FINAL REPORT ON SERIOUS INCIDENT TO M/s UZBEKISTAN AIRWAYS, A320 AIRCRAFT , UK32022 AND M/s INDIGO, A320 AIRCRAFT, VT-IHQ IN DELHI AIRSPACE, ON 25/01/2020

KUNJ LATA
INVESTIGATOR-IN-CHARGE

AMIT KUMAR
INVESTIGATOR

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/serious 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 evidences collected during the investigation, opinion obtained from the experts and laboratory examination of various components. Consequently, the use of this report for any purpose other than for the prevention of future accidents or incidents could lead to erroneous interpretations.

ABBREVIATIONS

AAIB	Aircraft Accident Investigation Bureau
ACC	Area Control
ADC	Aerodrome Control
AA	Approach Control
FA	Approach Final
ATC	Air Traffic Controller
ATPL	Airline Transport Pilot License
CCW	Current Conflict Warning
CPL	Commercial Pilot License
DFDR	Digital Flight Data Recorder
ICAO	International Civil Aviation Organization
NM	Nautical Miles
STCA	Short Term Conflict Alert
TCAS RA	Traffic Collision Avoidance System- Resolution Advisories
TCAS TA	Traffic Collision Avoidance System- Traffic Advisories
UTC	Co-ordinated Universal Time
VHF	Very High Frequency

TABLE OFCONTENT

FINAL REPORT ON SERIOUS INCIDENT TO BETWEEN UZBEKISTAN AIRWAYS, A320 AIRCRAFT, REG UK32022 AND M/s INDIGO, A320 AIRCRAFT, REG VT-IHQ IN DELHI AIRSPACE, ON 25/01/2020

1.	Aircraft Type	AIRBUS A320	AIRBUS A320
2.	Nationality	UZBEKISTAN	INDIGO
3.	Registration and Call Sign	UK32022, UZB423	VT-IHQ, IGO6966
4.	Owner	BOC AVIATION LTD	ECAF
5.	Operator	UZBEKISTAN AIRWAYS	INDIGO
6.	Pilot – in –Command	ATPL	ATPL
	Extent of Injuries	NONE	NONE
7.	Co-Pilot	ATPL	CPL
	Extent of Injuries	NONE	NONE
8.	Place of Incident	DELHI AIRSPACE	
9.	Co-ordinates of Serious Incident Site (Location)	50 NM to DPN on Radial 180	
10.	Last point of Departure	AMRITSAR	SHAMSABAD (HYDERABAD)
11.	Intended place of Landing	DELHI	DELHI
12.	Date & Time of Serious Incident	25.01.2020 AT 0721 UTC	
13.	Extent of Injuries (Crew)	NONE	NONE
14.	Extent of Injuries (Passenger)	NONE	NONE
15.	Phase of Operation	DESCEND	DESCEND
16.	Type of Incident:	AIRPROX	
(ALL TIMINGS IN THIS REPORT ARE IN UTC)			

SYNOPSIS

On 25.01.2020, UZB423 (Type- A320, Registration- UK32022) scheduled to operate its flight from Amritsar to Delhi and IGO6966 (Type- A320, Registration- VT-IHQ) scheduled to operate from Shamsabad to Delhi were involved in a Serious Incident (Airprox) in Delhi Approach at time 0721 UTC.

Both aircraft were approaching Delhi as per their schedule and were in their descend phase of flight. Flight UZB423 was following RNAV STAR for Runway 29 and flight IGO6966 was following RNAV STAR for Runway 27. Both aircraft were operating under the command of their respective ATPL License holder Pilots (Pilot Flying).

UZB423 was in the control of Approach (FA) and was descending to FL80. UZB423 was instructed to decent to FL70 and further decent to FL60. At 0720 UTC, UZB423 was instructed to decent 2600 Feet. At this time, IGO6966 was with Approach (AA) Control maintaining FL80.

After sometime Approach (FA) Radar Controller observed that UZB423 is climbing without authorization. An unauthorized climb resulted in breach of separation and TCAS-RA triggered at 0721 UTC. To resolve the conflict, both aircraft executed RA maneuvering in their respective ATC units.

The minimum separation was reduced to 1.7 NM laterally while no vertical separation existed. Separation was restored in 23 seconds.

The occurrence was classified as a "Serious Incident" in accordance with the Aircraft (Investigation of Accidents and Incidents) Rules, 2017. Director General, AAIB appointed Ms. Kunj Lata, Assistant Director, AAIB as Investigator – In – Charge & Sh. Amit Kumar, Safety Investigator Officer, AAIB as Investigator to investigate into the probable cause(s) of the serious incident, vide Order INV/12011/3/2020-AAIB dated 03/02/2018.

1 FACTUAL INFORMATION.

1.1 History of the flight.

On 25.01.2020, a Serious Incident occurred between UZB423 (Type- A320, Registration- UK32022) and IGO6966 (Type- A320, Registration- VT-IHQ) in Delhi Airspace while both were making approach on Runway 29 and Runway 27 respectively for landing.

UZB423 was scheduled to operate its flight from Amritsar to Delhi and IGO6966 was scheduled to operate its flight from Shamsabad (Hyderabad) to Delhi. Both Aircraft were under the command of their respective ATPL holders.

At 07:06:37 UTC, UZB423 came in contact with Delhi Approach (AA) Control on 126.35 MHz frequency. It was descending to FL150. Radar controller gave step decent till FL80 and handed over to Approach (FA) Control on 124.2 MHz frequency at 07:15:40 UTC. UZB423 was following RNAV STAR IGINO 5C for Runway 29. At this time IGO6966 was also in Approach (AA) Control. Radar Controller had vectored it for Runway 27 via. RNAV STAR BAVOX 5A. IGO6966 was maintaining FL80.

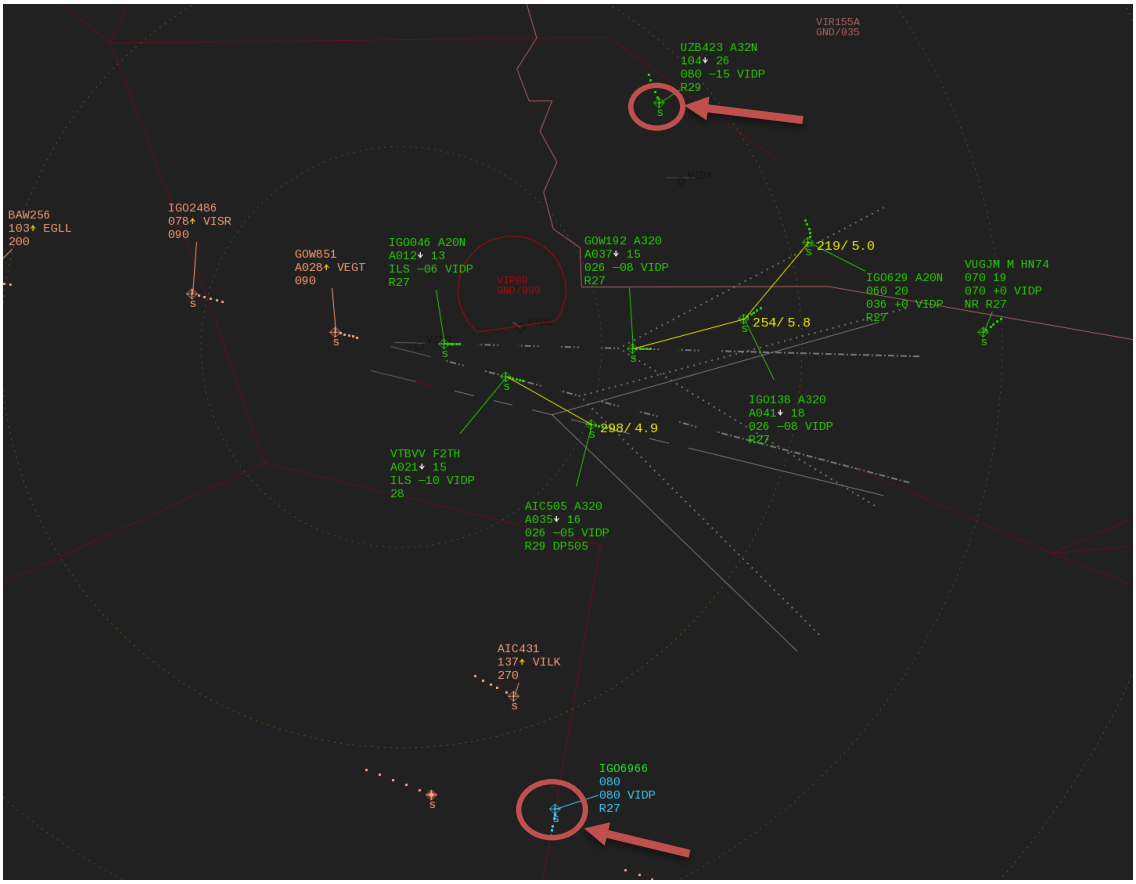

Figure: Showing initial positions of both aircraft

At 07:15:44 UTC, UZB423 came in contact with Approach (Final). It was passing FL110 for FL80. Radar Controller gave step decent till FL60. Traffic density at Approach sector was moderate and three runway westerly flow operation was operational at Delhi Airport. UZB423 was often high on speed thus, controller advised him several times to reduce the speed of the aircraft.

At 0719 UTC, it was observed that UZB423 is climbing instead of descending. After some time, it started descending to its assigned level. At 0720 UTC, controller gave further descent to 2600 Feet. At 07:20:37 UTC, it was observed by the controller that UZB423 is climbing again and STCA (Yellow) got generated by Automation system. At 0721 UTC, STCA (RED) got generated by Automation system and TCAS RA triggered.

