



**DIRECTORATE GENERAL OF CIVIL AVIATION**

**INVESTIGATION REPORT ON SERIUOS INCIDENT TO M/s GLOBAL  
VECTRA HELICORP LTD. AS350B3E HELICOPTER VT-RRH AT  
PANCHTARNI ON 10.07.2023**

**GOVERNMENT OF INDIA, O/o DIRECTOR GENERAL OF CIVILAVIATION,  
OPP. SAFDARJUNG AIRPORT, NEW DELHI-110003**

## **Foreword**

*In accordance with Annex 13 to the Convention on International Civil Aviation Organization (ICAO) and Rule 13(1) of Aircraft (Investigation of Accidents and Incidents), Rules 2017, the sole objective of the investigation of an incident shall be the prevention of accidents and incidents 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, etc. The opportunity was accorded to all the parties to participate during the course of investigation. Consequently, the use of this report for any purpose other than for the prevention of future accidents or incidents could lead to erroneous interpretations.*

<b>INDEX</b>		
<b>Sl. No</b>	<b>Contents</b>	<b>Page No.</b>
	General Information	1
	Synopsis	2
1.0	Factual Information	2
1.1	History of the Flight	2
1.2	Injuries to Persons	4
1.3	Damage to Aircraft	4
1.4	Other Damage	6
1.5	Personal Information	6
1.6	Helicopter Information	7
1.7	Meteorological Information	8
1.8	Aids to Navigation	8
1.9	Communication	9
1.10	Aerodrome Information	10
1.11	Flight Recorders	10
1.12	Wreckage and Impact Information	10
1.13	Medical and Pathological Information	10
1.14	Fire	10
1.15	Survival Aspects	10
1.16	Tests and Research	10
1.17	Organizational & Management Information	10
1.18	Additional Information	11
1.19	Useful and Effective Investigation Techniques	12
2	Analysis	
2.1	Operational Aspects	12
2.2	Engineering Aspects	13
2.3	Weather Aspects	13
3	Conclusion	
3.1	Findings	13
3.2	Probable Causes	14
4	Safety Recommendations	15

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HELICORP LTD. AS350B3E HELICOPTER VT-RRH AT PANCHTARNI ON  
10.07.2023**

1	Aircraft	Type	AS350B3E
		Nationality	Indian
		Registration	VT-RRH
2	Owner		M/s Global Vectra Helicorp Ltd.
	Operator		
3	Pilot – in –Command		Commercial Pilot License (Helicopter)
	Extent of injuries		Nil
4	Date & Time of Incident		10.07.2023 at 1042 hrs IST Approx
5	Place of Incident		Panchtarni helipad
6	Last point of Departure		Neelgrath Helipad
7	Intended place of landing		Panchtarni Helipad
8	No. of Passengers on board		Five (05)
9	Type of Operation		Commercial (Pilgrim operation)
10	Phase of Operation		Landing
11	Type of Incident		Abnormal Runway Contact (Hard Landing)

(All timings in the report are in IST or else specifically mentioned)

## **SYNOPSIS:**

On 10.07.2023 M/s Global Vectra Helicorp Ltd. AS350B3E helicopter VT-RRH was scheduled to operate Neelgrath-Panchtarni-Neelgrath. Helicopter was released for carrying out flying operation after required inspection. Pilot in Command (PIC) accepted the helicopter after maintenance inspection. Helicopter took off for its first flight of the day at 0650 hrs IST. PIC completed three sorties of 08 landing and fuel was uplifted for the next sortie at Neelgrath. Helicopter again took off for Panchtarni at 1032 Hrs IST and flew uneventfully. During landing at Panchtarni helipad, the PIC experienced winds and subsequently sink. PIC could not control the helicopter and landed on helipad surface with bounce, resulted in the hard landing.

Director General of Civil Aviation instituted the investigation by appointing Investigator-in-Charge under Rule 13(1) of The Aircraft (Investigation of Accidents and Incidents) Rules 2017. During investigation it was found that;

The probable cause of the incident is attributed to that, the PIC was maintaining a high rate of closure and low collective pitch setting on final approach. On entering the helipad the collective pitch was raised rapidly for carrying out the landing. Consequently the cautionary audio gong for likely power exceedance was heard by the PIC. On hearing the audio gong the PIC rapidly lowered collective pitch, helicopter landed on helipad with high vertical acceleration and bounced which eventually resulted into a hard landing.

