FINAL REPORT
OF SERIOUS INCIDENT OF RUNWAY INCURSION BETWEEN
M/s GOAIR FLIGHT GOW336 AND INDIAN AIR FORCE FLIGHT VUDBL
AT DELHI ON 02ND OCTOBER 2013.

1. Aircraft	
Type :	A 320 (GoAir) and AN32 (IAF)
Nationality :	INDIAN
Registration :	VT-GOK (GoAir) and VUDBL (IAF)
2. Owner/ Operator :	GoAir and Indian Air Force
3. Pilot – in –Command :	ATPL holder / IAF Licence, qualified on type
Extent of injuries :	Nil
4. First Officer :	CPL Holder / IAF licence, qualified on type
Extent of injuries :	Nil
5. Place of Incident :	IGI Airport, Delhi
6. Date & Time of Incident :	2nd October 2013 09:06:32 UTC(Approx.)
7. Last point of Departure :	Delhi for GoAir and Chandigarh for IAF
8. Point of intended landing :	Mumbai for GoAir and Delhi for IAF
9. Type of operation :	Schedule Operation for GoAir and IAF flight
10. Crew on Board :	2 pilots + 4 cabin crew on VT-GOK, 3 IAF Officers on VUD BL
Extent of injuries :	Nil
11. Passengers on Board :	136 on VT-GOK
Extent of injuries :	Nil
12. Phase of operation :	Takeoff for GoAir and Taxi-in for IAF
13. Type of incident :	Runway Incursion

(*ALL TIMINGS IN THE REPORT ARE IN UTC*)

SUMMARY :

GoAir A-320 aircraft VT-GOK was on its scheduled flight GOW 336 from Delhi to Mumbai on 2nd Oct., 2013 and at time 09:02:17 was in sequence for take off at Delhi. Indian Air Force aircraft VUDBL was operating flight Chandigarh - Delhi and landed at Delhi around the same time.

Delhi airport Runway 28 at this time was restricted due to VVIP flight, VIP 1 aircraft and it is therefore that the scheduled aircraft movements from apron 1 were restricted. There were delays to the few affected domestic departures on this account. VT-GOK was in sequence for such delayed flights.

The VVIP flight departed at 08:51:00 UTC and immediately thereafter the three runway operations was started to expedite the pending departures from the apron 1.

VUDBL, IAF aircraft landed in such situation at Delhi on runway 10 and vacated the active runway via TWY "F". The aircraft was given the taxi clearance to the Air Force Technical Area which was to cross Rwy 09.

While VUDBL was on its assigned taxi way the three runway operation had commenced and therefore runway 09 was also made an active runway and the departures / arrivals were scheduled. The SMC (N) controller lost the situational awareness for a short duration in connecting that runway 09 crossing has also been cleared for VUDBL the IAF aircraft.

GoAir aircraft VT-GOK flight GOW 336 was given the departure clearance from runway 09.

At this stage SMC (N) controller realized the oversight and called VUDBL to stop immediately. Having received no response from VUDBL, SMC (N) advised TWR (N) controller to immediately stop the departure of GoAir flight VT-GOK.

VT-GOK which by now had commenced its take off roll, rejected the take off immediately on the ATC Tower's instructions and hence a possible accident was avoided.

1. FACTUAL INFORMATION.

1.1 History of the flight

GOW 336 is a scheduled flight operated by GoAir on 2nd October 2013 by aircraft VT-GOK (A320) from Delhi to Mumbai and at about 09:06:30 UTC the aircraft rejected take off on the instructions of Aerodrome Control Tower.

VU-DBL is a flight operated by IAF on 2nd October 2013 by aircraft AN 32 from Chandigarh to Delhi. The aircraft after landing on Runway 10 was given taxi instructions via taxiway F, E and was advised to hold short of taxiway E2 and was further advised to cross Runway 09 by SMC.