Flight crew of UZB423 stated that during descend from FL70 to 60, Crew unintentionally pushed the ENG # 2 Thrust lever to TOGA position, consequently Auto Flight System got activated “SRS” mode in vertical profile. Thus, aircraft had started climbing. Later, flight crew took the corrective action but by the time TCAS RA alert had been triggered. Crew manoeuvred the aircraft as per Resolution Advisory.

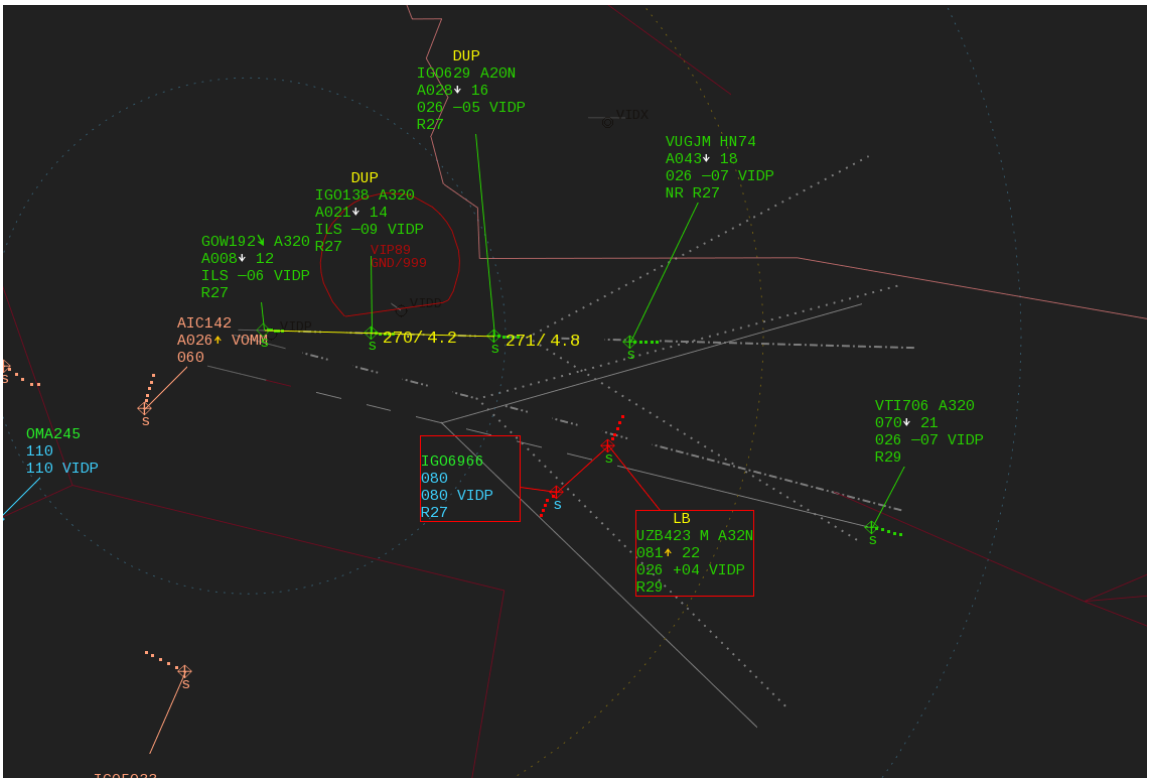

Figure: Showing TCAS-RA between IGO6966 and UZB423

Both aircraft did RA maneuvers. Aircraft were clear of conflict at time 07:21:41 UTC in their respective ATC units.

Standard Separation in Approach (Final) is 1000 ft vertically and 3 NM horizontally in Radar Environment which was reduced to 1.7 NM laterally while no vertical separation existed.

1.2 Injuries to persons.

NIL

1.3 Damage to Aircraft.

NIL

1.4 Other damage.

NIL

1.5 Personnel information.

1.5.1 Air Traffic Controller.

Licence	Terminal
Date of Issue	24.10.2019
Validity	31.07.2033
Endorsements	Aerodrome Control, Approach Control (Procedural and Surveillance).
Medical Validity	01.01.2022
Date of Last Proficiency Check	Approach Control Surveillance on 19.02.2020
Fatigue factor	No

1.5.2 Flight Crew.

Flight crew of both aircraft held valid licenses and were qualified to operate their respective flights.

Details of Pilot-In Command of UZB423

Date of Birth	15.08.1964
License	ATPL
Date of Issue	25.05.2010
Valid up to	07.06.2020
Category	ATPL

Date of Class I Med. Exam.	04.06.2019
Class I Medical Valid up to	07.06.2020
Date of issue FRTOL License	08.07.2010
FRTO License Valid up to	07.06.2020
Endorsements as PIC	26.07.2010
Total flying experience	17515 Hrs
Total flying experience on type	6615 Hrs
Last Flown on type	23.01.2020
Total flying experience during last 30 days	78.37 Hrs
Total flying experience during last 24 Hours	03.26 Hrs
Rest period before flight	37.00 Hrs
Whether involved in Accident/Incident earlier	NIL
Date of latest Flight Checks and Ground Classes	LINE CHECK ON 07.09.2019

Details of Pilot-In Command of IGO6966

Date of Birth	17.11.1989
License	ATPL
Date of Issue	24.01.2017
Valid up to	23.01.2022
Category	PIC
Date of Class I Med. Exam.	09.10.2019
Class I Medical Valid up to	08.10.2020
Date of issue FRTOL License	02.07.2019
FRTO License Valid up to	01.07.2024
Endorsements as PIC	02-11-2018
Total flying experience	3899.11 Hrs

Total flying experience on type	3769.41 Hrs
Last Flown on type	24.01.2020
Total flying experience during last 30 days	39.22 Hrs
Total flying experience during last 24 Hours	4.33 Hrs
Rest period before flight	26.47 Hrs
Whether involved in Accident/Incident earlier	NIL
Date of latest Flight Checks and Ground Classes	18.05.2019

Details of Co-Pilot of UZB423

Date of Birth	15.05.1989
License	ATPL
Date of Issue	15.10.2010
Valid up to	13.05.2020
Category	ATPL
Date of Class I Med. Exam.	10.05.2019
Class I Medical Valid up to	10.05.2020
Date of issue FRTOL License	12.01.2015
FRTO License Valid up to	13.05.2020
Endorsements as PIC	15.03.2019
Total flying experience	3845 Hrs
Total flying experience on type	3306 Hrs
Last Flown on type	22.01.2020
Total flying experience during last 30 days	63.29 Hrs
Total flying experience during last 24 Hours	03.26 Hrs
Rest period before flight	18.00 Hrs
Whether involved in Accident/Incident earlier	NIL

Date of latest Flight Checks and Ground Classes	SIM Check on 24.01.2020

Details of Co-Pilot of IGO6966

Date of Birth	16-11-1994
License	ATPL
Date of Issue	01-01-2015
Valid up to	31-12-2024
Category	ATPL
Date of Class I Med. Exam.	04-10-2019
Class I Medical Valid up to	03-10-2020
Date of issue FRTOL License	01-01-2020
FRTO License Valid up to	31-12-2024
Endorsements as PIC	–
Total flying experience	1987.16 Hrs
Total flying experience on type	1777.16 Hrs
Last Flown on type	24-01-2020
Total flying experience during last 30 days	47.51 Hrs
Total flying experience during last 24 Hours	4.33 Hrs
Rest period before flight	13.28 Hrs
Whether involved in Accident/Incident earlier	NIL
Date of latest Flight Checks and Ground Classes	27-04-2019

1.6 Aircraft Information.

Aircraft Information of UZB423

Aircraft Model	AIRBUS A320-251N
Aircraft S.No.	UK32022

Year of Manufacturer	08.04.2019
Name of Owner	BOC Aviation Ltd (Lessee Uzbekistan Airways)
C of R	08.04.2019
C of A	08.04.2019
Category	PASSENGER
C of A Validity	From 08.04.2019 to 08.04.2020
A R C issued on	N/A
ARC valid up to	N/A
Maximum Takeoff weight	77000 KG
Last major inspection	Last A- Check- 18.01.2020- FH: 2826:21/ FC:702
List of Repairs carried out after last major inspection till date of incidence	NIL

Aircraft Details of IGO6966

Aircraft Model	A320-232
Aircraft S. No.	2670
Year of Manufacturer	2006
Name of Owner	ECAF I 2670 DAC
C of R	4895
C of A	6998
Category	NORMAL
C of A Validity	NO VALIDITY
A R C issued on	04.04.2019
ARC valid up to	09.04.2020
Maximum Takeoff weight	73500 KG

Last major inspection	750 FH/ 90 Days Inspection Carried Out ON 24.01.2020.
List of Repairs carried out after last major inspection till date of incidence	NIL

1.7 Meteorological Information.

Meteorological information at time 0701 UTC recorded is as below:

Wind	320 Degree/ 05 Kts
Visibility	2 KM
Temp	17 Degree
QNH	1017
WEATHER	Haze
CLOUD	NO SIGNIFICANT CHANGE
TREND	NO SIGNIFICANT CHANGE

1.8 Aids to Navigation.

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

Frequencies of navigation aids are as below:-

Navigation Aid	Frequency
NDB (DH)	202.0 KHz
NDB (DP)	274.0 KHz
DME (DVOR)	1132/1195 MHz (FOR DPN) 1117/1180 MHz (FOR DIG)
DME (IPLM)	1001/1064 MHz
DME (IDGM)	1070/1007 MHz
DVOR (DPN)	116.1 MHz

DVOR (DIG)	114.60 MHz

1.9 Communications.

The VHF channels were working normal. Following are the VHF channels working at Delhi Airport.

