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**Final Report on Serious Incident between M/s Jet Airways
Ltd. B737-800 & M/s Tata Singapore Ltd. A320-232 at Delhi
on 21.04.2017.**

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 2012, the sole objective of the investigation of a serious incident shall be the prevention of accidents and not 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 serious incidents, could lead to erroneous interpretations.

Glossary

AAI	Airports Authority of India
AAIB	Aircraft Accident Investigation Bureau, India
AOP	Air Operator Permit
ATC	Air Traffic Control
ATD	Actual Time of Departure
ATIS	Automatic Terminal Information Service
ATPL	Airline Transport Pilot Licence
AMM	Aircraft Maintenance Manual
AUW	All Up Weight
C of A	Certificate of Airworthiness
C of R	Certificate of Registration
COI	Committee of Inquiry
CPL	Commercial Pilot Licence
DGCA	Directorate General of Civil Aviation
DFDR	Digital Flight Data Recorder
DME	Distance Measuring Equipment
ETA	Expected Time of Arrival
HZ	Haze
IACO	International Civil Aviation Organization
IATA	International Air Transport Association
IFR	Instrument Flight Rule
ILS	Instrument Landing System
NM	Nautical Mile
PIC	Pilot In Command
Pax	Passenger
<i>PANS-ATM</i>	Procedures for Air Navigation Services - Air Traffic Management
QFE	Query: Field Elevation
QNH	Query: Nautical Height
<i>R/T</i>	Radio Telephony
<i>RWY</i>	Runway
SQMS	Standards, Quality Management and Safety
SOP	Standard Operating Procedures
VHF	Very High Frequency
VOR	Very High Frequency Omni Range
UTC	Co-ordinated Universal Time
WSW	West South west

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**Final Report on Serious Incident between M/s Jet Airways Ltd.
B737-800 & M/s Tata Singapore Ltd. A320-232 at Delhi on 21.04.2017.**

1. Aircraft

Type : B737-800 (Jet Airways)/ A320 (Tata Singapore)

Nationality : Indian

Registration : VT-JGV (Jet Airways)/ VT-TTC (Tata Singapore)

2. Owner/ Operator : M/s Jet Airways Ltd. / M/s Tata Singapore Ltd.

3. Pilot – in –Command : ATPL Holder for both Jet Airways and Tata Singapore

Extent of injuries : Nil

4. First Officer : CPL Holder for both Jet Airways and Tata Singapore

Extent of injuries : Nil

5. Place of Incident : Within 02 NM of IGI Airport’s climb out area.

6. Date & Time of Incident : 21st April 2017, 01:20 UTC

7. Last point of Departure : Muscat for Jet Airways and New Delhi for Tata Singapore

8. Point of intended landing : New Delhi for Jet Airways and Bengaluru for Tata Singapore

9. Type of operation : Scheduled Operation for Jet Airways & Tata Singapore

10. Crew on Board : 02+07 (Jet Airways) and 02+05 (Tata Singapore)

Extent of injuries : Nil

11. Passengers on Board : 163 (Jet Airways) and 149 (Tata Singapore)

Extent of injuries : Nil

12. Phase of operation : Missed Approach for Jet Airways & Departure for Tata Singapore

13. Type of Occurrence : Air Proximity

(ALL TIMINGS IN THE REPORT ARE IN UTC)

SYNOPSIS

On 21.04.2017, M/s Jet Airways flight JAI597, aircraft B737-800 from Muscat to Delhi was flying at a very high speed. JAI597 was observed to be maintaining very high speed during its approach. When aircraft was 20 Nm and 13 Nm from touch down, the ground speed of aircraft was 390 Kts and 350 kts respectively. Approach Radar Controller on both occasions reminded flight crew of the high speed of aircraft and instructed the aircraft to ***“reduce to the landing speed”***. JAI597 continued to approach at a very high speed and at the same time, M/s Air Vistara flight, VTI811, aircraft A320 took off from Runway 11 at IGI Airport, Delhi for Bengaluru. The simultaneous, go around of very high speed JAI597 and departing VTI811 from Runway 11 led to breach of standard separation. The Crew of JAI597 failed to reduce the speed to the standard published speed despite being reminded repeatedly by the approach Radar Controller.

At five miles from touch down, the approach Controller lost situational awareness and asked JAI597, with very high ground speed (310 kts) ***“Confirm you will be able to land at this speed”***. The Crew of JAI597 replied ***“Affirm”*** but in fact, the speed of JAI597 was too high and even flaps were not down (maximum Indicated Air Speed for flaps to be down is 250 kts).

Tower Controller too didn't monitor the very high speed of arriving JAI597 and released the departure, VTI811 without coordinating with Approach Radar Controller. Subsequently, JAI597 went around and had an airprox incident with the departing VTI811. The lateral separation between JAI597 and VTI811 was reduced to 0.3 NM when the vertical separation was 400 feet.as against the standard Lateral separation of 3 Nm and standard vertical separation of 1000 feet.



Figure 1: Airprox between JAI597 and VTI811 with vertical and lateral separation as 400 feet and 0.3 NM

At the time of serious incident, mode of operation at IGI Airport was easterly with both the runway i.e. Rwy 10 and Rwy 11 were used in the mixed mode of operation. Only one Approach Sector was operational till time 0115 UTC. Thereafter the flights were uneventful with no injuries to persons on board either aircraft.