1.2 Injuries to persons.

INJURIES	CREW	PASSENGERS	OTHERS
FATAL	Nil	Nil	Nil
SERIOUS	Nil	Nil	Nil
MINOR	Nil	Nil	Nil

1.3 Damage to aircraft.

Nil

1.4 Other damage:

Nil

1.5 Personnel information:

1.5.1 ATC Controllers : Tower Controller and SMC Controller

Following are the qualifications and training details :

1. **Tower Controller**
   a) Double Banking start :
      i) ADC/SMC/ASMGCS : 13.09.2011
      ii) ACC/FIC : 19.01.2012
      iii) ADS/CPDLC : 05.06.2012
   b) Date of Rating :
      i) ADC/SMC/ASMGCS : 23.11.2011
      ii) ACC/FIC : 30.05.2012
      Iii) ADS/CPDLC : 27.07.2012

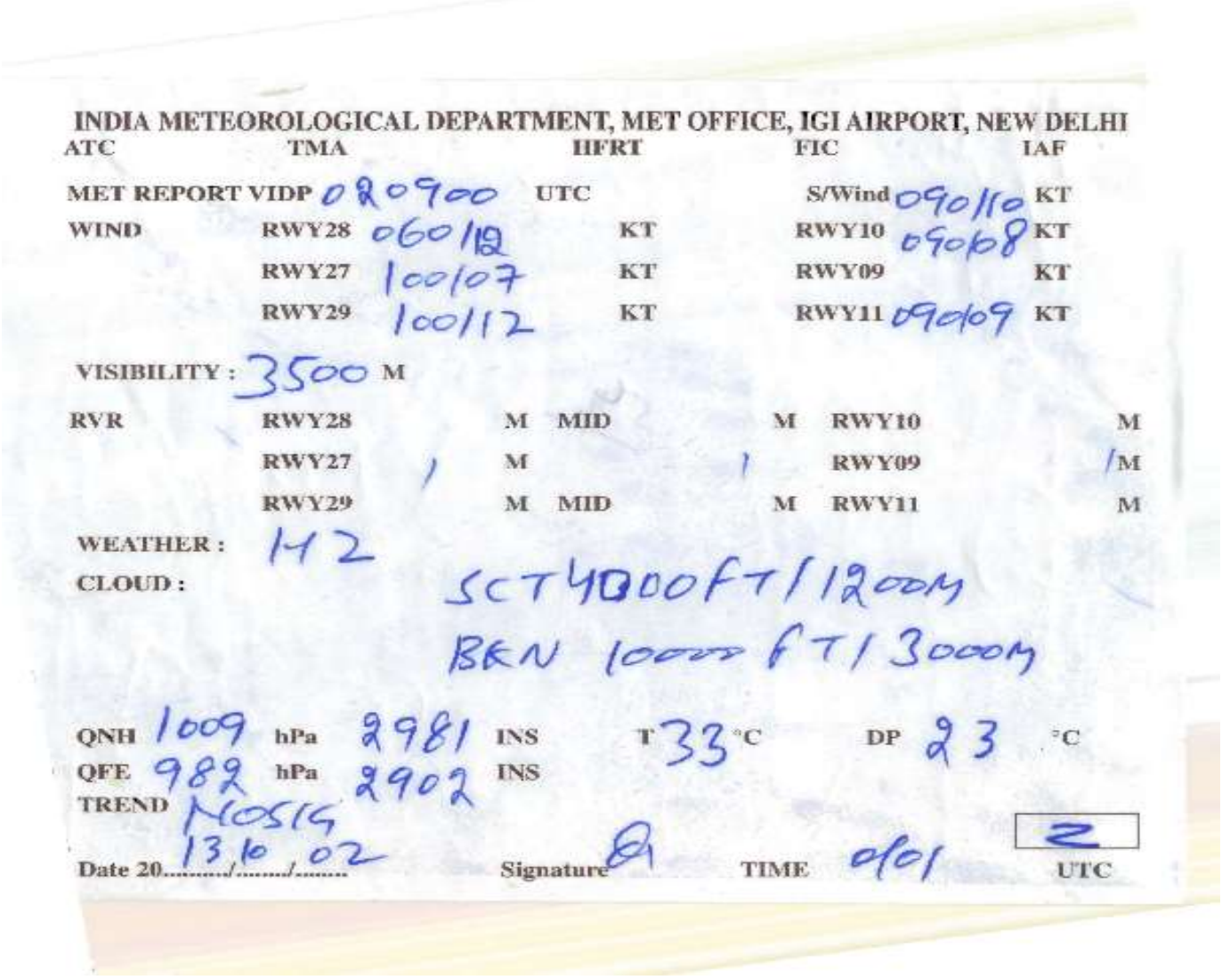
   C) Previous Rating
      ADC/SMC/ASMGCS/ACC/FIC/ADS/CPDLC Delhi

2. **SMC Controller**
   a) Double Banking Start : 01.11.2011
   b) Date of ADC/SMC/ASMGCS Rating : 25.04.2012

1.6 Aircraft information:

A320 is a twin engine transport Category C aircrafts certified for day and night operations under VFR and IFR.