ATC POSITIONS	FREQUENCY
ATIS	126.475 MHZ
Emergency	121.5 MHZ
Approach/ Radar	124.2 MHZ 126.35 MHz
AREA (WEST)	119.3 MHZ 124.55 MHZ
AREA (EAST)	120.9 MHz 124.2MHz 119.3MHz

UZB423 was in control of Approach (FA) on 124.2 MHz and IGO6966 was in control of Approach (AA) on 126.35 MHz. The tape transcript of both channels are given below:

Tape Transcript of Approach (FA), Frequency 124.2 MHz

TIME (HHMMSS)	UNIT	TRANSMISSIONS
071544-071554	UZB423	DELHIRADAR UZBEK FOUR TWO THREE GOOD MORNING FLIGHT LEVEL ONE ONE ZERO DECEND EIGHT ZERO SPEED TWO SEVENTY
	RADAR	UZBEK FOUR TWO THREE ROGER TURN RIGHT HEADING ONE SIX ZERO
	UZB423	TURN RIGHT ONE SIX ZERO UZBEK FOUR TWO THREE
071751-071755	RADAR	UZBEK FOUR TWO THREE SPEED ONE EIGHT ZERO NOW
	UZB423	SPEED ONE EIGHT ZERO UZBEK FOUR TWO THREE

071841-071845	RADAR	UZBEK FOUR TWO THREE DECEND TO FLIGHT LEVEL SEVEN ZERO
	UZB423	DECEND SEVEN ZERO UZBEK FOUR TWO THREE
071856-071902	RADAR	UZBEK FOUR TWO THREE TURN RIGHT HEADING TWO , ZERO FIVE
	UZB423	RIGHT HEADING TWO ZERO FIVE UZBEK FOUR TWO THREE
072004-072009	RADAR	UZBEK FOUR TWO THREE DECEND TO FLIGHT LEVEL SIX ZERO
	UZB423	DECEND SIX ZERO UZBEK FOUR TWO THREE
072031-072034	RADAR	UZBEK FOUR TWO THREE DECEND TO TWO THOUSAND SIX HUNDERED FEET QNH ONE ZEO ONE SEVEN
Controller gave descent from FL60 to 2600 Ft and it is readback correctly by UZB423		
072036-072039	UZB423	DECEND TWO THOUSAND SIX HUNDERED UZBEK FOUR TWO THREE
072039-072041	RADAR	AFFIRM QNH ONE ZERO ONE SEVEN
072042-072044	UZB423	QNH ONE ZERO ONE SEVEN UZBEK FOUR TWO THREE
Controller observed UZB423 climbing instead of descending		
072052-072053	RADAR	UZBEK FOUR TWO THREE RADAR
072054-072056	UZB423	UZBEK FOUR TWO THREE NOW DESCEND SORRY
072056-072059	RADAR	AFFIRM DUE TRAFFIC DECEND DESCEND
072102-072104	RADAR	UZBEK FOUR TWO THREE TURN LEFT HEADING ONE THREE ZERO
TCAS-TA triggered at 07:21:00 UTC (As per DFDR of UZB423)		
072107-072110	RADAR	UZBEK FOUR TWO THREE TURN LEFT HEADING ONE ONE ZERO
072110-072111	UZB423	TURN LEFT ONE ONE ZERO
TCAS-RA triggered at 07:21:12 UTC (As per DFDR of UZB423)		
072133-072148	RADAR	UZBEK FOUR TWO THREE DELHI
	UZB423	UZBEK FOUR TWO THREE NOW HEADING ONE SEVEN ZERO MAINTAIN EIGHT...NINE ZERO DUE TCAS RESOLUTION
	RADAR	WHY YOU ARE CLIMBING

	UZB423	NOW NINE ZERO DUE TRAFFIC RESOLUTION UZBEK FOUR TWO THREE
Clear of Conflict at time 07:21:39 UTC (As per DFDR of UZB423)		
072156-072231	RADAR	UZBEK FOUR TWO THREE TURN LEFT HEADING ONE ONE ZERO
	UZB423	TURN LEFT ONE ONE ZERO MAINTAIN NINE ZERO UZBEK FOUR TWO THREE
	RADAR	AFFIRM...I GAVE YOU DECEND AND WHY YOU ARE CLIMBING
	UZB423	DUE TO TRAFFIC RESOLUTION ADVISORY UZBEK FOUR TWO THREE
	RADAR	TRAFFIC AT EIGHT ZERO YOU ARE FROM SEVEN ZERO I GAVE YOU DECEND TO TWO THOUSAND SIX HUNDERED FEET WHY ARE YOU CLIMBING FROM SEVEN ZERO TO EIGHT ZERO
	UZB423	THERE WAS SOME BUT WE HAVE RESOLUTION ADVISORY WE HAVE CLIMBED NINE ZERO CONFIRM NOW DESCEND UZBEK FOUR TWO THREE
	RADAR	AFFIRM DECEND TO TWO THOUSAND SIX HUNDRED FEET
	UZB423	DECEND TWO THOUSAND SIX HUNDRED UZBEK FOUR TWO THREE THANK YOU
072248-072307	RADAR	UZBEK FOUR TWO THREE SPEED ONE EIGHT ZERO AND NOW DECEND TO TWO THOUSAND SIX HUNDERED FEET ONE ZERO ONE SEVEN
	UZB423	QNH ONE ZERO ONE SEVEN DESCEND TWO THOUSAND SIX HUNDERED UZBEK FOUR TWO THREE
	RADAR	AFFIRM I JUST WANT……. TO WHY YOU ARE CLIMBING FROM LEVEL SEVEN ZERO
	UZB423	UZBEK FOUR TWO THREE……
072340-072431	RADAR	UZBEK FOUR TWO THREE TURN LEFT HEADING ZERO ONE FIVE
	UZB423	TURN LEFT ZERO ONE FIVE UZBEK FOUR TWO THREE

	RADAR	UZBEK FOUR TWO THREE NOW TURN LEFT HEADING THREE ONE FIVE CLEARED FOR ILS APPROACH RUNWAY TWO NINER
	UZB423	TURN LEFT HEADING ONE FIVE CLEAR RUNWAY ILS TWO NINER UZBEK FOUR TWO THREE
	RADAR	AFFIRM HEADING IS THREE ONE FIVE
	UZB423	THREE ONE FIVE UZBEK FOUR TWO THREE
072519-072613	RADAR	UZBEK FOUR TWO THREE REPORT SPEED NOW
	UZB423	SPEED ONE EIGHT ZERO UZBEK FOUR TWO THREE
	RADAR	AFFIRM UZBEK FOUR TWO THREE DELHI
	UZB423	GO-AHEAD UZBEK FOUR TWO THREE
	RADAR	CONFIRM YOU ARE GETTING TRAFFIC ADVISORY AT FLIGHT LEVEL SEVEN TWO AND YOU ARE DESCENDING
	UZB423	NEGATIVE WE ARE CLIMBING DUE RESOLUTION ADVISORY REQUIRED
	RADAR	THAT IS CORRECT AFTER EIGHT ZERO THAT IS TRAFFIC AT FLIGHT LEVEL EIGHT ZERO BUT I GAVE YOU DESCEND TWO THOUSAND SIX HUNDERED FEET WHILE YOU ARE PASSING SEVEN THOUSAND TWO HUNDERED FEET WHY YOU ARE CLIMBING THAT TIME
	UZB423	SOME PROBLEM WITH....(UNCLEAR)...FLIGHT SYSTEM UZBEK FOUR TWO THREE
	RADAR	CONFIRM PROBLEM IN FMS
	UZB423	NOW NO
	RADAR	WHAT IS THE PROBLEM
	UZB423	YES WE HAVE SOME PROBLEM WITH FMS UZBEK FOUR TWO THREE NOW DESCEND TWO THOUSAND SIX HUNDERED
072707-072712	RADAR	IFLY SIX NINE SIX SIX TURN RIGHT HEADING TWO FOUR ZERO
	IG06966	TURN RIGHT HEADING TWO FOUR ZERO IFLY SIX NINE SIX SIX
072736-072753	RADAR	IFLY SIX NINE SIX SIX DESCEND TO TWO THOUSAND SIX HUNDERED FEET ONE ZERO ONE SEVEN CLEARED FOR ILS TWO SEVEN
	IG06966	OK...DESCEND TO TWO THOUSAND SIX HUNDERED ONE ZERO ONE SEVEN CONFIRM FOR IFLY SIX NINE SIX SIX....ROGER ANY HEADING FOR US
	RADAR	TWO FOUR ZERO CLERED FOR ILS TWO SEVEN