Ministry of Civil Aviation constituted a committee of inquiry vide Notification No. Av-15013/13/2017-DG dated 29th May 2017 to investigate the cause of the Serious Incident under Rule 11 (1) of Aircraft (Investigation of Accidents and Incidents), Rules 2012 comprising of Dr. Jitender Loura Assistant Director of Operations (AAIB) as Chairman and Shri Dinesh Kumar, Air Safety Officer (AAIB) as member.

The Causative factors for the serious incident were:

1. Failure of Crew of flight JAI597 to adhere to the published speed control procedures.
2. Non-adherence to the Standard Cockpit procedures by the Crew of JAI 597.
3. Loss of Approach Radar Controller's Situational awareness as to ***“Whether an aircraft can land at 310 kts of ground speed at 5 miles from touch down”***.
4. Failure of Tower Controller to monitor the very high speed of arriving JAI597 and releasing the departure VTI811 without coordinating with Approach Radar Controller.

1. FACTUAL INFORMATION

1.1 History of the flight

- 1.1.1 Jet Airways aircraft, JAI597 came in contact with the Approach Radar Controller on frequency 126.35 MHz at 011140 UTC when aircraft was 60 NM WSW (west south west) of Delhi.
- 1.1.2 JAI597 was observed to be maintaining very high speed during its approach. When aircraft was *20 Nm from touch down at time , the ground speed was 390 kts* on the Radar and when the *aircraft was 13 Nm from touch down at time . the ground speed of aircraft was 350 knots.*
- 1.1.3 At time 011734 UTC, Approach Radar Controller asked Crew of JAI597 *“JAI597 Speed”* to which Crew of JAI597 replied *“Sir reducing to 230 JAI597”*.
- 1.1.4 At time 011738 UTC, Approach Radar Controller asked Crew of JAI597 *“Roger Reduce speed for landing Sir.”* And Crew of JAI597 replied *“Reducing Sir, JAI597”*.
- 1.1.5 At time 011820 UTC, Approach Radar Controller asked the Crew of JAI597 *“JAI597 Roger Cleared for ILS approach RWY 11. Reduce to landing speed”* and the crew of JAI597 replied *“Copied Sir, Reducing to Landing Speed and Cleared for ILS RWY 11, JAI597”*.
- 1.1.6 At time 011954 UTC *when JAI597 was five and half miles from touchdown the ground speed of aircraft was 320 knots* (as observed on radar label of flight). At this time, the controller again enquired from Crew of JAI597 *“Will you be able to make landing with this speed”* to which the Crew of JAI597 replied *“affirm”*.



Figure 2: At 011902 UTC, JAI597 10 miles from touchdown, on ILS RWY 11, passing 3900 feet , 340 kts.



Figure 3: At 011954 UTC, JAI597 5.5 miles from touchdown, on ILS RWY 11, passing 2600 feet, 320 kts.

1.1.7 At time 012010, JAI597 was asked to change over to tower, ***“JAI597 Roger 4 miles from touch down, Contact Tower 125.85”***.