The PIC's incorrect assessment of winds before landing is a contributory factor to the incident.

## **1. FACTUAL INFORMATION:**

### **1.1 History of Flight:**

On 10.07.2023 M/s Global Vectra Helicorp Ltd. AS350B3E helicopter VT-RRH was scheduled to operate Neelgrath-Panchtarni-Neelgrath. Before First Flight inspection

was carried out by AME and helicopter was released to the PIC for carrying out the shuttle services for Sri Amarnath Yatra. Before the flight, the PIC underwent Pre-Flight Breath Analyzer Test and same was negative. The PIC accepted the helicopter and carried out pre-flight inspection. Helicopter took off at 0650 hrs IST for first flight. First three sorties were flown with 08 landings in each sortie (04 landing at Neelgrath and 04 landings at Panchtarni). A total of 24 landings were carried out by the PIC. In between helicopter was switched off 02 times for refueling and turn around inspection was carried out by the engineer. After completion of third sorties helicopter was again switched off third time for refueling. 80 litres of fuel was uplifted at Neelgrath and total fuel onboard after uplifting was 225 litres before the fourth sortie. After completion of refueling, helicopter resumed the pilgrimage operations. 05 passengers were boarded and helicopter takeoff weight was within limits.

The details of sortie is as under:

<b>From</b>	<b>To</b>	<b>Takeoff Time (Hrs IST)</b>	<b>Touchdown time (Hrs IST)</b>	<b>Total Landings</b>
Neelgrath-Panchtarni-Neelgrath		0650	0740	8
Neelgrath-Panchtarni-Neelgrath		0805	0855	8
Neelgrath-Panchtarni-Neelgrath		0920	1010	8
Neelgrath-Panchtarni-Neelgrath		1032	1042	1 (Incident flight)

Helicopter took off at 1032 hrs IST and Enroute flight from Neelgrath to Panchtarni was uneventful. While entering into the valley, crew experienced tailwind which was not favorable for landing hence he did not carry out straight approach to the helipad, instead he carried out reciprocal approach for helipad 1.

As per the crew, during finals he experienced sudden sink probably due to winds. The PIC was maintaining a high rate of descent on approach and on entering the helipad

the collective pitch was raised rapidly for carrying out the landing, consequently the cautionary audio gong for likely power exceedance was heard by the PIC, thereafter aircraft landed hard on the helipad and bounced.

All the occupants on board the helicopter escaped unhurt. There was no fire post landing.

## 1.2 Injuries to Persons:

Injuries	Crew	Passengers	Other
Fatal	Nil	Nil	Nil
Serious	Nil	Nil	Nil
Minor/ None	01	05	

## 1.3 Damage to Aircraft:

Following damage was assessed on site:

- Skin folding and damage on the tail boom near to the tail boom to fuselage junction attachment.
- Dents on the main fuselage LH side near to tail boom to fuselage junction attachment.
- Slight noise from tail rotor drive shaft bearing No. 4 during rotation of main and tail rotor drive system.
- Rub marks on tail skid due to rubbing on ground.
- Slight oil on transmission deck below MGB to Engine coupling housing.

Tail booms seems bent slightly downward. However tail boom to fuselage attachment bolts are secure and intact.

M/s Airbus Helicopters has recommended following actions to be carried out by M/s M/s Global Vectra Helicorp Ltd.

Parts to be changed	Parts to be checked	Parts to be repaired
Right Window fairing	LH and RH Aft beam	Tail Boom rear Cowling
Reinforcement shims	LH and RH Skids	Rear left door
LH Aft skin	Forward, Tube Crossbar	

left skin of the intermediate fuselage	Aft, Tube Crossbar
Tail Boom Assembly	LH, RH Landing gear shock absorbers