	IG06966	ROGER TWO FOUR ZERO CLERED FOR ILS RUNWAY TWO SEVEN IFLY SIX NINE SIX SIX
072811-072819	UZB423	LOCALIZER ESTABLISHED RUNWAY TWO NINER UZBEK FOUR TWO THREE
	RADAR	UZBEK FOUR TWO THREE ROGER CLEARED FOR ILS TWO NINE SPEED ONE SIX ZERO
	UZB423	SPEED ONE SIX ZERO UZBEK FOUR TWO THREE
072908-072916	RADAR	UZBEK FOUR TWO THREE CLEARED FOR ILS TWO NINE CONTACT TOWER ONE TWO FIVE DECIMAL EIGHT FIVE
	UZB423	ONE TWO FIVE EIGHT FIVE UZBEK FOUR TWO THREE HAVE A GOOD DAY
073245-073249	RADAR	IFLY SIX NINE SIX SIX SPEED ONE SIX ZERO
	IG06966	MAINTAINING IFLY SIX NINE SIX SIX ONE SIX ZERO
073340-073347	IG06966	IFLY SIX NINE SIX SIX WE ARE EIGHT MILES ON THE LOCALIZER RUNWAY TWO SEVEN
	RADAR	ROGER CONTACT TOWER ONE ONE EIGHT DECIMAL SEVEN FIVE
	IG06966	ONE ONE EIGHT SEVEN FIVE IFLY SIX NINE SIX SIX

Tape Transcript of Approach (AA), Frequency 126.35 MHz

TIME (HHMMSS)	UNIT	TRANSMISSIONS
070637-070655	UZB423	DELHI APPROACH UZBEK FOUR TWO THREE GOOD MORNING FLIGHT LEVEL TWO ONE ZERO DECEND ONE FIVE ZERO INBOUND IGINO INFORMATION OSCAR AIRBUS THREE TWO ZERO
	RADAR	UZBEK FOUR TWO THREE RADAR DECEND TO FLIGHT LEVEL ONE THREE ZERO
	UZB123	DECEND ONE THREE ZERO UZBEK FOUR TWO THREE
	RADAR	UZBEK FOUR TWO THREE SPEED TWO FIVE ZERO KNOTS
	UZB423	SPEED TWO FIVE ZERO UZBEK FOUR TWO THREE

070836-070844	IG06966	DELHI IFLY SIX NINER SIX SIX DECENDING PASSING LEVEL ONE FIVE THREE
	RADAR	IFLY SIX NINER SIX SIX RADAR DECEND TO FLIGHT LEVEL EIGHT ZERO
	IG06966	DECEND LEVEL EIGHT ZERO IFLY SIX NINER SIX SIX
070845-070851	RADAR	UZBEK FOUR TWO THREE RADAR DECEND TO FLIGHT LEVEL ONE TWO ZERO
	UZB423	DECEND DECEND ONE TWO ZERO UZBEK FOUR TWO THREE
071118-071122	RADAR	UZBEK FOUR TWO THREE DECEND TO FLIGHT LEVEL ONE ONE ZERO
	UZB423	DECEND ONE ONE ZERO UZBEK FOUR TWO THREE
0712200711222	RADAR	UZBEK FOUR TWO THREE DESCEND TO FLIGHT LEVEL ONE HUNDRED
071223-071224	UZB423	DESCEND ONE HUNDRED UZBEK FOUR TWO THREE
071324-071401	RADAR	UZBEK FOUR TWO THREE DECEND TO FLIGHT LEVEL NINER ZERO
	UZB423	DECEND NINE ZERO UZBEK FOUR TWO THREE
	UZB423	UZBEK FOUR TWO THREE CONFIRM SPEED TWO FIFTY
	RADAR	NOW REDUCE TO...TWO ONE ZERO KNOTS
	UZB423	TWO ONE ZERO UZBEK FOUR TWO THREE
071509-071540	RADAR	UZBEK FOUR TWO THREE DECEND TO FLIGHT LEVEL EIGHT ZERO
	UZB423	DECEND EIGHT ZERO UZBEK FOUR TWO THREE
	RADAR	UZBEK FOUR TWO THREE RADAR ONE TWO FOUR DECIMAL TWO
	UZB423	ONE TWO FOUR TWO UZBEK FOUR TWO THREE HAVE A GOOD DAY
071826-071828	1G06966	IFLY SIX N1NER SIX SIX MINIMUM CLEAN
071902-071910	RADAR	IFLY SIX NINE SIX SIX HEADING ZERO ONE FIVE VECTORING1LS TWO SEVEN

	IG06966	HEADING ZERO ONE FIVE VECTORING FOR TWO SEVEN I FLY SIX NINE SIX SIX
072004-072008	RADAR	IFLY SIX NINE SIX SIX SPEED ONE EIGHTY
	IG06966	ONE EIGHTY NOW IFLY SIX NINE SIX SIX
072047-072050	RADAR	IFLY SIX NINE SIX SIX HEADING ZERO FOUR FIVE
072050-072053	1G06966	RIGHT HEADING ZERO FOUR FIVE IFLY SIX NINE SIX SIX
072056-072107	RADAR	IFLY SIX NINE SIX SIX RADAR TURN..TURN LEFT..I SAY AGAIN TURN LEFT HEADING……. IFLY SIX NINE SIX SIX TURN LEFT HEADING TWO TWO ZERO..TURN LEFT HEADING TWO TWO ZERO
TCAS-RA got triggered at time 0721 UTC		
072107-072110	IG06966	LEFT HEADING TWO TWO ZERO IFLY SIX NINE SIX SIX
072112-072114	IG06966	TCAS RA IFLY SIX NINE SIX SIX
072114-072116	RADAR	IFLY SIX NINE SIX SIX TURN LEFT HEADING TWO TWO ZERO
072117-072119	1G06966	LEFT HEADING TWO TWO ZERO IFLY SIX NINE SIX SIX
072131-072135	IG06966	IFLY SIX NINE SIX SIX TCAS RA WILL FILE REPORT AFTER LANDING CLEAR OF CONFLICT NOW
072135-072139	RADAR	ROGER SIR....LEFT HEADING TWO TWO ZERO AIRCRAFT IS UNEXPECTABLY CLIMBING SIR
072144-072147	RADAR	IFLY SIX NINE SIX SIX NOW FLY HEADING THREE SIX ZERO
072147-072150	IG06966	HEADING THREE SIX ZERO IFLY SIX NINE SIX SIX....SIR REQUESTING REASON FOR THIS
072151-072157	RADAR	THE AIRCRAFT ARE THE....IS UNEXPECTABLY CLIMB FLIGHT LEVEL NINER ZERO SIR I DONOT KNOW THE REASON HE IS WORKING WITH ANOTHER CONTROLLER
072200-072203	RADAR	IFLY SIX NINER SIX SIX YOU CAN MAINTAIN SEVEN ZERO NOW
072204-072207	IG06966	OK.W1LL BE DECENDING TO SEVEN ZERO NOW IFLY SIX NINER SIX SIX

072251-072307	RADAR	IFLY SIX NINER SIX SIX AIRCRAFT UZBEK A1RBUS...CORRECTION BOEING....CORRECTION AIRBUS THREE TWENTY NEO AIRCRAFT...I HAVE GIVEN APPROACH CONTROLLER HAS GIVEN DECEND TO TWO THOUSAND SIX HUNDERED FROM SEVEN ZERO...HE IS STILL CLIMBING EIGHT ZERO NINE ZERO I DON'T KNOW WHAT'S THE REASON.
072309-072311	IG06966	REQUESTING CALL SIGN OF AIRCRAFT OPERATOR AND EVERTHING
072312-072322	RADAR	UZBEK FOUR TWO FIVE SIR……. UZBEK FOUR TWO THREE UZBEK FOUR TWO THREE AIRBUS THREE TWENTY IT IS FROM AMRITSAR TO DELHI OPERATOR IS UZBEK
072324-072329	RADAR	IFLY SIX NINE SIX SIX RIGHT HEADING ZERO FOUR ZERO
	IG06966	RIGHT HEADING ZERO FOUR ZERO IFLY SIX NINE SIX SIX
072438-072443	RADAR	IFLY SIX NINE SIX SIX HEADING ZERO NINER ZERO
	IG06966	RIGHT HEADING ZERO NINE ZERO IFLY SIX NINE SIX SIX
072554-072559	RADAR	IFLY SIX NINE SIX SIX CONTACT RADAR ONE TWO FOUR DECIMAL TWO
	IG06966	ONE TWO FOUR DECIMAL TWOIFLY SIX NINE SIX SIX

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). Aerodrome has ARP at 283407N 0770644E. The Aerodrome is operation for 24 Hrs.

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 westerly, with all the three runways being used as:-

I. Runway 29 (runway-in-use) was used for both arrival and departures.

II. Runway 28 was used for departures only.

III. Runway 27 was used for arrivals only.

At the time of incident, UZB423 was with Approach (FA) and IGO6966 was with Approach (AA).

1.11 Flight Recorders.

DFDR of flight UZB423 was downloaded and analyzed. The relevant events has been given below:-

i. DFDR relives that the aircraft made an unauthorized climb for two times.

ii. At time 07:17:19 UTC, aircraft was descending for 8000 ft and it passing 9493.2 ft.

iii. At time 07:18:38 UTC, the selected altitude on FCU was 8000 ft, but aircraft started climbing from 8096.4 ft and reached upto 8172.9 ft.

iv. At 07:18:39 UTC, the selected altitude was 6976 ft instead of 7000 as cleared by ATC.

v. The aircraft descended till 6960 ft at time 07:20:18 UTC.

vi. At time 07:20:19 UTC, aircraft again started climbing. While ATC had cleared it to descent to 6000 ft.

vii. At 07:20:41 UTC, when ATC cleared for 2600 ft, the altitude entered on FCU was 2752 ft.

viii. At 07:21:00 UTC, TCAS-TA got triggered at an altitude of 7886.6 ft.

ix. At 07:21:12 UTC, TCAS-RA got triggered at an altitude of 7998.1 ft. It was active till 07:21:31 UTC.

x. At 07:21:32 UTC, TCAS-TA got triggered at an altitude of 8708.6 ft.

xi. At time 07:21:39 UTC, aircraft was clear of conflict at an altitude of 8850.8 ft.

