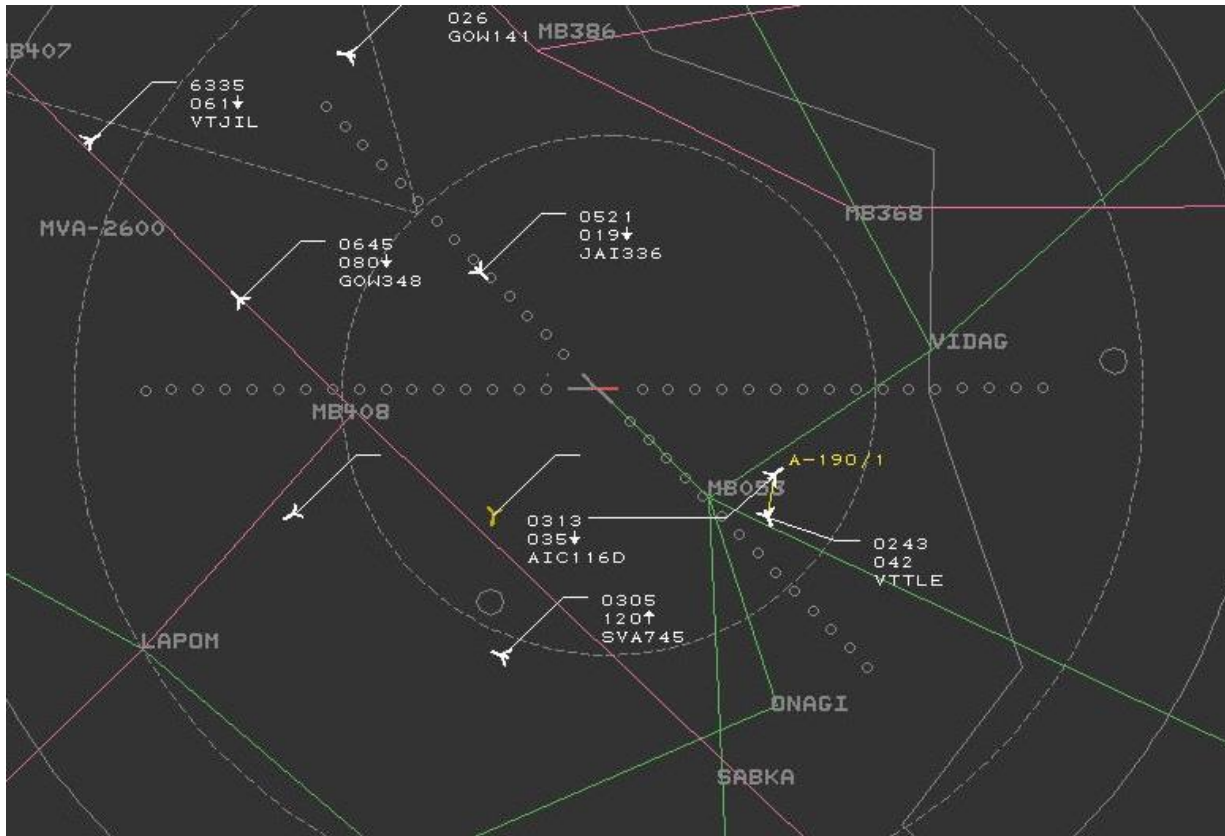
At time 043652



At time 043711



At time 043721



1.19 Useful and Effective Techniques:

Nil

2. ANALYSIS

VT-TLE, P68C, departed from Juhu Aerodrome at time 0429UTC RUNWAY26 and contacted Mumbai Approach Radar. The controller cleared the aircraft to turn left heading southerly direction and climb to 1000ft.