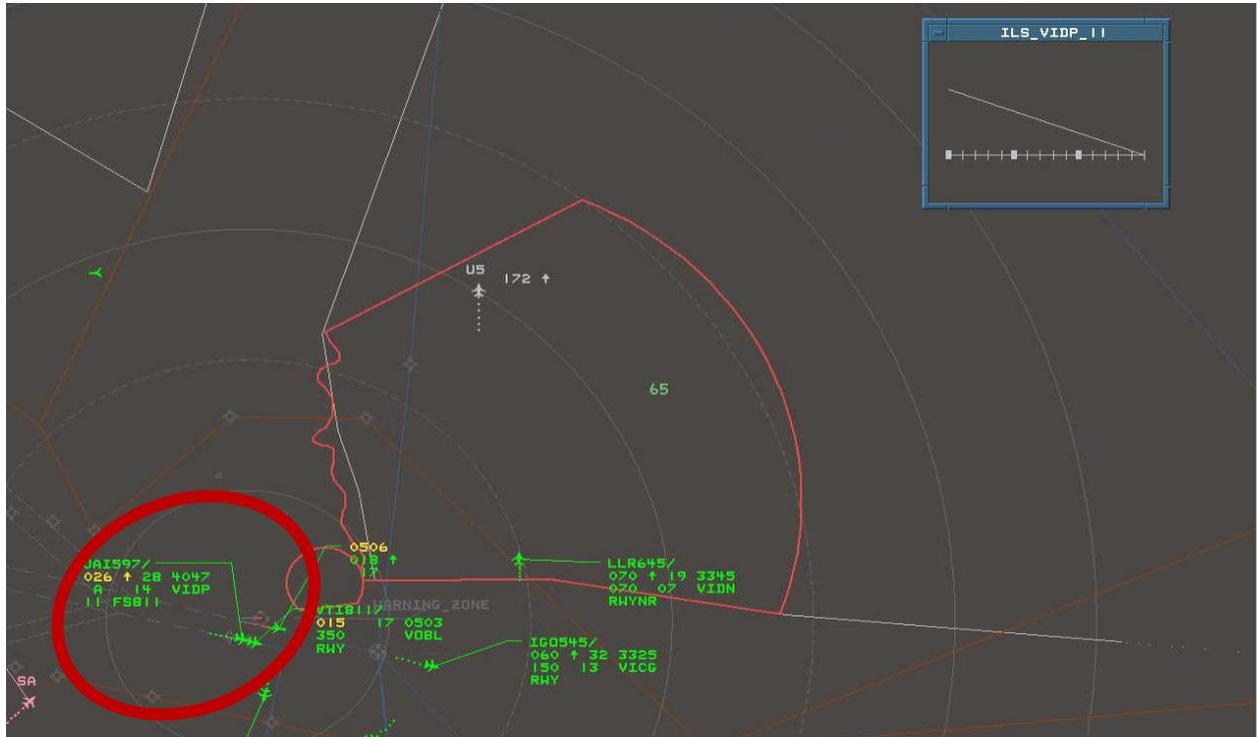


Figure 4: At 012027 UTC, JAI597 going around RWY 11, passing 2600 feet.

1.1.8 At time, 012027 UTC, the Crew of JAI597 informed Approach Radar Controller that they are going around runway11 ***“Sir Request Go around JAI597 Going around.”***

1.1.9 At time 012049, Approach Radar Controller instructed JAI597 to maintain 2600 feet.

1.1.10 At time 012101 UTC, Approach Radar Controller asked Crew of JAI597 to ***“Climb to FL 60 expedite passing 4000 feet JAI597”*** and the instruction was duly acknowledged by Crew of JAI597.

1.1.11 At time 011952, VTI811 was given take-off clearance by Tower Controller, when JAI597 was 5.5 Nm from touchdown.

1.1.12 At time 012015, VTI811 commenced its take-off roll when JAI597 was beyond 4 Nm from touch down.

1.1.13 At 012126 UTC tower controller changed VTI811 to approach controller after giving traffic information to VTI811 about JAI597.

1.1.14 At time 012145 UTC, the Tower South Controller tells Approach Radar Controller ***“Traffic De Diya Change Kar Diya¹”*** [means Traffic (VTI811) handed over/Changed over].



Figure 5: At 012144 UTC, JAI597 after high speed approach, going around RWY 11, airprox with VTI811

1.1.15 At time 012148 UTC, Approach Radar Controller replied ***“Chodna Nhi Chahiya tha na Bhai”***. [means Should not have released (the traffic) Brother].

1.1.16 At time 012150 UTC, VTI811 came in contact with Approach Radar Controller and was asked to maintain 2600 feet by asking ***“VTI811 maintain 2600 feet. Traffic above you passing 3000 feet for Flight Level F60, going around from RWY 11”***.

¹ Tape transcript of Intercom between Tower (South) and Approach

1.1.17 *In mandatory Occurrence report as well as the statement, Crew of JAI597 reported getting TCAS RA and followed TCAS RA (Climb). As per DFDR data, both the aircraft got TCAS RA.*

1.1.18 Thereafter, the flights were reported to be uneventful.

1.1.19 Crew (P1) of JAI597 in his statement reported that *“more than expected tailwinds on approach, approximately 30 kts²”*.

1.1.20 No weather deviation/tailwind was reported by ATC.

1.1.21 *Crew (P2) of JAI597 in her statement reported that “We couldn’t take Flaps³ because Speed never came below 250 Kts. For Flaps 1, speed should be below 250 Kts.”*

1.1.22 Weather at time 0100 UTC was reported to be Visibility of 2200 meter in Haze, QNH 1002, temperature 29°C, Dew Point 20 °C and wind 130° 07 kts.

1.2 Injuries to persons

INJURIES	CREW	PASSENGERS	OTHERS
FATAL	Nil	Nil	Nil
SERIOUS	Nil	Nil	Nil
MINOR/NONE	(02+07) Jet Airways (02 +05) Tata Singapore	163 Jet Airways 149 Tata Singapore	Nil

1.3 Damage to aircraft Nil

² Statement of Crew (P1) of JAI597.

³ Statement of Crew (P2) of JAI597.

1.4 Other damage Nil

1.5 Personnel information

Both the flights i.e. JAI597 and VTI811 were operated by scheduled airlines and all the flight crew were appropriately licensed. The crew of both the airlines fulfilled all the requirements for operating the flight.

Both the Air Traffic Controllers i.e. the Aerodrome Controller and the Approach Radar Controller (APST) were authorized to handle R/T in the procedural and Radar environment respectively. Both the Aerodrome Controller and Approach Radar Controller had undergone the proficiency checks in the respective ATC units and were found proficient⁴ to perform ATC duties.

Approach Radar Controller in addition to Approach Radar (TAR), was rated/authorized for Tower, Approach, Area (ACC) and ADS/CPDLC units at IGI airport. During the period of over 180 days (preceding the date of serious incident i.e. 21.04.2017), the Approach Radar Controller had primarily worked in Approach Radar (TAR) and on three occasions in ADS/CPDLC Unit only. He has failed to perform any duty in Tower⁵ as well as ACC in last over 180 days.

1.6 Aircraft information

M/s Jet Airways Ltd. B773-800 and M/s Tata Singapore Ltd. A320-232

Boeing 737-800 aircraft of M/s Jet Airways Ltd., registration VT-JGV (MSN 34803) had been manufactured in year 2007. At the time of serious incident, the Certificate of Airworthiness and Certificate of Registration was current.

⁴ Proficiency Check reports as obtained from GM ATC,AAI,IGI Airport.