1.12 Wreckage and Impact Information.

NIL

1.13 Medical and Pathological Information.

Flight crew of both aircraft had undergone pre-flight medical (Breath Analyzer Test) before departure as per requirement of CAR Section 5, Series F, Part III. The test result was negative.

Air traffic controllers were having valid medical assessment report and were fit to perform their duties on their respected channels.

1.14 Fire.

NIL

1.15 Survival Aspects.

The serious incident was survivable.

1.16 Tests and Research.

NIL

1.17 Organizational and Management Information.

1.17.1 Airports Authority of India.

Airports Authority of India (AAI) is a statutory body working under the Ministry of Civil Aviation, Government of India. It provides Communication Navigation

Surveillance / Air Traffic Management (CNS/ATM) services over Indian airspace and adjoining oceanic areas.

Training of Air Traffic control is done in Allahabad, Hyderabad and Gondia.

1.17.2 Uzbekistan Airways.

Uzbekistan Airways is a national carrier of Uzbekistan. Its head quarters is in Tashkent. It has a fleet of Airbus A320-200 & A320 neo and Boeing B757, B767 & B787 which are used as a passenger flights. It has a total of 29 aircraft which are used as passenger flights. It is operational in Domestic flying and International flying in Asia, Europe and North America.

1.17.3 Indigo

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

1.18 Additional Information.

1.18.1 Division of Airspace In Approach Control:

Area under jurisdiction of Approach Control has been divided into four control positions. These are:-

1. Approach Control (AA)
2. Approach Arrival (SA)
3. Final Approach or Approach Final (FA)
4. Approach Departure (AD)

The lateral and vertical jurisdiction of these positions depend on direction of flow of traffic. At the time of incident, aircrafts were arriving to Delhi. Thus, they were

controlled by two units i.e. Approach control and Approach Final. The Jurisdiction of these units are given below:-

UNIT	LATERAL JURISDICTION	VERTICAL LIMITS	FREQUENCY (MHz)
Approach Control (AA)	The jurisdiction of Approach shall extend over an area of 60 NM around DPN within Delhi TMA at and below FL140, excluding the airspace of defined dimension over which jurisdiction is exercised by Delhi Approach Arrival.	GND/ F140	126.35
Approach Final (FA)	An Area in the shape of trapezoid symmetrically placed on either side of DPN VOR aligned along the approach side depending upon the direction of flow of width at DPN end, other end and length of 30 NM, 40 NM and 40 NM respectively excluding the area under jurisdiction of Approach departure.	GND/F090	124.2

1.18.2 Short Term Conflict Alert:

Short Term Conflict Alert (STCA) is a ground-based safety feature to assist the controller in preventing collision between aircraft by generating, in a timely manner, an alert of a potential or actual infringement of separation minima.

Short Term Conflict Alert are of two type:-

1. Predicted: It is STCA parameter, the time for generation of Predicted Conflict Warning (PCW) adapted in the system is 90 seconds before potential breach of separation. It is usual visible in Yellow colour on Radar Screen.

2. Violation: It is a Current Conflict Warning (CCW) and is generated on actual breach of applicable separation parameter defined for the airspace. It is usually visible in Red colour on Radar Screen.

1.18.3 Traffic Collision Avoidance System (TCAS)

Traffic Collision Avoidance System or Traffic Alert and Collision Avoidance System is abbreviated as TCAS. It is an aircraft collision avoidance system designed to reduce the incidence of mid-air collisions between aircraft. It monitors the airspace around an aircraft for other aircraft equipped with a corresponding active transponder (Mode-S Transponder). This system is independent of the Aircraft Navigation, Flight Management Systems, and Air Traffic Control (ATC) ground system. It warns pilots of the presence of other transponder-equipped aircraft in its proximity, which may present a threat of mid-air collision.

Generally TCAS system issues the following types of aural warning/advisory:-

- Traffic advisory (TA)
- Resolution advisory (RA)

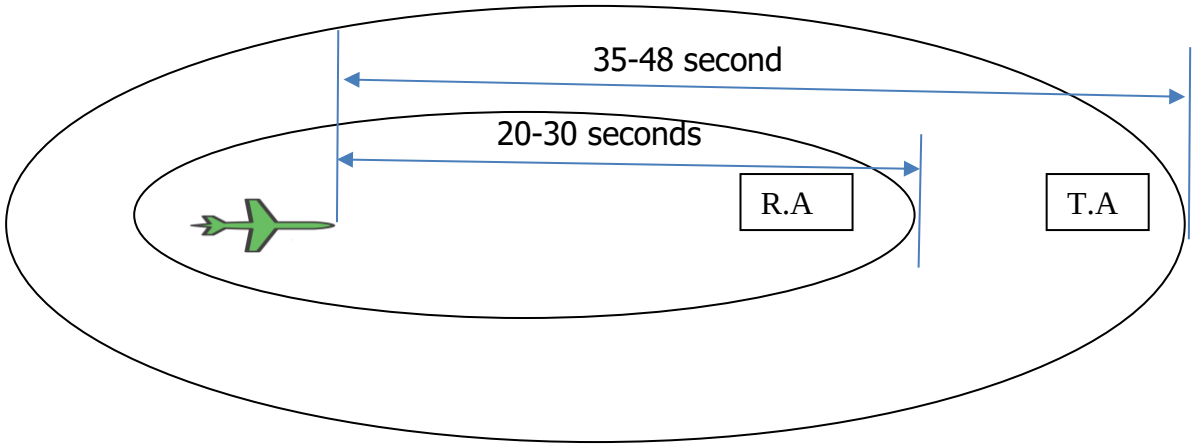

Figure: Symbolic representation of TCAS system

Traffic Advisory (TA): When any aircraft equipped with TCAS or Mode-S transponder comes in aircraft's pre-defined range, then the system simultaneously generates an aural alert and a visual alert on its display unit called Traffic Advisory. It alerts the pilot and keeps him informed of the present traffic situation.

Resolution Advisory (RA): When another aircraft equipped with TCAS or Mode-S transponder in aircraft close proximity, which is going to present a mid-air collision threat then the system simultaneously generates a visual alert on its display unit and an aural vertical manoeuvring command, till the aircraft comes out of the conflict. When an RA is issued, pilots are expected to respond immediately to the RA unless doing so would jeopardize the safe operation of the flight. R.A manoeuvres have priority over ATC instruction. This means that aircraft will at times have to manoeuvre contrary to ATC instructions or disregard ATC instructions.

1.19 Useful or Effective Investigation Techniques.

NIL

2. ANALYSIS.

On 25.01.2020, a Serious Incident occurred in Delhi Airspace while making an approach to Airport between UZB423 (Type-A320, Registration- UK32022) and IGO6966 (Type- A320, Registration- VT-IHQ).

On the day of Serious Incident, UZB423 was scheduled to operate its flight from Amritsar to Delhi and IGO6966 was scheduled to operate its flight from Shamsabad (Hyderabad) to Delhi. The incident occurred in Delhi Approach.

At the time of Serious Incident, Westerly flow three runway operation was operational at Delhi Airport. Runway 27 was designated for Arrivals only, Runway 28 was designated for Departures only and Runway 29 was designated for both Arrivals and Departures. UZB423 was following RNAV STAR IGINO 5C for Runway 29 and IGO6966 was following RNAV STAR BAVOX 5A for Runway 27.

At 0707 UTC, UZB423 came in contact with Approach Arrival at FL210. It was descending for FL150. Approach (AA) Radar Controller gave descent to FL130. At 0708 UTC, IGO6966 was given decent to FL80.

At 0709 UTC, Approach (AA) Radar Controller gave descent to UZB423 for FL120 then further descent to FL110 at 0711 UTC. At 0712 UTC, the controller gave descent to FL100 and subsequently to FL90 at 0714 UTC. Since the aircraft was at a high speed, controller instructed UZB423 to reduce speed of the aircraft. At 0715 UTC, further descent of FL80 was given and UZB423 was changed over to Approach (FA) unit.

Till this time, IGO6966 was with Approach (AA) Control. Approach (AA) Controller vectored IGO6966 for Runway 27 via RNAV STAR BAVOX 5A.

UZB423 after change over by Approach (AA) came in contact with Approach (FA) at time 0715 UTC. UZB423 was passing FL110 for FL80. Approach (FA) Controller vectored UZB423 for Runway 29 via RNAV STAR IGINO 5C. Since Aircraft was high on speed thus controller instructed to reduce the speed of aircraft.