*Fig-1: Damage at Tail boom to fuselage junction*



*Fig 2*





*Fig 3: Abnormal contact of helicopter with the helipad surface*

#### **1.4 Other Damages: Nil**

#### **1.5 Personnel Information:**

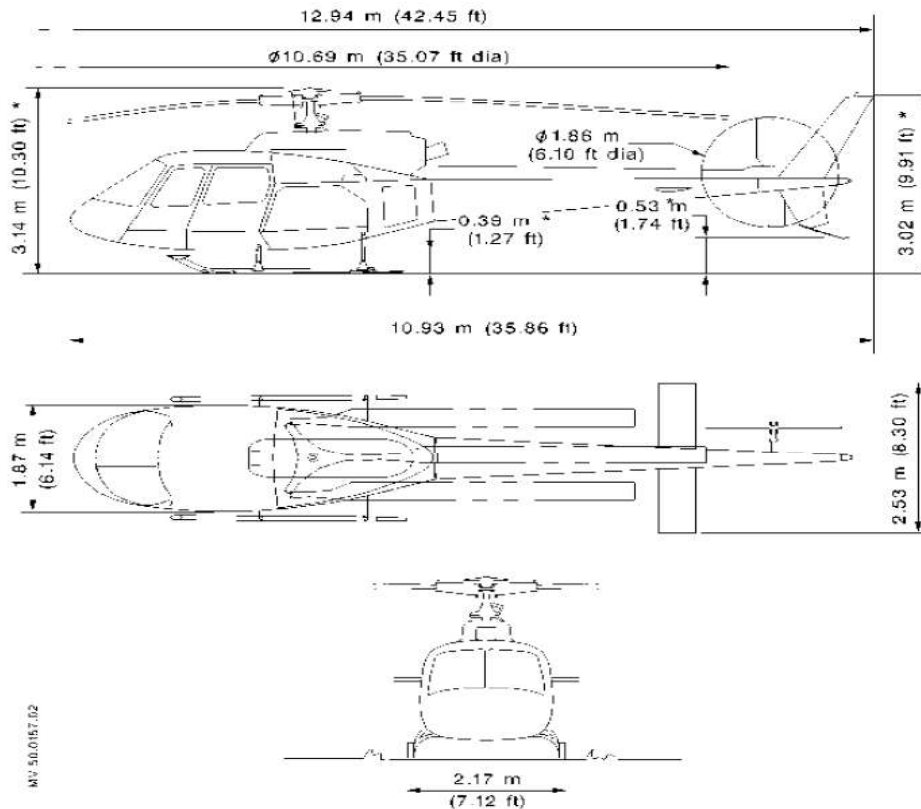
##### **1.5.1 Pilot-in-Command:**

Age	36
License	CPL-H
Date of issue	04.08.2018
Valid upto	04.08.2023
Category	CPL
Class	Helicopter
Date of Class 1 Medical Exam	21.06.2023
Date of issue of FRTOL License	05.08.2018
FRTOL Valid upto	04.08.2023
Endorsement as PIC	AS350/ EC130, Bell 206
Total Flying Experience	1927:32 hrs
On Type experience	414:22hrs
PIC on type Experience	393:45 hrs

Experience during last one year	411:45 hrs
Experience during last 180 days	252:10 hrs
Experience during last 90 days	178:10 hrs
Experience during last 30 days	49:20 hrs
Experience during last 07 days	15:45 hrs
Experience during last 24 hours	05:00 hrs
Last PPC done on	24.06.2023
Last hill check carried out on (10000ft and above)	24.04.2023

### 1.6 Helicopter Information:

Helicopter Manufacturer	Airbus Helicopters, France
Manufacturer's design	Airbus Helicopters, AS350B3E
Aircraft Registration	VT-RRH
Aircraft S.No	8974
Year Of Manufacture	2021
ARC Issue date	08.12.2022
Engine	Turbomeca Arriel 2D
Engine Serial number	53616
600hrs/ 24 months inspection	21.06.2023
1200hrs/ 48 months inspection	15.01.2023
Total Airframe Hours	1627:40hrs (including incident flight)
Total Helicopters landing	7364(including incident flight)