Reaching 1000ft, VT-TLE contacted Approach Radar and requested left turn (to proceed via shortest route) and further climb. At time 0430, the controller gave it climb to 2000ft and asked

the aircraft to turn right, turn left proceed direct DOGAP. VT-TLE interpreted this ambiguous instruction as turn left proceed direct DOGAP which it confirmed with the controller who said AFFIRM. This direct routing now aligned the aircraft on a heading intersecting with the take-off path of RUNWAY 14 of CSIA Mumbai Aerodrome, which happened to be the RUNWAY in use for departures/arrivals. The point of intersection can be estimated at approx. 4.5NM from the RUNWAY14 end of CSIA Aerodrome. At time 043133 Approach Radar restricted its climb to 3000ft and informed it to expect further climb after passing 10NM due traffic (traffic not specified). However, VT-TLE readback climb to 3700ft which was not corrected by Approach RADAR.

At time 043225, SVA745 contacted Approach RADAR after departing RUNWAY14 Mumbai passing 2000ft and was cleared FL140. RADAR passed VT-TLE traffic information of SVA745 which was climbing 5NM ahead of VT-TLE (non-standard phraseology used) and asked VT-TLE to maintain 3000ft on reaching which was read back correctly by VT-TLE. Thereafter, the controller was handling other traffic, and VT-TLE continued on its heading & maintaining 3000ft.

At time 043527 B787 aircraft VT-ANE flight AIC116D, after departure from Mumbai RUNWAY14 & passing 2100ft came in contact with Approach RADAR. Approach RADAR called "116D, VTLT CLIMB FL70 EXPEDITE REACHING". VT-TLE called to confirm whether it was being called which was acknowledged by RADAR. Again use of ambiguous and non-standard phraseology. AIC116D again called Approach RADAR, but RADAR was unable to respond and asked VT-TLE to proceed direct DOGAP and expedite climb to FL70, maybe recognizing the situation that was now developing. At time 043627 RADAR instructed AIC116D "116D TURN LEFT HEADING 360 CLIMB FL, STAND BY FOR FURTHER CLIMB". AIC116D readback the turn instruction and added that it was cleared to CLIMB to FL70 (as per SID).

At 043632 RADAR instructed AIC116D to TURN LEFT HEADING 310, 340 NOW. To this AIC116D readback 'LEFT HEADING 340 AND CLIMBING LEVEL 70'. Then Approach RADAR restricted VT-TLE to 4000ft and to turn right heading 180 now. At 043650 RADAR passed traffic to VT-TLE of AIC116D and asked AIC116D to expedite passing FL80 using "VT TRAFFIC IS JUST CROSSING YOU NOW JUST STAND BY FOR CLIMBING, AIC166D EXPEDITE TILL PASSING, CLIMB 140 EXPEDITE 80".

At 043703 AIC116D reported getting RA on TCAS at 4000ft approximately 6NM from Mumbai, which was acknowledged by RADAR. AIC116D was observed maneuvering and descending for RA. Then, RADAR asked VT-TLE to turn right heading 180. At time 043716 RADAR asked AIC116D to CLIMB FL140 AND PROCEED DIRECT TO DOSTO NOW. AIC116D had not reported that it was clear of traffic then.

At 043721 AIC116D reported that it was now CLEAR OF TRAFFIC NOW CLIMBING LEVEL 140 PROCEEDING DIRECT DOTIP. RADAR instructed AIC116D to proceed direct to DOSTO to which AIC116D complied.

VT-TLE did not report receiving RA or TA as it was not carrying TCAS on board but had a serviceable mode 'C' transponder.

3 CONCLUSIONS:

3.1 Findings

1. Runway in use at Mumbai Aerodrome was 14 for arrivals and departures. Traffic in Mumbai Approach was moderate. However, the controller had been manning the channel for last one and half hour.
2. VT-TLE departed from Runway 26 from Juhu Aerodrome at time 0429UTC.
3. VT-TLE was a VFR traffic and was not identified on RADAR.
4. VT-TLE was given direct to DOGAP after the aircraft came in contact with the Approach Controller.
5. After giving the aircraft direct DOGAP, VT-TLE heading was intersecting the take-off path of Runway 14 at approximately 4.5NM from the Runway 14 end.
6. The Approach controller did not restrict/ delay departure from Runway 14 even after giving VT-TLE direct to DOGAP which was taking her to the takeoff path of Runway 14.
7. When SVA745 contacted APP RADAR after departing RUNWAY14 Mumbai Aerodrome, RADAR passed VT-TLE traffic information of SVA745 which was climbing 5NM ahead of VT-TLE (non-standard phraseology used) and asked VT-TLE to maintain 3000ft on reaching.