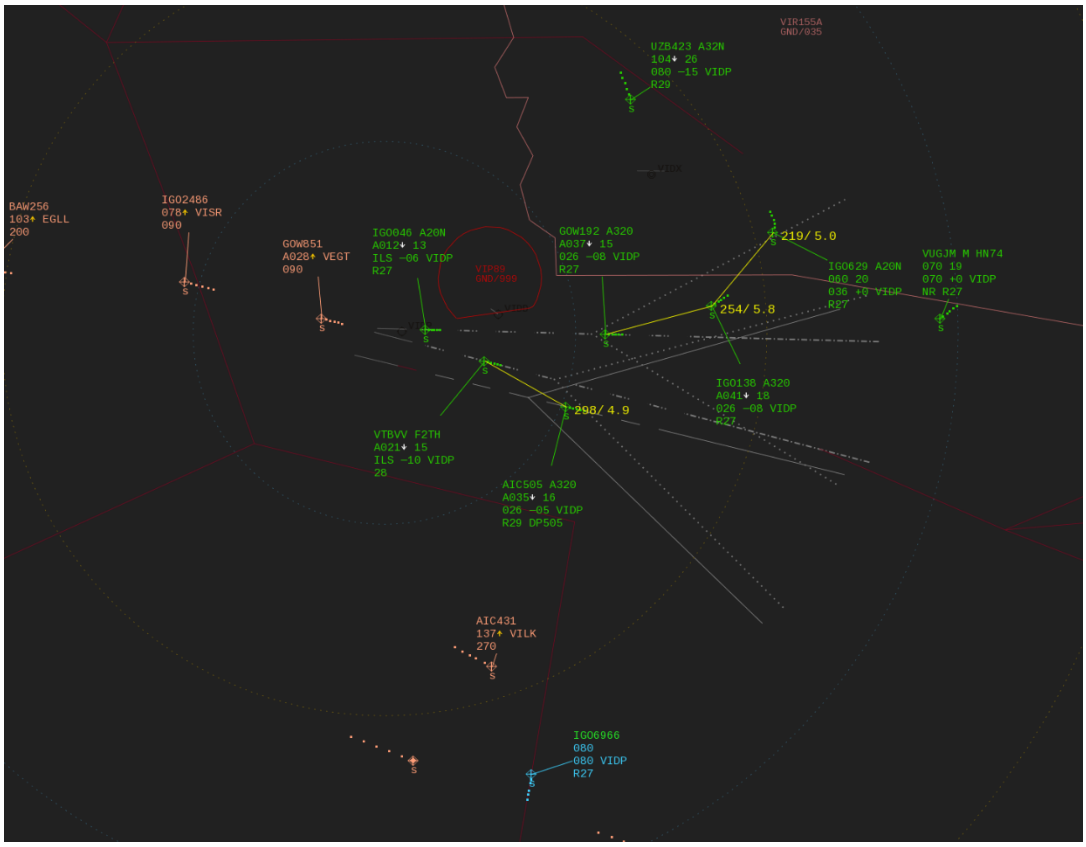

Figure: At 07:16:41 UTC, IGO6966 maintaining FL80 and UZB423 descending to FL80 (Both the controller are with Approach (AA) Control Unit.

At 0719 UTC, Approach (FA) Controller gave further descent to FL70 and right heading H205. UZB423 was further given descent of FL60. This instruction was read back correctly by UZB423.

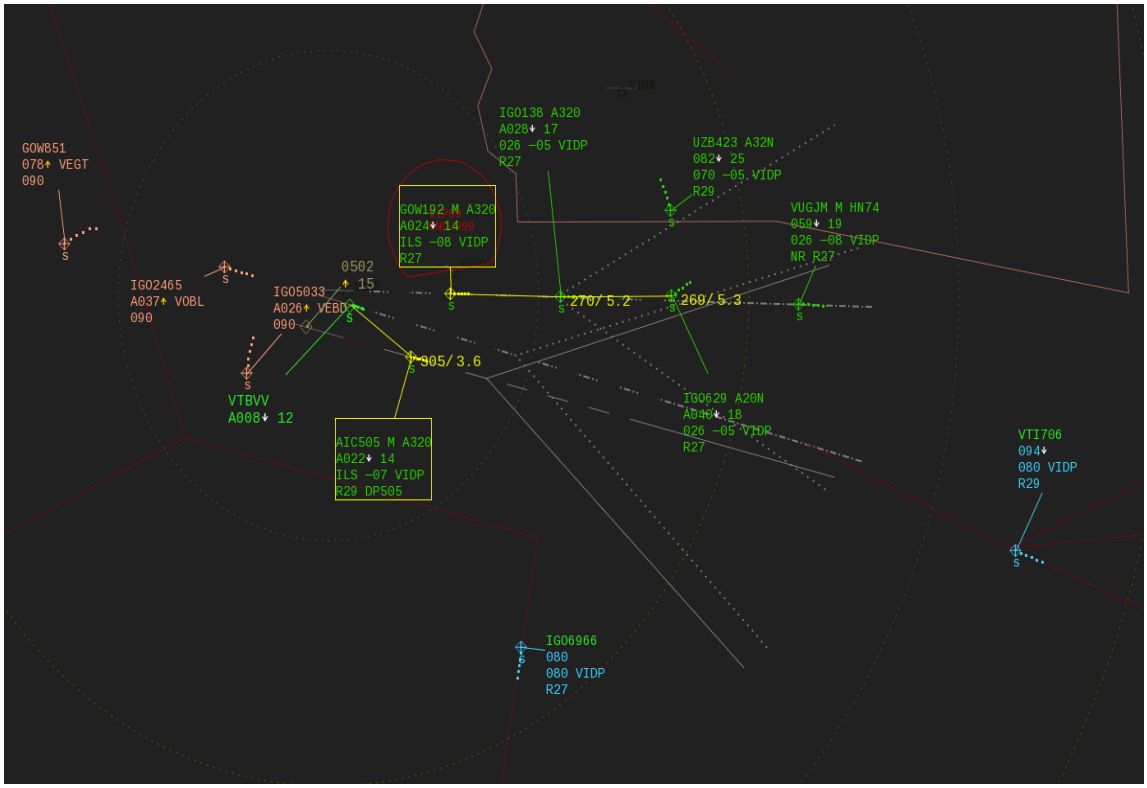

Figure: At 07:18:54 UTC, Approach (FA) unit gave descent to FL70 to UZB423, IGO6966 is with Approach (AA) unit.

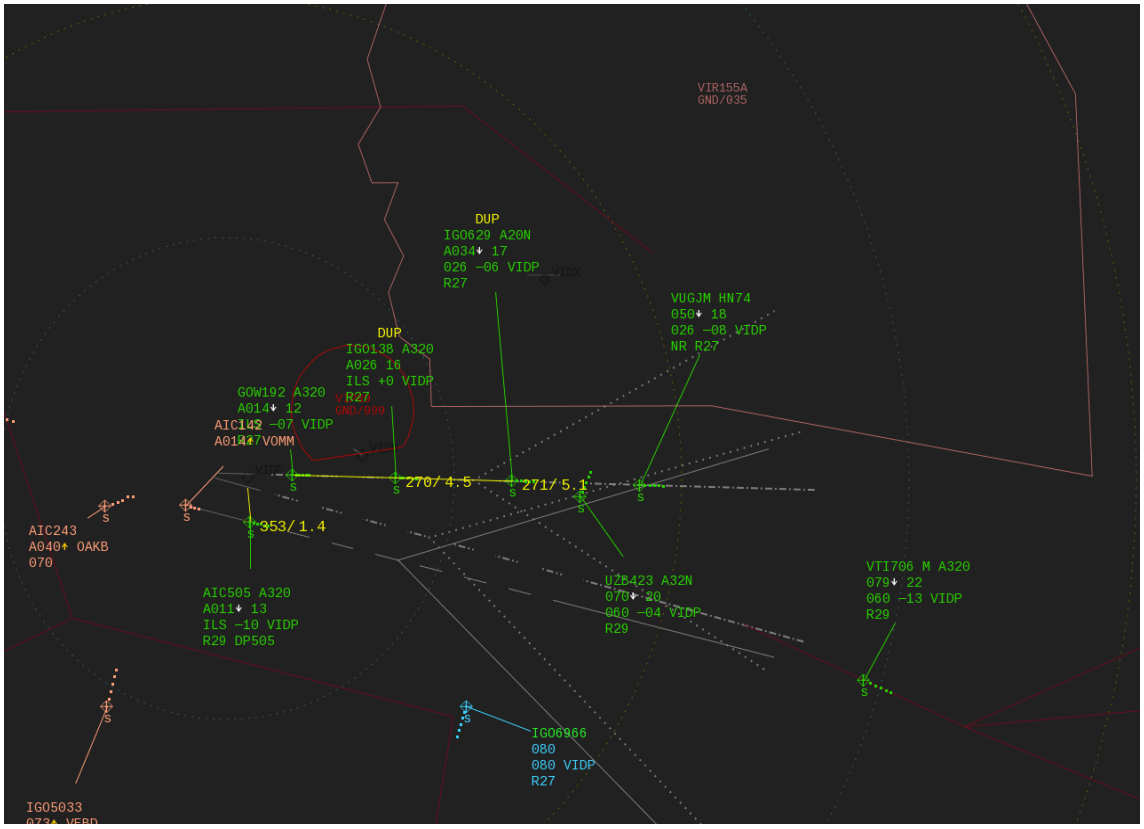

Figure: At 07:20:16 UTC, Approach (FA) unit gave descent to FL60 to UZB423, IGO6966 is with Approach (AA) unit.

At 0720 UTC, Controller gave descent to 2600 feet and QNH 1017 was passed. This instruction was also read back correctly by UZB423.