1.7 Meteorological information:



INDIA METEOROLOGICAL DEPARTMENT, MET OFFICE, IGI AIRPORT, NEW DELHI

ATC TMA IIFRT FIC IAF

MET REPORT VIDP 020900 UTC S/Wind 090110 KT

WIND RWY28 060/12 KT RWY10 09008 KT

RWY27 100/07 KT RWY09 KT

RWY29 100/12 KT RWY11 09009 KT

VISIBILITY : 3500 M

RVR RWY28 M MID M RWY10 M

RWY27 M RWY09 M

RWY29 M MID M RWY11 M

WEATHER : HZ

CLOUD : SCT 4000FT/1200M

BKN 10000 FT/3000M

QNH 1009 hPa 2981 INS T 33 °C DP 23 °C

QFE 989 hPa 2902 INS

TREND NOSIG

Date 20 13/10/02 Signature TIME 0901 UTC

1.8 Aids to navigation:

Runway 09 at Delhi is equipped with Cat I ILS (DME collocated with glide path). The last routine flight calibration of ILS 09 was done on 14th November, 2013.

Other navigation aids installed include DVOR and DME with Precision and Non Precision approach procedures.The last routine flight calibration of DVOR/DME was done on 16th October, 2012.

1.9 Communications:

During the period of occurrence GoAir aircraft GOW 336 was tuned in with ATC on Tower Frequency 118.75 MHz whereas IAF VU-DBL was tuned in on Ground frequency 121.75 Mhz. There was always two way communication between the ATC and both aircraft until the last clearance given by SMC (N) to VU-DBL clearing to cross runway 09 for technical area. Calls made by SMC (N) controller thereafter on 121.75 Mhz. were not responded by the IAF aircraft.

1.10 Aerodrome information:

Indira Gandhi International Airport (IATA: DEL, ICAO: VIDP) is the primary international airport of the National Capital Region of Delhi operated by Delhi International Airport Private Limited (DIAL) with a current capacity of handling more than 46 million passengers.

The elevation of the airport is 777 ft, and it has three near-parallel runways: runway 11/29, 4,430 m × 60 m (14,534 ft × 197 ft) with CAT IIIB instrument landing system (ILS) on both sides, runway 10/28, 3,810 m × 45 m (12,500 ft × 148 ft), and an auxiliary runway 09/27, 2,813 m × 45 m (9,229 ft × 148 ft). Runway 28 and runway 11/29 are the only two in South Asia to have been equipped with the CAT III-B ILS.

The other Navigation aids installed include Cat I ILS DME, DVOR and NDB with precision and non-precision approach procedures for Runways 11/29, 10/28 and 09/27.

IGI Airport has Category 10 rescue and firefighting capabilities with all ARFF personnel trained in rescue and fire-fighting as well as medical first-aid.

1.11 Flight recorders

The ATC tape transcript of frequency 121.75 SMC (N) and 118.75 TWR (N) Mhz are as under:

Date of Incident: 02/10/2013
ATC Unit: SMC (N) & TWR(N)
Frequency : 121.75 & 118.75
Call sign : GOW336 & VUDBL

TOWER (N) :-

Time	Station	Text
090426	TOWER	GOW336 TOWER
	GOW336	GO AHEAD SIR
090430	TOWER	GOW336 TOWER LINE UP RWY09
	GOW336	LINE UP RWY 09 GOW336
	TOWER	CONFIRM OBTAINED SID FOR RWY09
	GOW336	SAY AGAIN PLEASE
	TOWER	CONFIRM OBTAINED DEPARTURE CLEARANCE FOR RWY09
	GOW336	STAND BY SIR
090513	TOWER	GOW336 RWY09 CLEARED FOR TAKE OFF WIND 110 DEGREES 13 KNOTS
	GOW336	RWY09 CLEARED FOR TAKE OFF GOW336
090632	TOWER	GOW336 CANCEL DEPARTURE DUE AIRCRAFT CROSSING THE RWY
090636	GOW336	ON A REJECTED TAKE OFF GOW336
090657	TOWER	GOW336 VACATE VIA 'E'
	GOW336	VACATING VIA 'E' GOW336
090733	TOWER	GOW336 CONTACT GROUND HOLD SHORT 'E2' CONTACT GROUND 121.75
	GOW336	HOLD SHORT 'E2' 121.75 GOW336