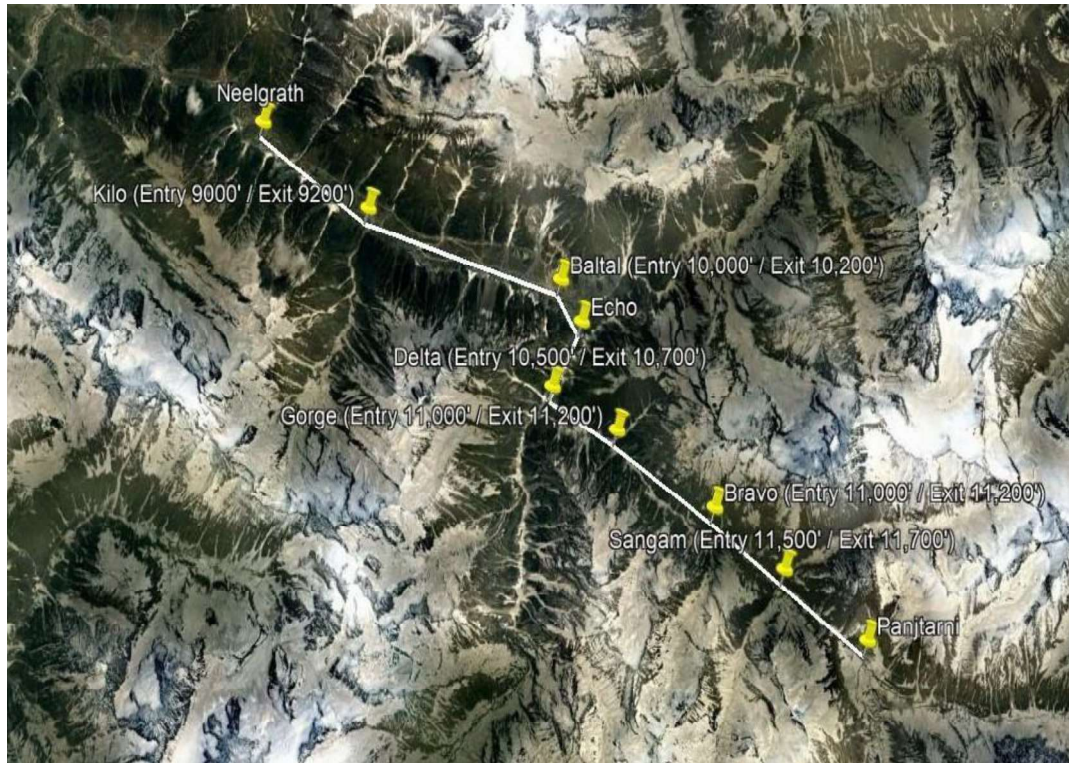
### 1.7 Meteorological Information:

The Weather observed on the day was Clear Skies with visibility more than 5 Km.

### 1.8 Aids to Navigation:

The onward flying route is Neelgrath – Baltal – Domail – Barari – Sangam – Panchtarni. As such there are no navigational aids available enroute. The flying time for this route is approximately 08 minutes. After take-off from Neelgrath helipad helicopter have to start climbing visually on regional QNH along the valley to Baltal and further follow the route thereafter descend visually for Panchtarni helipad.

The reporting points will be as under:



**Neelgrath - Panchtarni (all heights plus 200' on return route)**

- |        |        |   |   |
|--------|--------|---|---|
| (i)    | Kilo   | - | Over Kilo Ht 9000'.                                   |
| (ii)   | Baltal | - | Over the helipad 10,000'.                             |
| (iii)  | Echo   | - | Over Echo Entering valley.                            |
| (iv)   | Delta  | - | Abeam Village Domail ,10,500'.                        |
| (v)    | Gorge  | - | Over Gorge, 11,000'.                                  |
| (vi)   | Bravo  | - | Abeam Barari, 11,000'.                                |
| (vii)  | Sangam | - | Over Sangam, 11500'.                                  |
| (viii) | Papa   | - | Approaching Papa, get visual with Panchtarni helipad. |

### **1.9 Communication:**

As per the requirement of Operation Circular 02 of 2023 on "Conduct of Helicopter Pilgrim Operation", Helicopter Operators will maintain one VHF set each at Neelgrath / Pahalgam for monitoring of operations. RT calls at designated reporting points and visual contact between crossings helicopters will be mandatory. The

Main and Alternate frequencies will be maintained in consultation with ATC Srinagar.

The crew operating was following the communication procedures mentioned in aforesaid circular. There was always two way communication between helicopter and ground station.

**1.10 Aerodrome Information:**

Not applicable

**1.11 Flight Recorders:**

Helicopter is not fitted with any flight recorders nor required in this helicopter as per the regulations.