⁵ AAI letter Vide No AAI/DP/ATM/49/739 dated 13/06/2017 and ATC log book extracts.

The Airbus A320-232 aircraft of M/s Tata Singapore Ltd. Registration VT-TTC (MSN 6278) had been manufactured in year 2014. At the time of serious incident, the Certificate of Airworthiness and Certificate of Registration was current.

1.7 Meteorological information:

Date: 21st April 2017 and Time of Observation: 01:00 UTC

Wind	Visibility	Weather	Cloud	Temperature	Dew Point	QNH
130° 07Kts	2200 meters	HZ (Haze)	NSC	29°C	20° C	1002 hPa

1.8 Aids to navigation

All aids to navigation viz., VOR, DME, ILS RWY 11 along with Tower South frequency 125.85 MHz and approach frequency 126.35 MHz were reported working normal.

1.9 Communications

During the period of occurrence both the aircraft, B737-800 and A320-232 were in contact with ATC on approach (126.35 MHz) and A320-232 was continuously in contact with Tower –South frequency at 125.85 MHz. However, the B737-800 aircraft was changed over to Tower South frequency and the aircraft gave a call on Tower South frequency. But no response/communication seems to be available from Tower south frequency.

1.10 Aerodrome information

Indira Gandhi International Airport (IATA: DEL, ICAO: VIDP) is a Joint venture airport being managed by Delhi International Airport Limited (DIAL) and Airports Authority of India. The air traffic services at IGI airport are provided by AAI which includes Aerodrome Control service (ADC/SMC), Approach Control service (APP), Area Control Service (ACC), Terminal Approach Radar (TAR) and Route Surveillance Radar Service (RSR). IGI airport houses three near converging runways in the westerly direction namely Rwy 27, Rwy28 and Rwy29. On the other hand, it has three diverging runways in the

easterly direction i.e. Runway 09, Rwy10 and Rwy 11. At the time of serious incident, the mode of operation at IGI airport was easterly, with both runways, Runway 11 (runway-in-use) and Runway 10 were both used in mixed mode of operation. Only one approach sector was operational till 0115 UTC.

1.10.1 Declared Distances⁶

The declared distances (in meter) concerning Rwy-in-use are as follows:

Rwy Designator	TORA	TODA	ASDA	LDA	Threshold Displaced	Remarks
11	4110	4110	4430	3465	645	RESA = 240*120M

1.11 Flight recorders

DFDR data of both the aircrafts was made available for analysis. Besides, DFDR data, ATC tape recording of frequency 128.85 MHz (Tower – South), 126.35 MHz (Approach) and Intercom between Tower and Approach, were available for analysis.

1.12 Wreckage and impact information

There was no damage to either of the aircraft.

1.13 Medical and pathological Information

There was no reported adverse medical condition of the cockpit crew of both M/s Jet Airways and M/s Tata Singapore. Both the Controllers were reported to be medically fit to perform ATC duties.

⁶ Manual of Air Traffic Services –Part 2 table 6.4 pg 5-4

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

Both the aircraft were operated by the Scheduled Indian registered airlines viz. Jet Airways and Tata Singapore (Vistara).

Both the procedural and Radar Controllers were under the administrative control of Airports Authority of India which is responsible for Air Traffic Services at IGI airport including Route Radar Surveillance, Terminal Approach Radar, Area control Service, Approach Control Service and Aerodrome Control Service.

1.18 Additional information

1.18.1 In this serious incident, it has been observed that the Radar Controller has lost his privilege to perform independent duty in Tower and Area.

1.18.2 In serious incident between IGO334 and UAE 353 in Nagpur on 28.01.2018, it has been observed that the Radar Controller has lost his privilege to perform independent duty in Tower and Area .and in fact She has done some duties unauthorizedly in Tower and is still continuing in ACC. The Planning Controller has lost his privilege to perform independent duty in Tower and he has done some duties unauthorizedly in Tower.

1.18.3 In Serious incident between IAD768 and IGO 398 in Varanasi on 16.04.2017, it was observed that out of these 20 Radar Controllers, as on date of serious incident, seven radar controllers have lost the privilege of providing ATC services in Aerodrome/Approach Control. Three radar controllers have lost the privilege of providing ATC services in Area Control.

1.18.4 In Serious Incident between JAI792 and LLR626 in Nagpur on 02.12.2016, after the analysis of ATC log books from January 2016 to January 2017, it was found that “there were 19 Radar Controllers as on date of serious incident i.e. 02.12.2016. All the 19 Radar Controllers have not performed any duty in Tower for over Six months and thus rendering their Tower rating/authorization as Null and void. This includes training -in-Charge, Jt. GM (ATM), Senior Managers and WSOs etc.”

1.18.5 In another Serious Incident between KLM811 and IGO977 in Delhi on 02.11.2016 and Serious Incident between AIC 142 B788 (REG- VT-AND) and AIC 154 B788 (REG- VT-ANI) in Delhi ACC at IGI Airport, New Delhi on 10.11.2016, “after the analysis of ATC log books, it is found that over 80 Radar Controllers [out of total 109 Radar Controllers, records in respect of 85 Radar Controllers have been scrutinized] have not performed a single duty in Tower for over six months and have lost the privilege/authorization to handle aircrafts in Tower. i.e. their Tower rating has lapsed.”