Thereafter, the controller was engaged in handling other traffic, and failed to recognise and resolve the situation developing at VT-TLE continued on its heading & maintaining 3000ft.

8. When AIC116D after departure from Mumbai RUNWAY14 & came in contact with APP RADAR, then he asked VT-TLE to climb FL70 and expedite. However, the two aircraft performance characteristics were different. VT-TLE was an aircraft of a lower speed with slower climb rate whereas B787 is a far higher speed aircraft with a faster rate of climb. This exacerbated the situation more.
9. Further, at this time AIC116D was also climbing FL70 (as per SID) and it also readback this twice. At this moment both aircrafts were climbing to FL70. Vertical separation was attempted by the RADAR controller. In fact, 20 secs before AIC116D received RA, RADAR asked VT-TLE to stop climb at 4000ft and recleared AIC116D to FL140 and expedite climb to FL80 and passed it traffic information of VT-TLE using non-standard phraseology.
10. The first avoidance headings were issued by RADAR controller to AIC116D 60 seconds after, & to VT-TLE 70 seconds after, AIC116D first made contact with RADAR Controller. This was just 30 seconds before AIC116D received RA.
11. AIC116D reported TCAS RA at 4000ft approximately 6NM from Mumbai. It was observed maneuvering and descending for RA.
12. The controller gave AIC116D instructions, after AIC116D had reported receiving RA but had not reported 'CLEAR OF TRAFFIC'.
13. VT-TLE did not receive any RA/TA as it was not carrying any TCAS on board but only mode C transponder.
14. There were a few instances where non-standard and ambiguous phraseologies were used by the controller.
15. Further, the Predicted Conflict Warning did not annunciate at any time even during SVA745 and AIC116D departures.
16. The incident was not logged by the controller as per the standard procedures.

3.2 Probable cause of Incident

The Controller giving routing to aircraft VT-TLE direct to DOGAP which was cutting across the take-off path of the aircraft VT-ANE (AIC116D), took the aircraft VT-TLE into conflict with aircraft VT-ANE and subsequently resulted into the incident.

Contributory Factors

- a) The Approach controller did not stop departure from Runway 14 even after giving VT-TLE direct to DOGAP which was taking her to the takeoff path of Runway 14.
- b) No attempt was made to ensure vertical separation between VT-TLE and VT-ANE until both of them came close to each other resulting into breach of separation.
- c) The first avoidance headings were issued by RADAR controller to VT-ANE 60 seconds after & to VT-TLE 70 seconds after, VT-ANE first made contact with RADAR Controller. This was just 30 seconds before VT-ANE received RA.
- d) Further, the ATC Automation System did not annunciate any Predicted Conflict Warning (PCW). A timely warning may have alerted the controller earlier to the impending situation for him to take a more timely action.

4 SAFETY RECOMMENDATIONS

1. AAI to develop or review Standard Operating Procedures (SOPs) for handling of fixed wing VFR movement from Juhu.
2. AAI may impart suitable corrective training to the Approach Controller for use of standard phraseology and handling VFR traffic from Juhu and for actions required, if an aircraft reports RA.
3. AAI shall re-emphasis on handling of VFR traffic from Juhu Aerodrome for all approach controllers during their refresher training program.

K. Ramachandran

(K Ramachandran)
Air Safety Officer
AAIB
Member, Col to VT-ANE & VT-TLE

N S Dagar

(N S Dagar)
Jt. GM (ATM)
AAIB
Chairman, Col to VT-ANE & VT-TLE

Place: New Delhi
Date: 16.06.2016