**1.12 Wreckage & Impact Information:**

Helicopter sustained impact while landing at Panchtarni, however there was no disintegration of any part.

**1.13 Medical & Pathological Information:**

Crew underwent preflight breath analyzer test prior to operating the flight and same was found negative.

**1.14 Fire:**

There was no pre and post impact fire during the incident.

**1.15 Survival aspects:** The Incident was survivable.

**1.16 Test and Research:**

Nil

**1.17 Organizational & Management Information:**

M/s Global Vectra Helicorp Ltd. is a Non-Scheduled operator with AOP Number

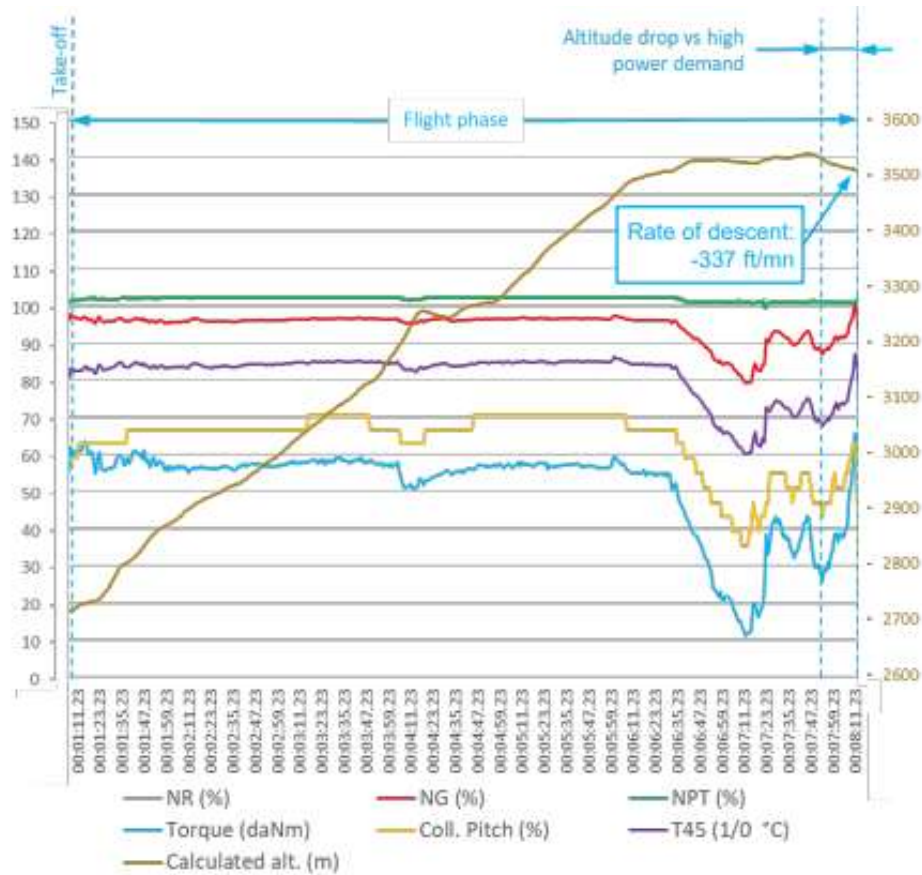
08/1998. M/s Global Vectra Helicorp Ltd. is having mixed fleet of helicopter which includes Bell 412EP, Agusta 139, Agusta 169, AS350B3, EC 130 T2 and AS350B3E.

The organization is headed by Accountable Manager and having approved post holders. The organization is engaged in both offshore and onshore helicopter operation including hill flying.

#### **1.18 Additional Information:**

Helicopter is not installed with DFDR, however the Engine data was downloaded and analyzed by the engine manufacturer and following are the salient observations:

- There seems to be no fault recorded nor over limit recorded during the last flight.
- The behavior of TRQ, N1, T45 seems to be consistent during the flight.
- Oil and fuel filter pressure seems to be consistent with the N1 variations all over the flight.
- The flight phase lasted 7mn 15sec, during which all the engine parameters reacted in synchronicity with the power demands. No discrepancy messages and no Contexts were recorded and the NR speed was maintained at nominal value.
- The aircraft's altitude dropped in the last 30 seconds of the flight with an estimated rate of descent between -200ft/mn and -337 ft/mn, with the latter just one second before touch-down. In the last 4 seconds, the engine's power increased 160 kW to reach 416kW.