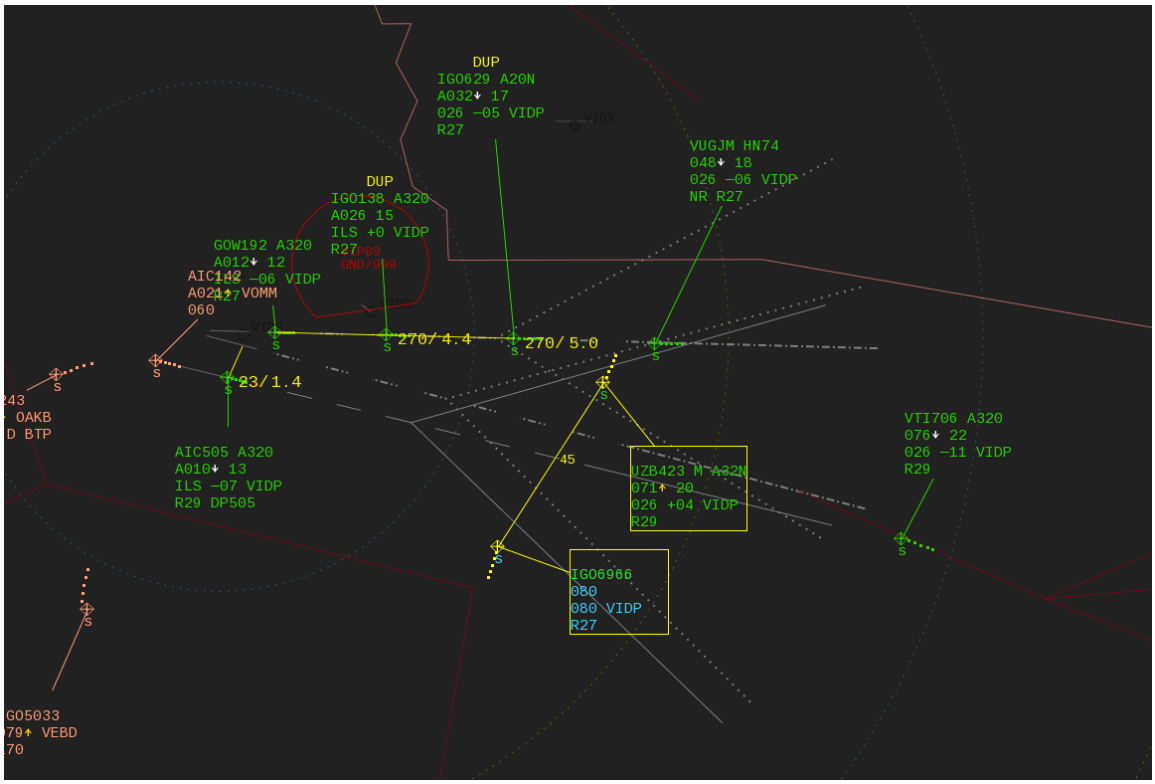

Figure: Controller gave descent to 2600 ft but it was observed that UZB423 started climbing

After giving descent, it was observed by the controller that UZB423 was climbing without authorisation. At 07:21:42 UTC, While unauthorised climb Automation System also showed Level Burst. This was monitored by Controller who immediately raised call to UZB423 , in turn it replied "now descend sorry". Controller emphasized again "affirm due traffic".

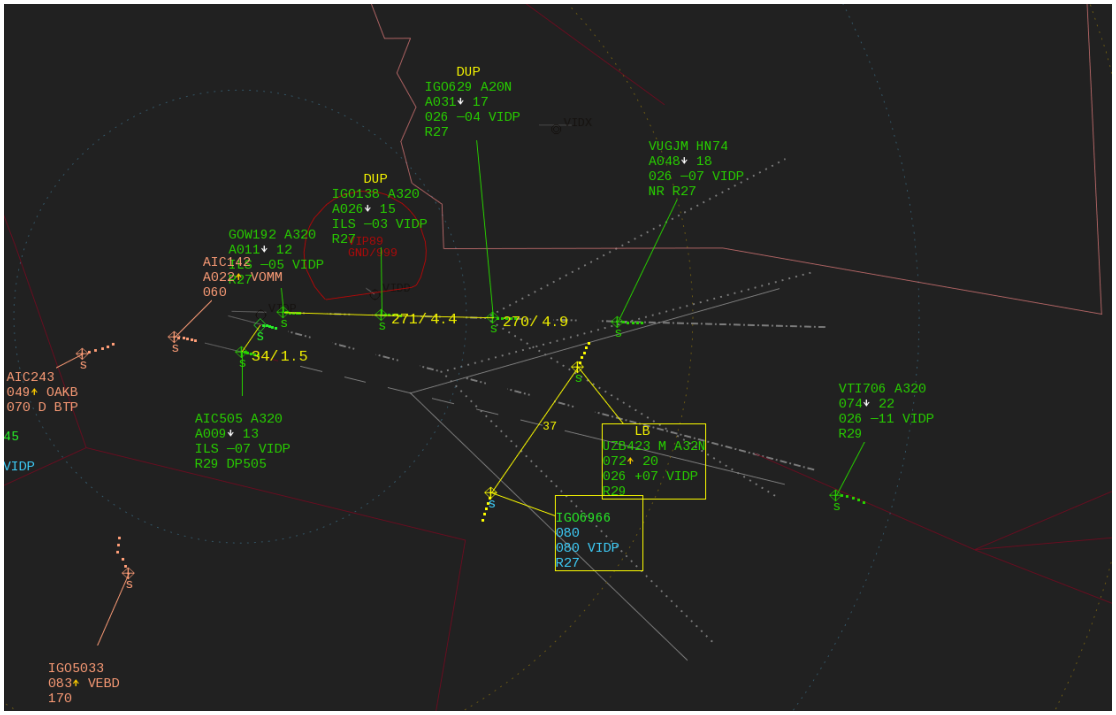

Figure: At 07:20:42 UTC, Automation system popped (Level Burst) LB alert.

Controller prompted for descent again and it was also read back by UZB423. However, on the contrary, the aircraft was still climbing. Consequently, the minimum required separation was breached between IGO6966 and UZB423.

At 0720 UTC, Approach (AA) controller observed that UZB423 which was with other unit i.e. Approach (FA) is climbing and is the immediate traffic to IGO6966. Since, the control of IGO6966 was with Approach (AA) unit, Approach (FA) could only instruct UZB423 which is under his jurisdiction. Therefore, in order to resolve the conflict and to establish the required minimum separation, the Approach (FA) controller gave traffic avoiding heading. However by this time IGO6966 reported TCAS-RA at a level of 8000 ft and followed RA instruction of "DESCEND DESCEND"

UZB324 climbed till FL89. Controller gave avoiding heading and instructed to maintain FL89. On enquiring the reason of climb by the controller, UZB423 replied as "Due to TRAFFIC RESOLUTION ADVISORY UZBEK Four Two Three". However, as per the Radar Scope, no alert was generated and no such traffic was observed in the close vicinity of UZB423.

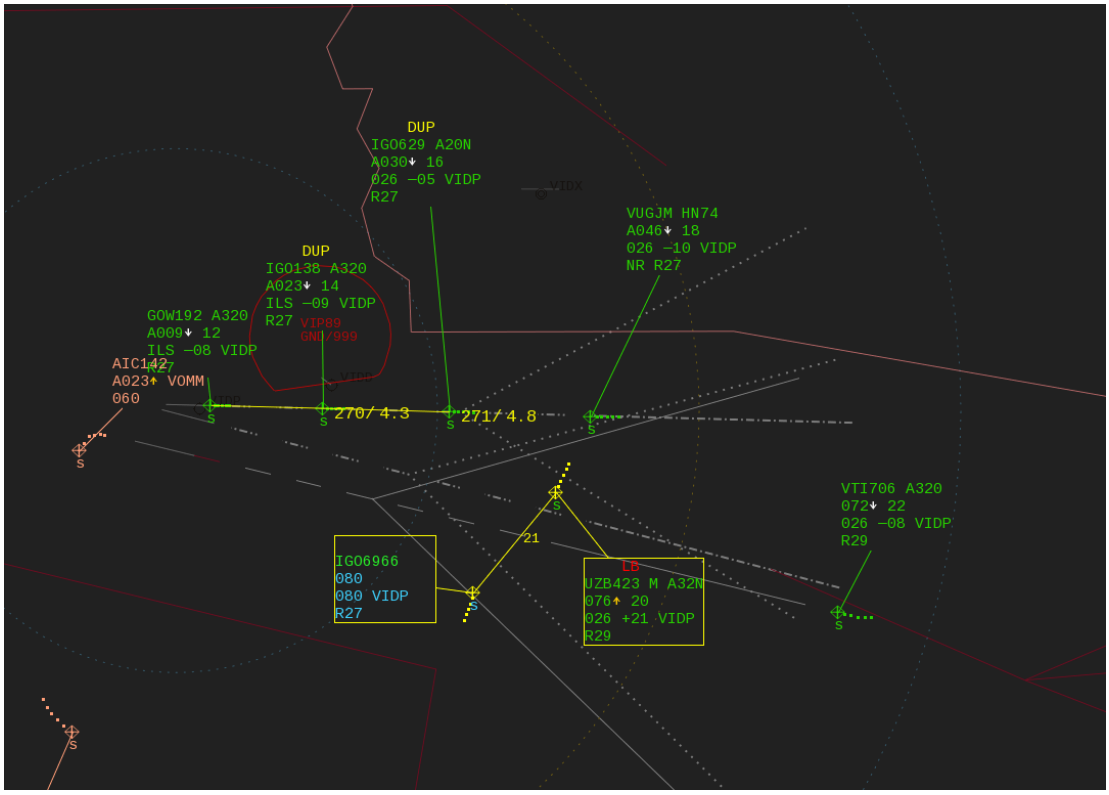

Figure: At 07:21:00 UTC, TCAS-TA got triggered and Automation System showing STCA (Predicted)

