



सत्यमेव जयते

GOVERNMENT OF INDIA

CIVIL AVIATION DEPARTMENT

FINAL INVESTIGATION REPORT

**LEVEL BURST INCIDENT TO M/s AIR ASIAA-320 AIRCRAFT
VT-RED, FLT No. I5-1721 (JAIPUR-BANGALORE) ON 25-02-2015.**

O/o Dy. Director General of Civil Aviation(ER)

Air Safety Directorate, NSCBI Airport,

Kolkata – 700052

INDEX

Item No.	Description	Page No.
	Title page	i
	Index	ii
	Foreword	iii
	Abbreviations	iv
	Preliminary Information	1
	Synopsis	2
1.	Factual Information	2
1.1	History of Flight	2
1.2	Injuries to persons	3
1.3	Damage to Aircraft	3
1.4	Other damages	3
1.5	Personal information	3
1.6	Aircraft information	5
1.7	Meteorological information	6
1.8	Aids to Navigation	6
1.9	Communication	6
1.10	Aerodrome information	6
1.11	Flight Recorders	6
1.12	Wreckage and impact information	7
1.13	Medical and pathological information	7
1.14	Fire	7
1.15	Survival Aspects	7
1.16	Test and Research	7
1.17	Organisational information	7
1.18	Additional information	8
1.19	Useful and effective investigation techniques	9
2.	Analysis	10
2.1	Operational aspects	10
2.2	Maintenance aspects	10
2.3	Weather	10
2.4	Circumstances leading to the incident.	11
3.	Conclusion	11
3.1	Findings	11
3.2	Probable cause of the incident	12
4.	Safety Recommendation	12

FOREWORD

This document has been prepared based upon the evidences collected during the investigation and opinion obtained from the experts. The investigation has been carried out in accordance with Annex 13 to the convention on International Civil Aviation and under Rule 13(1) of the Aircraft (Investigation of Accidents and Incidents), Rules 2012.

The investigation is conducted not to apportion blame or to assess individual or collective responsibility. The sole objective is to draw lessons from this incident which may help to prevent such future incidents.

ABBREVIATIONS

Abbreviation	Expanded form
AP	Auto Pilot
AME	Aircraft Maintenance Engineer
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
A/THR	Auto Thrust
ATPL	Airline Transport Pilot Licence
CAS	Calibrated Air Speed
CSN	Cycles Since New
CAT	Clear Air Turbulence
DFDR	Digital Flight Data Recorder
FAK	First Aid Kit
FDTL	Flight and Duty Time Limitations
FLT	Flight
FL	Flight Level
kts	Knots
MSN	Manufacturer Serial Number
MMO	Maximum Mach Number Operating Speed
PIC	Pilot in Command
RA	Resolution Advisory
RQRD	Required
RADAR	Radio Detection and Range
STCA	Short Term Conflict Alert
TA	Traffic Advisory
TSN	Time Since New
UTC	Coordinated Universal Time
WSO	Watch Supervisory Officer

**FINAL INVESTIGATION REPORT ON LEVEL BURST INCIDENT
TO M/s AIR ASIA A-320 AIRCRAFT VT-RED, FLIGHT No. I5-1721
(JAIPUR-BANGALORE) ON 25-02-2015.**

- a) Aircraft
- | | | |
|--------------|---|----------|
| Type | : | Airbus |
| Model | : | A320-216 |
| Nationality | : | Indian |
| Registration | : | VT-RED |
- b) Owner/Lessor : M/s Wilmington Trust SP Service(Dublin) Ltd, 3 George's Dock IFSC, Dublin 1, Ireland.
- c) Operator : M/s Air Asia (India) Limited, Bangalore.
- d) PIC : ATPL holder
- | | | |
|------------------|---|-----|
| Extent of injury | : | Nil |
|------------------|---|-----|
- e) Co-pilot : ATPL holder
- | | | |
|------------------|---|-----|
| Extent of injury | : | Nil |
|------------------|---|-----|
- f) No. Of crew : Cockpit crew-02, Cabin crew-04
- g) Passengers on board : 161
- | | | |
|--------------------|---|-----|
| Extent of injuries | : | Nil |
|--------------------|---|-----|
- h) Date & time of incident : 25.02.2015, 04:51:32UTC
- i) Place of incident : Way Point TAMID, Near Nagpur
- j) Last point of departure : Jaipur
- k) Point of intended landing : Bangalore
- l) Type of operation : Scheduled commercial operation
- m) Type of flight : Domestic flight
- n) Phase of operation : Cruise
- o) Type of incident : Flight Level Burst