1.19 **Useful and Effective Techniques** Nil

2. ANALYSIS

The analysis, of DFDR data, ATC tape recording of frequency 128.85 MHz (Tower – South), 126.35 MHz (Approach), recording of intercom between Tower (South) and Approach Radar, ATC Log books of Tower & Approach and Proficiency Check report of the Controllers provided by AAI, reveal that:

- 2.1 The Crew of JAI597 were consistently flying at a very high speed and they consistently failed to comply with ALL the speed norms published in AIC. Within 20 miles from touchdown, the ground speed of JAI597 was *at times approximately twice the permissible/mandatory speed.*
- 2.2 The crew failed to reduce speed despite being advised by Approach Radar Controller on two counts i.e. at time 011734 and 011820 UTC.
- 2.3 The Crew when asked upon for the third time by Approach Radar Controller “*Would you be able make landing at this speed*” at time 011954 UTC, replied “*Affirm*”. At this stage, the aircraft was at five and half mile from touchdown and the ground speed of the aircraft was 320 kts.
- 2.4 When the Crew said Affirmative, the First officer reminded the Captain that “We are at 4 DME at 2000 feet with NO FLAPS so we should discontinue the approach because we would not be able to make it then after this Captain said to tell ATC that we are going around.”
- 2.5 The Crew of JAI 597 reported “We could not take flaps because speed never came below 250kts.”
- 2.6 The Approach Radar Controller though observed the very high speed of the arriving aircraft, JAI597 and asked to reduce speed twice but lost situational awareness as the radar controller failed to appreciate that “Whether an aircraft with a ground speed of 310 kts at 5 miles from touch down can actually land”.

2.7 Though the Approach Radar Controller is rated for ADC/SMC, ACC(P), ADS/CPDLC, TAR (Approach Radar), Yet during the last over 180 days, the Approach Radar Controller had primarily worked as Approach Radar Controller (TAR) and on three occasions as ADS/CPDLC Controller. He has failed to perform any duty in both Tower and ACC(P) in last over 180 days. Thereby, rendering his ADC/SMC and ACC(P) ratings as VOID.

2.8 The minimum lateral and vertical separation reduced to 0.3 NM and 400 feet respectively.

2.9 The Tower Controller passed the traffic information to departing VTI811 about going around JAI597.

2.10 The Approach Radar Controller restricted the climb of flight JAI597 initially to 2600 feet and subsequently asked it to climb to FL60 and expedite passing 4000 feet.

2.11 Thereafter the flights were uneventful.

2.12 The Coordination between Tower South Controller and the Approach Radar Controller was affected in non-standard Language.

2.13 Weather was not a contributory factor.

3. CONCLUSION

3.1 Findings

- 3.1.1 Both the scheduled flights were under the command of an appropriately licensed ATPL holder and FO being CPL holders.
- 3.1.2 The medical of all cockpit crew members as well as Controllers was valid.
- 3.1.3 Traffic density with Approach Radar and Aerodrome Control South was Light.
- 3.1.4 All communication facilities like VOR, ILS RWY 11, DME including Tower – South frequency and Approach frequency at 125.85 MHz and 126.35 MHz respectively were reported to be working normal.
- 3.1.5 The crew of JAI597 was observed to flying at a very high speed in contravention to the laid down SOP. The observed ground speed of JAI597 was
 - 3.1.5.1 390 Kts at 20 NM from touchdown
 - 3.1.5.2 350 kts at 13 NM from touchdown and
 - 3.1.5.3 320 kts at 5.5 NM from touch down.
- 3.1.6 The approach speed of JAI597, at all the times, was ***approximately twice the speed as laid down in SOP.***
- 3.1.7 No efforts were made by the Crew of JAI597 to reduce speed of the arriving aircraft despite repeated reminders by the Approach Radar Controller.

- 3.1.8 The approach Controller lost situational awareness as he asked JAI597 at around 5.5 NM from touchdown, with very high ground speed (310 kts) *“Confirm you will be able to land at this speed”*.
- 3.1.9 The Crew of JAI597 continued approach and confirmed to Approach Radar Controller at around 4.5 NM from touchdown that they will be able to land at his speed (310 kts) and at that time even flaps were not down and the First Officer (P2) reminded the Commander (P1)/(PF) that flaps were not down and they will not be able to land at this speed.
- 3.1.10 Tower South controller failed to take into consideration the very high speed of the arriving aircraft JAI597 (approximately double the approach speed) and released the departure, VTI811 without coordinating with Approach Radar Controller.
- 3.1.11 The simultaneous go around of high speed JAI597 and departure of VTI811 led to breach of separation/ airprox incident. The lateral separation between JAI597 and VTI811 was reduced to 0.3 NM when the vertical separation was 400 feet.
- 3.1.12 During the period of over 180 days (preceding the date of serious incident i.e. 21.04.2017), the Approach Radar Controller had failed to perform any duty in Tower⁷ as well as ACC in last over 180 days and thus has lost the privilege of Tower and Area ratings/authorization.
- 3.1.13 The Coordination between Tower South Controller and the Approach Radar Controller was also affected in non-standard Language.
- 3.1.14 Weather/tailwind was not a contributory factor. As tail winds were neither reported by ATC/meteorological department nor by any other aircraft to ATC nor even by the Crew of JAI597 during approach/go around to ATC.