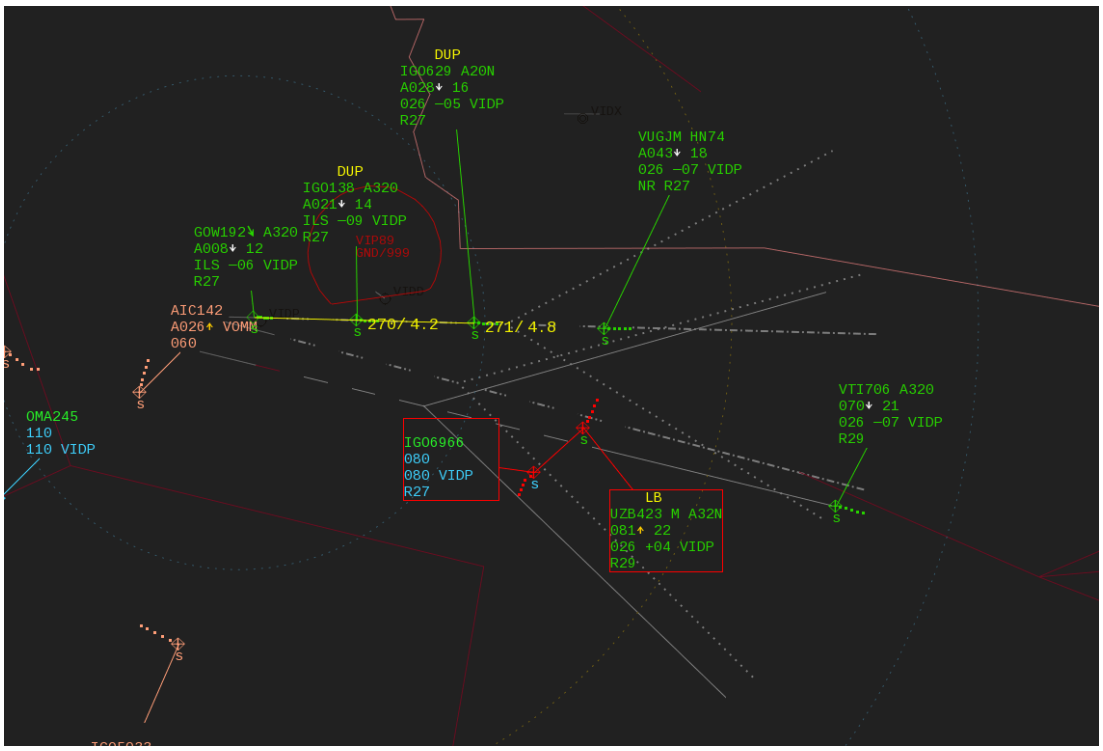

Figure: At 07:21:31 UTC, TCAS-RA got triggered and Automation System showing STCA (Violation)

Both aircraft did RA manoeuvres. Aircraft were clear of conflict at time 07:21:41 UTC. Standard Separation in Approach (FA) is 1000 ft vertically and 3 NM horizontally in Radar Environment which was reduced to 1.7 NM laterally when no vertical separation existed.

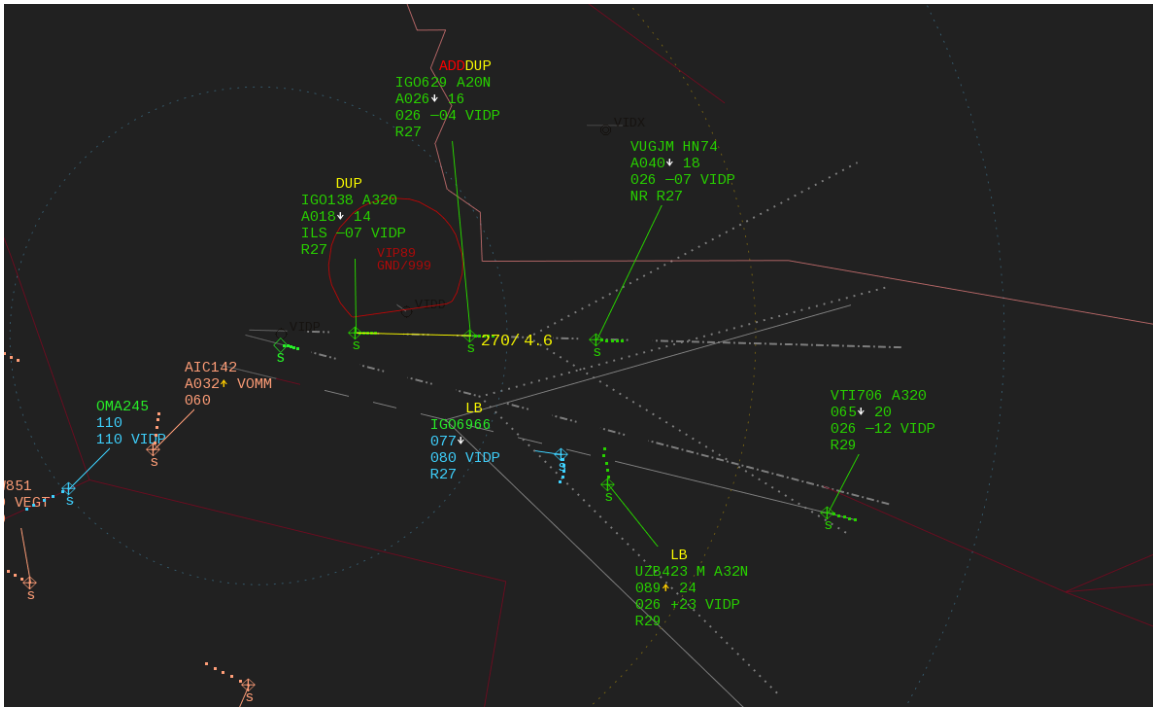

Figure: Showing Aircrafts are Clear of Conflict,UZB423 Climbed and IGO6966 Descended.

After restoration of required separation, Controller recleared UZB423 for approach and again gave descent to 2600 feet. UZB423 was again high on speed thus controller instructed again to reduce the speed of the aircraft.

At 0724 UTC, Controller cleared for ILS Approach Runway 29. When again enquired the reason for climb, Flight crew of UZB423 informed that “Yes we have some problem with FMS UZBEK Four Two Three now descend Two Thousand Six Hundred”.

As per DFDR analysis of UZB423, it was observed that after FL80, Crew selected 6976 ft instead of 7000 ft and 2752 ft instead of 2600 ft.

At 0728 UTC, UZB423 established on the Localizer Runway 29 and aircraft was handed over to Tower at time 0729 UTC.

After clear of conflict, IGO6966 came in contact with Approach (Final) and was cleared for approach Runway 27 at time 0727 UTC.

3. CONCLUSIONS.

3.1 Findings.

i. Both Flight crew were having valid licences to operate the flight.

ii. Air Traffic Controllers were rated to perform their duty on their concerned ATC unit.

iii. Traffic density at Delhi Approach was moderate.

iv. Three runway mixed westerly flow mode was operational i.e. Runway 27 for Arrival, Runway 28 for Departure and Runway 29 for arrival and departures both.

v. No snag was reported in either of the Aircraft.

vi. Weather was not a contributory factor.

vii. Pilot-in-Command was pilot flying and Pilot monitoring was Check Captain of the UZB423 aircraft and also a TRI.

viii. Approach were divided in two sector Approach (AA) Control and Approach (FA) Control during the time of incident.

ix. During the time of incident, UZB423 was with Approach (FA) on frequency 124.2 Mhz and IGO6966 was with Approach (AA) Control on frequency 126.35 MHZ.

x. Approach (AA) control gave step descent till FL80 and handed over UZB423 to Approach (FA). However, at that time IGO6966 was maintaining FL80 and was in control of Approach (AA).

xi. UZB423 was often having high speed thus, the controller prompted several times to reduce its speed

xii. The aircraft as per DFDR data and ATC recording made an unauthorised climb for two times. Firstly at 07:18:38 UTC and secondly at 07:20:19 UTC.

xiii. The predicted STCA warning was generated at time 07:20:30 UTC and got converted into violation at 07:21:19 UTC.

xiv. Approach (FA) Controller and Approach (AA) Controller both promptly reacted on automated system generated warnings. Both gave avoiding headings in their

jurisdiction as UZB423 was with Approach (FA) and IGO6966 was with Approach (AA).

xv. TCAS-TA was triggered at 07:21:00 UTC at a level of 7886.6 ft which was converted to TCAS-RA at time 07:21:12 UTC at a level of 7998.1 ft.

xvi. Aircraft was clear of conflict at 07:21:39 UTC and STCA warning ceased at 07:21:42 UTC.

xvii. After both aircraft were clear of conflict, Controller enquired with the flight crew of UZB423 about the reason of climb, UZB423 stated that it had climbed from flight level 70 was due to equipment (flight system).

xviii. As per statement of Flight crew while descending from FL70 to F60, Pilot Monitoring unintentionally touched thrust lever of Engine No#2, which led to activation of Go-Around mode of Auto Pilot.

xix. After the activation of Go-Around mode, Pilot Monitoring disconnected Auto-Pilot to avoid further climb. But, by that time TCAS-RA had got triggered.

xx. Standard separation was restored in 23 Sec as per Automation System.

3.2 Probable cause of the Incident.

Engaging thrust lever of Engine No#2 inadvertently, which resulted in climbing of Aircraft instead of descent clearance given by ATC.

4.0 Safety Recommendations.

Uzbekistan Airways may take suitable corrective action to avoid such occurrences in future.

(Kunj Lata)
Investigator-in-Charge

(Amit Kumar)
Investigator