(All timings in the report are in UTC)

SYNOPSIS:

M/s Air Asia Airbus A-320 aircraft registration VT-RED, flight no. I5-1721 (sector Jaipur –Bangalore) of 25.02.2015 took-off from Jaipur at 04:04 UTC. There were 161 passengers, 02 flight crew and 04 cabin crew on board the aircraft. At 04:51:32 UTC, when the aircraft was near way point TAMID in the jurisdiction of ATC Nagpur, it began to climb from its assigned FL 370 and climbed to 37516 feet pressure altitude approx.; thereby causing a level burst. When the aircraft returned to its assigned flight level, it received RA at 04:52:09 UTC, due a reciprocal flight of M/s Go Air, flight no.GOW-116 which was maintaining FL 360. The aircraft landed safely at Bangalore. There was no injury to any passenger, flight crew or cabin crew member. There was no damage to the aircraft. This incident has been investigated by inquiry officer under rule 13(1) of Aircraft (Investigation of Accidents and Incidents) Rule 2012. Non adherence to standard operating procedure for recovery from over speed (VMO/MMO) caused the incident of level burst. Weather was a contributory factor to the incident.

1. FACTUAL INFORMATION:

1.1. History of flight:

1.1.1 On 25.02.2015, M/s Air Asia (India) Airbus-A320 aircraft, registration VT-RED was scheduled to operate flight no. I5-1721 in the sector Jaipur – Bangalore. The flight was prepared by aircraft maintenance engineer and pilot during transit inspection at Jaipur. The flight was under the command of ATPL holder. There were 161 passengers, 02 flight crew and 04 cabin crew on board the aircraft. The aircraft taxied out from Jaipur apron at 03:47 UTC and took-off at 04:04 UTC. The take-off was uneventful. After take-off, ATC Delhi cleared the flight for flight level 310. After some time the flight was changed over to ATC Nagpur. ATC Nagpur cleared the flight to flight level 370. The flight was little bumpy at this flight level.

1.1.2. At 04:51:20 UTC, when the aircraft was near way point TAMID in the jurisdiction of ATC Nagpur, maintaining flight level 370 approx. calibrated airspeed (CAS) was seen increasing from 264 kts and reached to 269 kts. which corresponds to V_{MO}/M_{MO} at 37000 feet pressure altitude (FL 370).

1.1.3 To arrest or reduce the aircraft speed, the flight crew disconnected the autopilot and brought the 'auto thrust' to idle position. Pitch-up input was given. The pitch input values were raised from 2.8° to 6.3°. The aircraft began to climb and reached 37516 feet pressure altitude causing a flight level burst. The aircraft speed decreased to 241 kts. Thereafter, the flight crew descended the aircraft to its assigned flight level of 37000 feet (FL 370). During descent, the flight received Resolution Advisory (RA) 'DON'T DESCEND'. RA remained there from 04:52:09 UTC to 04:52:23 UTC. When RA stopped, the aircraft was at 37003 feet pressure altitude. M/s Go Air flight informed that it was turning right due traffic advisory.

1.1.4. M/s Air Asia (India) flight I5-1721 continued its flight and landed safely at Bangalore.

1.2. Injuries to Person :

Injuries	Crew	Passengers	Others
Fatal	Nil	Nil	Nil
Serious	Nil	Nil	Nil
Minor/None	Nil/06	Nil/161	

1.3. Damage to the aircraft : None

1.4. Other damage : Nil

1.5. Personal information

1.5.1. Pilot –in- Command

AGE :33 Years/ Male
 License :ATPL Holder
 Date of issue :15.03.2010
 Valid up to :12.05.2016
 Category : Aeroplanes
 Date of medical Exam :20/01/2015
 Medical Exam valid up to :19.01.2016