⁷ AAI letter Vide No AAI/DP/ATM/49/739 dated 13/06/2017 and ATC log book extracts.

3.2 Probable Cause

- 3.2.1 Failure of Crew of flight JAI597 to adhere to the published speed control procedures.
- 3.2.2 Non-adherence to the Standard Cockpit procedures by the Crew of JAI 597.
- 3.2.3 Loss of Approach Radar Controller's Situational awareness as to "Whether an aircraft can land at 310 kts of ground speed at 5 miles from touch down".
- 3.2.4 Failure of Tower Controller to monitor the very high speed of arriving JAI597 and releasing the departure VTI811 without coordinating with Approach Radar Controller.

3.3 Contributory Factors

- 3.3.1 Use of Non-Standard phraseologies by Approach Controller and use of Non-standard Language for coordination by Tower and Approach Controller.

4 SAFETY RECOMMENDATIONS

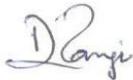
4.1 M/s Jet Airways Ltd

- 4.1.1 It is recommended that the Crew of the JAI597 may be subjected to Corrective training including CRM training, practical/Theoretical aspects of speed control, Cockpit procedures, Adherence to ATC instructions.

4.2 AAI

- 4.2.1 It is recommended that the Approach Radar Controller should be subjected to corrective training on speed control procedures, coordination with Tower, situational awareness, to deal with judgmental errors.
- 4.2.2 It is recommended that AAI should take necessary measures for revalidation of Tower and Area (ACC) ratings of Approach Radar Controller.

- 4.2.3 It is recommended that the tower controller should be given Corrective training on situational awareness, meticulous monitoring of speed and other parameters of aircrafts, coordinated procedure/ and use of standard language during Coordination etc.
- 4.2.4 It is recommended that when Radar Controller are not performing ATC duties in Procedural Units and the procedural Ratings are lapsed, it is pertinent that in the interest of safety, *“AAI should take necessary steps to reduce the number of ATC ratings so that a Radar Controller can mandatorily perform ATC duties in all the ATC units, every month, for which the Controller is rated.”*
- 4.2.5 It is recommended that AAI should make a case study and sensitize all the Radar and Tower Controllers about the handling of situations like this.



(Dinesh Kumar)

Member- Committee of Inquiry



(Dr. Jitender Loura)

Chairman-Committee of Inquiry

Place: New Delhi

Date: 30.03.2021



Phase of flight	IAS		Status	Remarks
	Turboprop	Turbojet		
Enroute and initial descent upto FL 290	N/A	250 kt or actual whichever is higher	Optional / As per requirement of ATC	Speed less than 250 kt will be subject to concurrence of pilot
Below FL 290 and upto FL 150	250 kt or actual speed whichever is lower	250 kt or actual whichever is higher	Optional/	Speed less than 250 kt will be subject to concurrence of pilot.
Below FL 150 & within 25D to 20NM (30D to 20 NM in case of straight-in)	220 kt or actual speed whichever is lower	220 kt or minimum clean speed whichever is higher	Mandatory	Below 10000 ft AMSL speed may be reduced to 210 kt by ATC
Within 20NM from touch down	180 kt	180 kt	Mandatory	Speed may be further reduced to 170Kt by ATC
Intercept leg or 12NM from touch-down in case	180-160 kt	180 -160 kt	Mandatory	Speed to be reduced to 160 kt during the
10 - 5 NM from Touchdown **	160-150 kt	160 kt	Mandatory	Turboprop aircraft unable to maintain the specified speed must inform ATC as early as possible preferably during intercept leg or when 12 NM from touchdown.
Within 5NM from touch down	N/A	N/A	N/A	

Table 8-3: Speed Control under Radar Environment for Arriving Aircraft

(All DME (D) Distances are from VOR and all distances in NM are from touchdown)