SMC(N) :-

Time	Station	Text
090219	VUDBL	DELHI GROUND VBL LANDED RWY10 VACATED ON 'F'
090227	GROUND	VUDBL CONTINUE VIA 'E' HOLD SHORT OF 'E2'
	VUDBL	CONTINUE VIA 'E' HOLD SHORT 'E2' VBL
090330	GROUND	GOW336 HOLD AT HOLDING POINT 09 ON 'E3' CONTACT GROUND 118.75
090523	VUDBL	GROUND VBL SHORT OF 'E2' ON 'E'
	GROUND	VBL GO AHEAD
	VUDBL	SIR WE ARE SHORT OF 'E2' SIR
090535	GROUND	VBL CONTINUE TAXI VIA 'E' CROSS RWY27 FURTHER TAXI VIA DUMBELL 15/33
	VUDBL	ROGER CONTINUE TAXI VIA 'E' CROSS OVER TO 'A2' 15/33 COPIED SIR VBL
090620	GROUND	VBL HOLD POSITION
090623	GROUND	VBL I SAY AGAIN HOLD POSITION
090628	GROUND	VBL
090641	VUDBL	VBL ON 'A2' IN CONTACT WITH BASE OPS SIR
090722	VUDBL	DELHI GROUND VBL IN CONTACT WITH BASE OPS ON 'A2' CHANGING OVER

090751	GOW336	GROUND GOW336 ON 'E'
	GROUND	GOW336 GROUND STAND BY
	GOW336	STANDING BY GOW336
090956	GROUND	GOW336 REPORT INTENTION
	GOW336	SIR STAND BY ONE
091006	GOW336	GROUND GOW336 WE WOULD LIKE TO GO BACK TO BAY
	GROUND	GOW336 CONTINUE TAXY VIA 'E' 'B3' STAND 25
	GOW336	'E' 'B3' STAND 25 COPIED SIR
091537	GOW336	GROUND GOW336 CONFIRM STAND NUMBER AGAIN MARSHALLER ON 22
	GROUND	GOW336 NOW WE HAVE TO CHECK AGAIN FROM AOCC
	GOW336	PLEASE DO SIR
091756	GROUND	GOW336 CONFIRM MARSHALLER IN SIGHT ON STAND 25

090751	GOW336	GROUND GOW336 ON 'E'
	GROUND	GOW336 GROUND STAND BY
	GOW336	STANDING BY GOW336
090956	GROUND	GOW336 REPORT INTENTION
	GOW336	SIR STAND BY ONE
091006	GOW336	GROUND GOW336 WE WOULD LIKE TO GO BACK TO BAY
	GROUND	GOW336 CONTINUE TAXY VIA 'E' 'B3' STAND 25
	GOW336	'E' 'B3' STAND 25 COPIED SIR
091537	GOW336	GROUND GOW336 CONFIRM STAND NUMBER AGAIN MARSHALLER ON 22
	GROUND	GOW336 NOW WE HAVE TO CHECK AGAIN FROM AOCC
	GOW336	PLEASE DO SIR
091756	GROUND	GOW336 CONFIRM MARSHALLER IN SIGHT ON STAND 25

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1.12 Wreckage and impact information.

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

1.13 Medical and pathological Information:

Pilots of VT-GOK had undergone preflight medical check prior to the flight and had successfully passed the same.

1.14 Fire:

There was no fire after the incident.

1.15 Survival aspects:

The incident was survivable.

1.16 Tests and research:

No malfunction of the VHF trans-receivers on the IAF aircraft VUDBL is reported before or after the incident.

1.17 Organizational and management information:

GoAir is a scheduled airline with a fleet of Airbus A-320 aircraft operating flights on domestic and international sectors.