Total flying experience during last 1 year :562 hrs 30 min
Total flying experience during last 6 month :215 hrs 05 min
Total flying experience during last 30 days : 62 hrs 10 min
Total flying experience during last 07 days : 24 hrs 05 min
Total flying experience during last 24 hours : 00 hrs 00 min

1.5.2. Co- Pilot:

Age :33 Years / Male
License : ATPL Holder
Date of issue :01.09.2014
Valid up to : 31.08.2016
Category :Aeroplanes
Date of medical Exam :05.05.2014
Medical Exam valid up to : 04.05.2015
Total flying experience during last 1 year : 218 hrs 15 min
Total flying experience during last 6 months : 218 hrs 15 min
Total flying experience during last 30 days : 44 hrs 15 min
Total flying experience during last 07 days : 10 hrs 00 min
Total flying experience during last 24 hours : 00 hrs 00 min

1.6. Aircraft information:**1.6.1. Technical information**

Certificate of Registration	Valid up to 13.12.2019.	
Certificate of Airworthiness	Initial Issue on 17.12.2014.	
Manufacturer	AIRBUS INDUSTRIES, FRANCE	
Type	AIRBUS A320-231	
Sr. No.	MSN 5824	
Year of manufacturer	2013	
Category	Normal Passenger/Mail/Goods	
Owner /Lessor	M/s Wilmington Trust SP Service(Dublin) Limited, 3 George's Dock IFSC, Dublin 1, Ireland.	
Operator	M/s Air Asia (India), Bangalore.	
Maximum all up weight authorised	73500 Kgs	
Last major inspection done before 25.02.2015	'C01' Check on 31.01.2015	
Last inspection	Transit inspection at Jaipur on 25.02.2015.	
Airframe Hrs since new as on 25.02.2015	18625 flight hours.	
Total landings as on 25.02.2015	12002	
Airframe Hrs since last C of A	18625 flight hours.	
Engine Information	No.1	No.2
Hrs done since new	TSN: 18626 CSN :12003	TSN: 18626 CSN :12003
Hrs done since overhaul	New	New
Last inspection	Transit inspection at Jaipur on 25.02.2015	Transit inspection at Jaipur on 25.02.2015

1.6.2. There were 161 passengers and 06 crew members on board the aircraft. The aircraft was not overloaded and its centre of gravity was within limit.

1.6.3. Type of fuel used was JET A 1 (Aviation Turbine Fuel).

1.6.4. Rectification on the aircraft: Snag reported by pilot after the flight was 'Nil'. The pilot further made a note that severe turbulence was experienced during the cruise due clear air turbulence. He also mentioned that the forward FAK (first aid kit) seal was missing. The AME referred the concerned para for inspection in case of flight in excessive turbulence or in excess of V_{MO}/M_{MO} . There was no abnormality observed by the AME. The aircraft was released for further service.

1.7. Meteorological information: As per ATCO, many aircraft had reported turbulence in the adjoining areas of the place where level burst had occurred to M/s Air Asia (India) flight I5-1721. Pilot also mentioned in his statement that there was turbulence and flight was little bumpy when the aircraft climbed to FL 370.

1.8. Aids to Navigation : Not relevant to the incident.

1.9. Communication : The aircraft was in two way communication with ATCs enroute.

1.10. Aerodrome Information: Not relevant to the incident.

1.11. Flight Recorder: As per DFDR read out, following information relevant to the incident were available:

1.11.1. At 04:51:20 UTC, an increase in aircraft speed (CAS) was observed. CAS was 265 kts. The speed increased to 269 kts at 04:51:24 UTC.

1.11.2. At 04:51:28 UTC, pitch input was given. The pitch input values were increased from 2.8° to 6.3° . The aircraft began to climb and reached 37516 feet pressure altitude, bursting the FL 370. The CAS decreased to 241 kts and below. Speed safety margin for V_{MO}/M_{MO} increased.

1.11.3. Pitch input was decreased from 6.3° to 1.1° in the interval 04:51:38 UTC to 04:51:53 UTC. The aircraft began to descend.