TAPE TRANSCRIPTS

DATE:-21/04/2017

CALL SIGN: - JAI597 & VTI811

FREQUENCY:-126.35

UNIT:-APPROACH

TIME(HH:MM:SS)	UNIT	TRANSCRIPTS
011138-54	JAI597	DELHI APPROACH RADAR JAI597 GOOD MORNING
	RADAR	DESCENDING PASSING LEVEL 150 FOR 70
	JAI597	JAI597 RADAR ROGER FLY HEADING 060 VECTORING FOR ILS APPROACH RWY 11
	JAI597	LEFT HEADING 060 VECTORING FOR ILS APPROACH RWY 11 JAI597
CONTINUOUS TRANSMISSION BETWEEN 011434 TO 012205		
011434-44	RADAR	VTI 959 RADAR CLIMB TO FL 240
	VTI959	CLIMB 240 VTI 959
	RADAR	LLR645 RADAR
011445-1213	RADAR	JAI597 RADAR DESCEND TO 2600 FEET QNH 1002 HPA
	JAI597	DESCEND TO 2600 FEET QNH 1002 JAI597
	LLR645	DELHI GOOD MORNING LLR645 CLIMBING PASSING 1800 FOR LEVEL 60 RWY HEADING
	RADAR	LLR64 LLR645 RADAR IDENTIFIED CLIMB TO FLIGHT LEVEL 70 UNRESTRICTED
	LLR645	LEVEL 70 LLR645
011514-19	RADAR	GOW 203 TURN LEFT PROCEED DIRECT TO SP
	GOW203	LEFT DIRECT SP GOW203
011520-25	RADAR	GOW203 DIRECT CLIMB TO FLIGHT LEVEL 210
	GOW203	CLIMB 210 GOW203
011530-43	RADAR	SEJ913 RADAR CLIMB TO FL 100
	SEJ913	CLIMB LEVEL 100 SEJ913
	RADAR	IGO985 CONTACT RADAR 132.15
	IGO985	13215 GOOD DAY
011604-10	RADAR	LLR645 TURN LEFT HEADING 090
	LLR645	LEFT HEADING 090 LLR645
011612-25	RADAR	JAI597 TURN RIGHT HEADING 075 CLEARED FOR ILS APPROACH RWY 11 REPORT ESTABLISH ON LOCALIZER
	JAI597	FLY HEADING 075 CLEARED FOR ILS RWY 11 WILL CALL YOU ESTABLISHED ON LOCALIZER JAI 597
011627-52	IGO489	APPROACH RADAR IGO 489 NAMASKAR
	RADAR	IGO489 NAMASKAR DESCEND TO FLIGHT LEVEL 120
	IGO489	DESCEND FLIGHT LEVEL 120 CONFIRM
	RADAR	THAT'S AFFIRM
	IGO489	AFFIRMATIVE IGO 489 DESCEND FLIGHT LEVEL 120 ANY SPEED RESTRICTION
	RADAR	NO RESTRICTION
	SEJ913	THANKYOU
	RADAR	SEJ913 CLIMB TO FLIGHT LEVEL 130

011724-32	SEJ913	CLIMB LEVEL 130 SEJ913	
	RADAR	LLR645 TURN LEFT HEADING 070	
	LLR645	TURN LEFT 070 LLR645	
011734	RADAR	JAI597 SPEED	
011738-1808	JAI597	SIR REDUCING TO 230 JAI597	
	RADAR	ROGER REDUCE SPEED FOR LANDING SIR	
	JAI597	REDUCEING SIR JAI 597	
	SEJ153	DEPARTURE NAMASKAR SEJ 153 CLIMBING PASSING 1900 FOR 60 TOPAL REBON	
	RADAR	SEJ153 RADAR IDENTIFIED CLIMB TO FLIGHT LEVEL 70	
	SEJ153	RECLEARED LEVEL 70 SEJ 153	
	RADAR	SEJ913 RADAR PROCEED DIRECT TO ADBUK	
	SEJ913	DIRECT ADBUK SEJ 913	
011815-19	JAI597	ESTABLISH ON LOCALIZER RWY 11 JAI597	
011820-1911	RADAR	JAI597 ROGER CLEARED FOR ILS APPROACH RWY 11 REDUCE TO LANDING SPEED	
	JAI597	COPIED SIR REDUCING TO LANDING SPEED AND CLEARED FOR ILS RWY 11 JAI597	
	RADAR	SEJ913 CLIMB TO FLIGHT LEVEL 160	
	SEJ913	CLIMB LEVEL 160 SEJ913	
	RADAR	IGO683 CONTACT RADAR 124.2	
	IGO863	CONFIRM FOR IGO 863	
	RADAR	AFFIRM MAM IGO863 1242	
	IGO863	1242 NAMASKAR	
	IGO545	RADAR IGO 545 GOOD MORNING CLIMBING PASSING 2300 FEET	
	RADAR	IGO545 IDENTIFIED CLIMB TO FLIGHT LEVEL 60	
	IGO545	CLIMB TO FLIGHT LEVEL 60 IGO545	
	RADAR	SEJ153 CLIMB TO FLIGHT LEVEL 140	
	SEJ153	RECLEARED 140 UNDERSTAND UNRESTRICTED SEJ153	
	RADAR	SEJ153 TURN RIGHT PROCCED TO REBON	
	SEJ153	RIGHT TURN DIRECT REBON SEJ 153	
	011912-53	IGO738	IGO738 NAMASKAR
RADAR		IGO738 NAMASKAR DESCEND TO FLIGHT LEVEL 140	
IGO738		140 IGO738	
RADAR		LLR645 TURN LEFT PROCEED TO SP	
LLR645		TURN LEFT PROCEED DIRECT SP LLR645	
RADAR		VTI959 CONTACT RADAR 132.15	
VTI959		13215 VTI959 GOOD DAY	
RADAR		GOOD DAY	
RADAR		SEJ913 CONTACT RADAR 132.15	
SEJ913		13215 SEJ913 GOOD DAY	
RADAR		GOOD DAY	
JAI685		DELHI NAMASKAR JAI685 DESCENDING FLIGHT LEVEL 150 TO 110	
RADAR		JAI685 DESCEND TO FLIGHT LEVEL 90	
JAI685		DESCEND FLIGHT LEVEL 90 JAI685	
011954-59		RADAR	JAI597 WOULD WIL BE ABLE TO MAKE LANDING WITH THIS SPEED
012000-2010		JAI597	AFFIRM JAI597