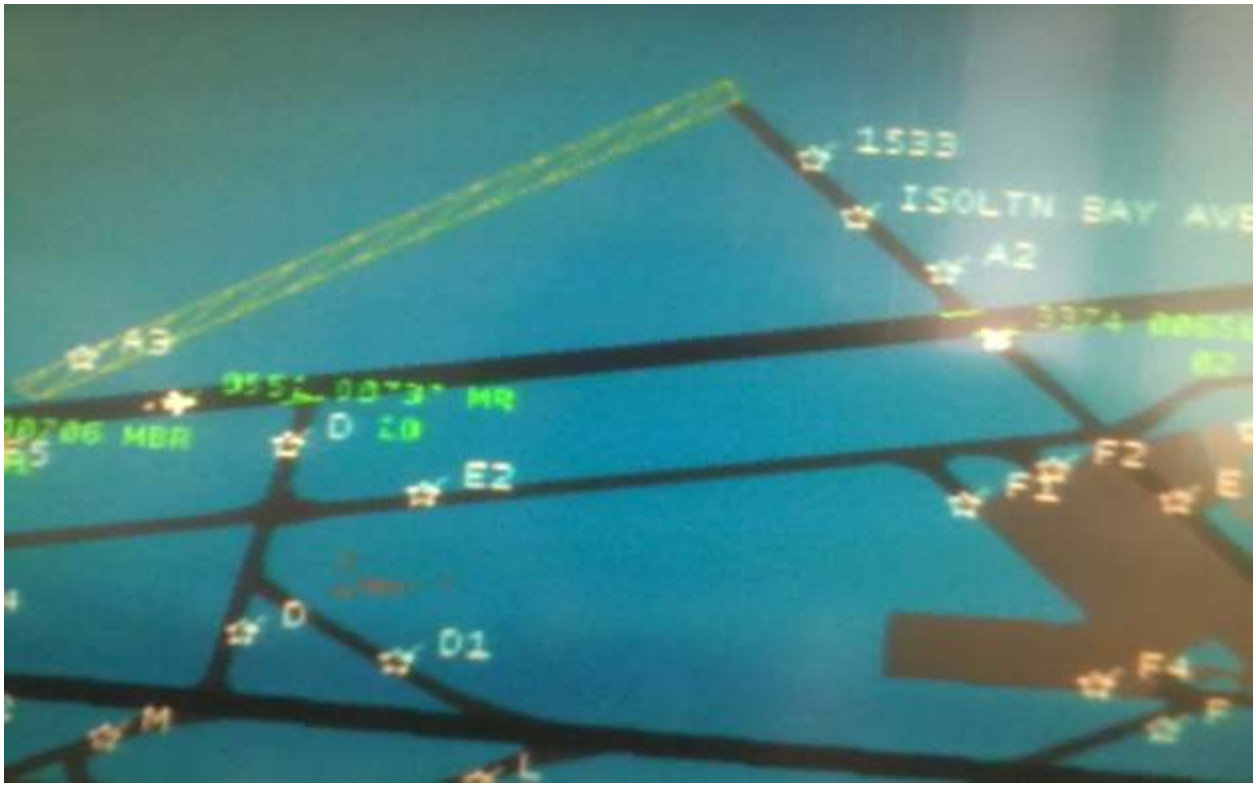
Airports authority of India (AAI) is a public sector undertaking under the Ministry of Civil Aviation.It was formed by an Act of Parliament and came into existence on 1st April 1995. AAI provides Air Navigation Services in air space measuring 2.8 million squire nautical miles which cover entire Indian air space. The Air Traffic Services at IGI airport are provided by AAI which includes Aerodrome Control Tower.

1.18 Additional information:

Radar picture of VUBDL (AN 32) IAF aircraft crossing Runway 09 from south to north


1533
ISOLTN BAY AVEL
A2
A3
D
E2
E3
E4E4
D
D1
M2
M
L
M1
L1
P
U
F4
F


1533
ISOLTN BAY
A2
A3
E2
D
D1
M
F2
F1
F4


1533
ISOLTN BAY AVE
A2
A3
E2
F1
F2
D1
F4
M
L


1533
ISOLTN BAY AVBL
A2
A3
E2
F1
F2
D1
F4
M
L

2. ANALYSIS

GoAir A320 aircraft VT-GOK was on its schedule flight GOW 336 from Delhi to Mumbai on 2nd Oct., 2013 and was in sequence for Take off from Delhi around 09:02:17. Around the same time an IAF aircraft registration VU-DBL landed at Delhi on its flight sector Chandigarh- Delhi.

Runway 28 of Delhi airport at this time was restricted due to VVIP flight VIP 1 aircraft and the aircraft movements from apron 1 were delayed on this account.