1.11.4. At 04:52:09 UTC, when the aircraft was descending and passing 37092 feet pressure altitude, it received RA. The RA remained till 04:52:23 UTC, when the aircraft was descending and passing 37016 feet pressure altitude. When the RA stopped, there was vertical separation of more than 1000 feet between the flights GOW-116 and I5-1721. Vertical separation was maintained.

1.11.5. Maximum vertical speed before trigger of RA was 1920 feet per minute.

1.11.6. Between 04:51:20 UTC and 04:51:30 UTC, when the aircraft speed (CAS) was reaching the VMO/MMO, the wind speed varied from 60 kts to 78 kts and wind direction varied from 260° to 286°. The wind was easterly.

1.11.7. The aircraft 'heading' was 177° to 178°. It was heading almost towards South. The difference between direction of wind and aircraft heading was approximately 82°. Therefore, tail wind component was very small.

1.12. Wreckage & Impact information: There was no impact and no wreckage.

1.13. Medical & Pathological information: Not applicable

1.14. Fire: There was no fire.

1.15. Survival Aspects: The incident was survivable.

1.16. Tests & Research: Nil.

1.17. Organizational & Management information:

M/s Air Asia (India) is a subsidiary of the parent company M/s Air Asia, Malaysia.

1.18. Additional information:

1.18.1. Information from Pilot-in Command's statement:

The flight conditions were little bumpy at FL 370. At way point TAMID the speed suddenly went into MMO because of clear air turbulence (CAT). The corrective action taken instantly was to bring thrust to idle and little pitch up by taking manual control and the very next step was to re-engage autopilot and vertical speed 'zero'. This was a conscious effort to make sure not to burst any altitude separation. After this, to come back to original assigned level open descent was selected but there was an aircraft crossing below the flight (Flight No. I5-1721), at FL 360 because of which the pilot received RA.

1.18.2. Information from the investigation report of ATC Nagpur.

1.18.2.1. At 04:51 UTC, the flight IAD 1721 climbed up to 600 feet at 2300 feet per minute up to FL376; and immediately at time 04:52 UTC it descended to FL 370 at the rate 1900 feet/minute. The cause of climb could have been turbulent atmospheric conditions. Many aircraft had reported turbulence in the adjoining areas. The corrective action taken by PIC of IAD 1721 was quick. The level change by IAD 1721 could not be noticed by the RADAR Controller as he was busy resolving other traffic and also because corrective action by PIC was quick. The density of traffic was high.

1.18.2.2. At 04:53 UTC, flight no. GOW-116 at FL 360 reciprocal at 03 miles to IAD 1721 reported turning right due traffic above 900 feet. It was observed that when GOW-116 commenced turning right, IAD-1721 was already maintaining the assigned FL-370. It appears that since the rate of descent of IAD from FL 376 to assigned FL 370 was high, GOW-116 received traffic advisory (TA). A very short interval of STCA popped up on screen as result of high rate of descent.

1.18.2.3. At 04:57 UTC, RADAR Controller confirmed from captain of GOW-116 whether he got TA or RA. The captain reported he got traffic advisory only. Accordingly entry was made in logbook.

1.18.2.4. Since controller was not able to notice the level burst climb up to FL 376 and corrective descent back to FL 370, which happened in quick time and PIC of IAD 1721 also did not report the same to controller, report on the actual happening could not be sent on the same day. However, information about STCA alert was given to WSO.

1.18.3. Over Speed handling (Prevention) Checklist:

If the aircraft encounters significant speed variations close to VMO/MMO, apply the following actions:

AP: KEEP ON

A/THR: KEEP ON

USE SELECTED SPEED

SPEEDREDUCE

Reduce the speed to increase the margin to VMO/MMO.

MIN SPEED : GREEN DOT

SPEED TREND :MONITOR

- **If the speed trend approaches or exceeds VMO/MMO:**
SPEED BRAKE LEVER.....AS RQRD.

- **If the speed exceeds VMO/MMO**
Over speed recovery procedure.....APPLY.