	RADAR	JAI597 ROGER 4 MILE TO TOUCHDOWN CONTACT TOWER 125.85
012015-21	JAI597	JAI597 SIR
	RADAR	GO AHEAD JAI597
	AIC439	GARBELED... GOOD MORNING AIC439
012021-26	RADAR	AIC439 GOOD MORNING IDENTIFIED CLIMB TO FLIGHT LEVEL 60
	AIC439	CLIMB FLIGHT LEVEL 60 AIC439
012027-47	RADAR	JAI597 GO AHEAD
	JAI597	SIR REQUEST GO AROUND JAI597 GOING AROUND
	RADAR	JAI597 ROGER
	RADAR	AIC439 RADAR
	AIC439	AIC439 GO AHEAD SIR
	RADAR	AIC439 EXPEDITE PASSING 3600 FEET
	AIC439	EXPEDITE PASSING 3600 AIC439
	RADAR	JAI597 MAINTAIN 2600 FEET
012049-51	RADAR	JAI597 MAINTAIN 2600 FEET
	JAI597	COPIED MAINTAIN 2600 FEET JAI597
	RADAR	IGO545 CLIMB TO FLIGHT LEVEL 90
	IGO545	CLIMB 90 IGO545
012101-41	RADAR	AIC439 CLIMB TO FLIGHT LEVEL 90
	AIC439	CLIMB FLIGHT LEVEL 90 AIC439
	RADAR	IGO545 TURN LEFT PROCCED DIRECT TO SP CLIMB TO FLIGHT LEVEL 150
	IGO545	CLIMB LEVEL 150 LEFT DIRECT SP IGO545
	RADAR	JAI597 CLIMB TO FLIGHT LEVEL 60
	JAI597	SAY AGAIN ALTITUDE JAI597
	RADAR	CLIMB TO FLIGHT LEVEL 60 EXPEDITE PASSING 4000 FEET JAI597
	JAI597	CLIMB FLIGHT LEVEL 60 EXPEDITE PASSING 4000 FEET JAI597
	RADAR	JAI597 TURN RIGHT HEADING 240 IMMEDIATELY
	JAI597	FLY HEADING 240 IMMEDIATELY JAI597
	INTERCOMM BETWEEN TOWER MIDDLE AND APPROACH	
	TOWER(M)	SIR YE AKELA TRACK HAI IGO908
	APPROACH	THEEK HAI THEEK HAI
	IGO908	IGO 908 PASSING 2000 SQAWK 0506
012144	GOW203	FURTHER CLIMB SIR GOW203
012145-49	INTERCOMM BETWEEN TOWER SOUTH AND APPROACH	
	TOWER(S)	TRAFFIC DE DIYA CHANGE KAR DIYA
	APPROACH	CHODNA NHI CHAHIYA THA NA BHAI
012150-2205	VTI811	DELHI VTI811 NAMSKAR
	RADAR	VTI811 MAINTAIN 2600 FEET TRAFFIC ABOVE YOU PASSING 3000 FEET FOR FLIGHT LEVEL 60 GOING AROUND FROM RWY 11
	VTI811	COPIED SIR MAINTAIN 2600 FEET VTI811
012206	RADAR	LLR645 CLIMB TO FLIGHT LEVEL 90
	LLR645	CLIMB LEVEL 90 LLR645

TAPE TRASNCRIPT TAKEN BY:-


MANOJ KUMAR SHARMA
-Am(ATC)

TAPE TRANSCRIPT

DATE:-21/04/2017

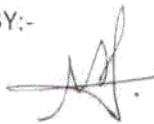
CALL SIGN: - JAI597 & VTI811

FREQUENCY:-125.85

UNIT:-TOWER SOUTH

TIME(HH:MM:SS)	UNIT	TRANSCRIPT
011741-46	TOWER	AIC439 DELHI TOWER GOOD MORNING LINEUP RWY 11
011748-56	TOWER	AIC439 DELHI TOWER GOOD MORNING LINEUP RWY 11
	AIC439	LINEUP RWY 11 AIC439
011810-27	TOWER	AIC439 CONFIRM FULLY READY
	AIC439	AFFIRMATIVE AIC439
	TOWER	AIC439 ROGER RUNWAY 11 CLEARED FOR TAKE-OFF SURFACE WIND 110 DEGREE 06 KNOTS EXPEDITE DEPARTURE
	AIC439	WIND COPIED CLEARED FOR TAKEOFF RWY 11 AIC439
011911-24	TOWER	VTI811 DELHI TOWER GOOD MORNING CONFIRM READY
	VTI811	AFFIRM
	TOWER	ROGER SIR LINEUP RWY 11 EXPEDITE BE READY FOR IMMEDIATE DEPARTURE
	VTI811	LINEUP BE READY FOR IMMEDIATE DEPARTURE VTI811
011952-2006	TOWER	VTI811 RWY11 CLEARED FOR TAKEOFF SURFACE WIND 110 DEGREE 06 KNOTS
	VTI811	CLEARED FOR TAKEOFF RWY 11 VTI811
	TOWER	AIC439 CONTACT APPROACH 12635 GOOD DAY
	AIC439	126.35 AIC439 GOOD DAY
012033-36	TOWER	JAI597 DELHI TOWER
012126-36	TOWER	VTI811 TRAFFIC PREVIOUS ARRIVAL JET B738 GOING AROUND RWY 11 HALF MILE BEHIND YOU PASSING 2700 FEET
	VTI811	COPIED SIR
012139-45	TOWER	VTI811 CONTACT APPROACH 126.35 GOOD DAY
	VTI811	12635 NAMASKAR

TAPE TRANSCRIPT TAKEN BY:-



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