The VVIP aircraft departed at 08:51:00 UTC and immediately thereafter all three runway simultaneous operations started with a view to expedite the pending departures. Runway 09 was only used only for Taxi prior to this time and was hence in control of SMC (N). At this time it was handed over to ATC TWR as made active for operations.

The IAF aircraft landed on Runway 10 at 09:02:17 and vacated the active Rwy via TWY "F" . The aircraft was given the taxi clearance to taxi via TWY "E", to hold short of "E2".

While VU-DBL was on its assigned taxi way the three Rwy operation had commenced and Rwy 09 was handed over to the ATC tower for scheduling arrivals / departures.

VU-DBL reported to SMC (N) at 09:05:23 its position on "E2" and requested further clearance. It was cleared by SMC (N) to cross Rwy 09 from E2 to A2. The SMC (N) had lost situational awareness for a short duration at this stage as he forgot to realize that Rwy 09 has already been handed over to the ATC tower and the Rwy is active in operations. SMC (N) at this time was handling heavy traffic density. Such congestions and delays were on account of the VVIP movement and the traffic movement restrictions imposed thereby. At this time when VU-DBL was reporting at taxi way E2, SMC (N) controller was engaged in resolving the conflict between arrival aircraft SEJ 869 and another aircraft SEJ 2384. It is reported in the statement of SMC (N) that traffic Hand (Attendant) was not available in Control Tower and SMC Controller was to collect Flight Progress Strips personally from Clearance Delivery Controller position, which is behind and difficult to access.

The SMC (N) controller realized the oversight and called VU-DBL at 09:06:20 to stop and hold position. VU-DBL did not respond to this call. A second call was made 09:06:23 immediately thereafter to VU-DBL to hold position and there was again no response. The SMC (N) controller physically informed the ATC tower controller to cancel departure clearance for VT-GOK as an aircraft is crossing the Runway. GoAir flight GOW 336 aircraft VT-GOK at this stage was on its take off roll on Rwy 09 and on the advice of ATC tower rejected the take off immediately at 09:06:32. The reject of the aircraft take off was initiated at around 100 knots.

Subsequent to the occurrence IAF aircraft VUDBL made transmissions to the SMC (N) on time 09:06:41 and again at 09:07:22 stating thereby their position on A2 and In Contact with Base Ops. SMC(N) however did not advice them of their RT blackout and a dangerous situation so created. The incident was neither perceived nor reported by the IAF air crew and hence no internal enquiry by the IAF was initiated. The CVR recording of the IAF aircraft was also not available as the aircraft continued in its operation on subsequent schedules.

Following are the sequence of events for the subject occurrence

TIME (UTC)	EVENTS
090217	VUDBL after vacating RWY10 came in contact with SMC (North) Controller. It was given taxi instructions to taxi via TWY "E" and hold short of "E2".
090328	SMC (North) Controller released GOW336 to TWR (North) Controller at Holding Point on TWY "E3".
090521	VUDBL reported short of "E2".
090532	SMC (North) Controller gave it taxi via E, Cross RWY27 and Dumbbell 15/33. VUDBL read back the clearance.
090618	46 seconds after the clearance to cross RWY, SMC (North) Controller transmitted VBL to Hold Position.
090621	Within 3 Seconds, SMC (North) Controller again transmitted VBL "VBL I say again, Hold Position". SMC (North) Controller then shouted to Tower (North) Controller to stop departure.
090630	Tower (North) Controller stopped the departure, GOW336, which had just commenced the takeoff roll.
090639	VBL reported "VBL on A2 in contact with Base Ops"

The serviceability of the VHF trans receivers on the IAF aircraft VU-DBL was also ascertained and it is inferred that no malfunction of the trans-receivers is seen or observed as the aircraft continued in its operation on subsequent assignments. No communication snag of any intermittent nature is also reported for these trans-receivers.

This is acknowledged that VU-DBL was given the positive clearance to cross Rwy 09 unambiguously and that the aircraft was taxying in compliance to the provided clearance. This is also noted that the information about Rwy 09 having been made active for operation was not available to the crew of VU-DBL. The ATIS broad cast was to suggest mix mode operation Rwy 10 and Rwy 11. The update to ATIS was not available till the time of occurrence.