- **If the speed stays below VMO/MMO**
 - **In the case of severe turbulence**
Refer to PRO-SUP 91 -10 Adverse weather Severe Turbulence

1.18.4. The flight crew had undergone corrective training recommended by DGCA after the incident.

1.19. Useful or Effective Investigation Techniques: Nil.

2. ANALYSIS

2.1. Operational aspects: The flight crew were appropriately qualified. Their licenses were valid beyond the date of the incident. Their Flight and Duty Time was within limit. The weather around way point TAMID was turbulent as informed by ATC Nagpur. Tail wind component was very small. Due turbulence the aircraft speed reached VMO/MMO. To recover the over speed, the pilot disengaged the autopilot and brought 'auto thrust' to idle. He gave pitch input to reduce the speed. Due pitch input, the aircraft left its assigned level of FL 370 and began to climb leading to level burst. The aircraft climbed up to 37516 feet pressure altitude. The pilot then selected open descent and brought the aircraft to its assigned flight level of FL 370. During descent the maximum vertical speed was 1920 feet per minute, which is higher than 1500 feet per minute. RA triggered during descent and stopped when the flight I5- 1721 (or IAD 1721) was still above FL 370. Vertical separation between the flights GOW-116 and I5-1721 was maintained. In order to recover from the over speed as per the standard operating procedure (check list) , the flight crew was required to keep the 'auto pilot' and 'auto thrust' ON; reduce the speed by speed selector and monitor the speed trend. If required, speed brakes could be used. The flight crew did not follow the standard operating procedure (check list) for recovery from over speed near VMO/MMO. Also the flight crew did not inform to ATC Nagpur about the level burst occurrence.

2.2. Maintenance aspects: The aircraft had undergone last major check on 31.01.2015. It was airworthy. The snag for the sector Jaipur-Bangalore was 'Nil'. It implied that there was no snag on the aircraft and it was serviceable. Maintenance aspects is not a contributory factor to the incident.

2.3 Weather : Weather was turbulent near way point TAMID. The same was informed by ATC Nagpur in their report. Many flights through the adjoining areas experienced turbulence.

2.4. Circumstances leading to the incident:

Due turbulence, the aircraft speed reached VMO/MMO near way point TAMID. In order to recover from the over speed, the flight crew disengaged the autopilot, brought auto thrust to idle and gave pitch input to pitch up the aircraft in order to reduce the aircraft speed. Due to pitch up input, the aircraft climbed from its assigned flight level and burst its flight level. The flight crew then descended the aircraft to its assigned FL-370 quickly. The descent was 'open' and not regulated one, which resulted in higher vertical speed. The maximum vertical speed recorded was 1920 feet per minute; which led to triggering of RA due reciprocal flight GOW-116 at FL 360. The flight crew neither followed standard operating procedure for recovery from over speed (VMO/MMO) nor for descent to its assigned flight level. During descent, the flight crew did not maintain the vertical speed of 1500 feet per minute or below to prevent triggering of RA.

3. CONCLUSION:

3.1 Findings:

3.1.1. The flight crew were appropriately licensed and qualified to operate the flight.

3.1.2. FDTL for the flight crew was within limit.

3.1.3. Maintenance aspects of aircraft was not a contributory factor to the incident.

3.1.4. The weather was turbulent near way point TAMID. Weather was a contributory factor to the incident.

3.1.5. The flight crew did not follow standard operating procedure (check list) for recovery from over speed (VMO/MMO) and pitched up the aircraft. The level burst occurred due pitch input by the flight crew. Non adherence to standard operating procedure for recovery from over speed (VMO/MMO) caused the incident of level burst. The crew were subjected to corrective training after the incident as recommended by DGCA.

3.1.6. The flight crew did not report the occurrence of level burst to ATC Nagpur.

3.1.7. There was no threat to safety of aircraft operation due triggering of RA.

3.2 Probable cause of the incident:

Non adherence to standard operating procedure for recovery from over speed (VMO/MMO) caused the incident of level burst. Weather was a contributory factor to the incident.

4.SAFETY RECOMMENDATIONS :

Flight Crew required to undergo corrective training for adhering to 'standard operating procedure' , which has been completed.

Place: Kolkata
04.01.2019



H.N. Mishra)
Deputy Director Air Safety
& Inquiry officer
O/o DDG (ER)