3 CONCLUSIONS:

3.1 Findings

1. Delhi Airport faced the congestions and delays for the scheduled departures for aircraft departing for apron 1 on account of VVIP movement which restricted the movements for some time.
2. After the departure of the VVIP aircraft and with a view to decongest the pending traffic simultaneous operation or all three Rwy was resorted to and in this process Rwy 09 which was previously used for aircraft taxi was made operational.
3. Rwy 09 control prior to its activation was with SMC (N) controller and when activated the control is shifted to the TWR controller.

4. At this moment when such transition of the Rwy is being implemented there is heavy density traffic and procedures are to be executed expeditiously. The arguments and some undesired transmissions are also reported which over loaded the frequency. It is also noted that a conflict between two aircraft SEJ 869 and another aircraft SEJ 2384 was being resolved by the SMC(N) controller at this point in time..
5. The SMC (N) controller cleared VU-DBL till holding point E2 and on acknowledging aircraft at this position VU-DBL was further cleared to cross Rwy 09.
6. The fact that in this span of time Rwy 09 control was handed over to the TWR controller and the situation supplemented by the involved work load in such heavy density traffic situation, this created the scope for an error to progress.
7. Rwy 09 active status was not updated on the ATIS broad cast and also not communicated to VU-DBL. The situational awareness for the crew of VU-DBL was therefore impaired.
8. It is suggestive from the available information that after obtaining the clearance from SMC (N) controller to cross Rwy 09 VU-DBL was not monitoring SMC (N) frequency 121.75 and were also not keeping a listening watch on the TWR frequency 118.75 MHz. The visual scan of the Rwy in both directions before crossing the same was reportedly conducted by VU-DBL but they failed to identify any aircraft on Rwy in the busy environment of the background.
9. SMC(N) controller acknowledges in his written submission to the committee that in the work pressure situation it was an oversight on his part in allowing a taxing aircraft to cross a Rwy which has just been activated for operation.
10. The situation was reconciled immediately and efforts were initiated to correct the progress of error before that was manifested. In this process the fact that VU-DBL did not monitor the SMC (N) frequency further compounded the situation. Further effort in cancelling the departure for VT-GOK on its take off roll broke the error chain and hence a possible accident avoided.

3.2.1 Probable cause of Incident

a) The SMC (N) controller made the initial error of giving the taxi clearance for arriving aircraft to cross Rwy 09 from E2 to A2 while Rwy 09 by this time was just activated and its first departure was released by the TWR controller.

b) IAF aircraft VU-DBL followed the taxi clearance that was given to him to cross Rwy 09 and while crossing the Rwy No VHF radio of this aircraft were not found tuned to either the SMC(N) frequency 121.75 Mhz or the TWR (N) frequency 118.75 Mhz. It is also acknowledged that information on Rwy 09 having being activated was not available with VU-DBL either by RT or by the ATIS broadcast.

c) The procedure and infrastructural support in handling high density traffic by the Air Traffic Control at Delhi needs improvements. It is reported that support man power to move the flight progress strips from the CLD position were also not available with the SMC (N) controller and he was to move physically between the stations to obtain them. Such distractions and lack of procedures robustness made scope for such errors to creep into the system.

A timely and effective action on part of SMC (N) controller avoided a possible accident.

4 SAFETY RECOMMENDATIONS

1. In the busy environment like of Delhi airport the simultaneous multi Rwy operation and also the changeovers of the Rwys is a likely and anticipated phenomenon. The air traffic control must review the procedures to preclude the chances of a human error in such situation. The processes as in practice as of now need a review.

2. Visual Alert could be created and activated around RWY 09/27 in the ASMGCS when it is active. Any aircraft entering in this area may be shown by enlarged datablock. This will give visual indication to both Tower and SMC Controller. Such effective filters may be inserted in the followed processes to check the progress of error.

3. The infrastructural support that is necessarily for safe and efficient conduct on such work intensive platform should be ensured. The man power allocation and the availability may be reviewed.

4. VU-DBL did not maintain a two way positive communication while in control with the surface movement controller. An RT blackout for this short duration may contribute seriously to an error chain. IAF may like to review the procedures in practice generically or any deviation from their SOP as observed in the subject incident.

5. Efforts may be initiated by all stakeholders to ensure RT discipline for safe aircraft operation. Airports Authority of India may initiate suitable action in this regard.

Place : NEW DELHI

Date: 26th MARCH 2014

Vijay Ginotra **N.S Dagar**

(Committee of Inquiry appointed by Ministry of Civil Aviation vide notification AV.15013/06/2013-DG dated 11th Nov 2013)