### 1.19 Useful and Effective Techniques: Nil

## 2. ANALYSIS:

### Operational Aspect:

On 10.07.2023 M/s Global Vectra Helicorp Ltd. AS350B3E helicopter VT-RRH was scheduled to operate Neelgrath-Panchtarni-Neelgrath. PIC started the helicopter at 0645 Hrs IST and took off for his first flight of the day at 0650Hrs IST from Neelgrath. 03 sorties were carried out and in between these sorties helicopter was switched off for fuel upliftment.

After completion of refueling at Neelgrath, helicopter again started for resuming the pilgrimage operations. There were 05 passengers on board the helicopter and helicopter takeoff weight was within limits. Helicopter took off at 1032 hrs IST and Enroute flight from Neelgrath to Panchtarni was uneventful. While entering into the valley, crew experienced tailwind which was not favorable for landing hence PIC did not carry out straight approach to the helipad, instead PIC carried out reciprocal approach for helipad 1.

The PIC was maintaining a high rate of closure and low collective pitch setting on approach, and on entering the helipad the collective pitch was raised rapidly for carrying out the landing. This caused the cautionary audio gong for likely power exceedance to come on, and same was heard by the PIC. Thereafter PIC rapidly lowered collective pitch resulting into a bounce and hard landing.

Although gong was heard by the PIC on his headset but there was no exceedance recorded for exceedance of the engine parameters, as verified by the investigation team from VEMD (Vehicle and Engine Multifunction Display). Helicopter touched down in the helipad with high rate of descent which resulted into hard landing and bounce thereafter.

Crew could not assess the situation correctly and continued the landing despite being unstable during final approach which eventually resulted into hard landing.

**Engineering aspect:** Helicopter was airworthy and aircraft maintenance was not a factor to the incident.

**Weather aspect:** Weather was clear with visibility more than 5KM. Pilot during his statement to investigation team reported winds during the approach into valley, however crew could have assessed the winds appropriately before landing.

### 3. CONCLUSION:

#### 3.1 Findings:

3.1.1 Helicopter VT-RRH was having valid C of A and valid ARC.



- 3.1.2 Crew License was valid on the day of serious incident.
- 3.1.3 Helicopter took off for carrying out pilgrim operation from Neelgrath-Panchtarni- Neelgrath at about 1032hrs IST with 05 passengers onboard the helicopter. The helicopter AUW was within the limits.
- 3.1.4 While entering into the valley, crew experienced tailwind which was not favorable for landing hence he did not carry out straight approach to the helipad, instead he carried out reciprocal approach for helipad 1.
- 3.1.5 The PIC maintained a high rate of closure and low collective pitch setting on approach, and on entering the helipad the collective pitch was raised rapidly for carrying out the touchdown. Consequently the cautionary audio gong for likely power exceedance was heard by the PIC. Thereafter PIC rapidly lowered collective pitch resulting into a bounce and hard landing.
- 3.1.6 There was no exceedance in the engine parameters as verified from VEMD.
- 3.1.7 Crew could not assess the situation correctly and continued landing despite of high rate of closure during the final approach and landing.
- 3.1.8 Aircraft touched down on the helipad surface and bounced which resulted in to the hard landing.
- 3.1.9 There was no pre/ post landing fire and all the passengers escaped unhurt from the helicopter.
- 3.1.10 Helicopter was secured and further flying operation was suspended on the involved helicopter.

### **3.2 Probable Cause:**

The probable cause of the incident is attributed to that, the PIC was maintaining a high rate of closure and low collective pitch setting on final approach. On entering the helipad the collective pitch was raised rapidly for carrying out the landing. Consequently the cautionary audio gong for likely power exceedance was heard by the PIC. On hearing the audio gong the PIC rapidly lowered collective pitch, helicopter landed on helipad with high vertical acceleration and bounced which eventually

resulted into a hard landing.

The PIC's incorrect assessment of winds before landing is a contributory factor to the incident.

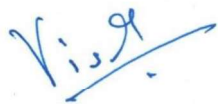
#### **4. Safety Recommendations:**

**4.1** M/s Global Vectra Helicorp Pvt. Ltd. should sensitize their crew towards :-

**4.1.1** Proper approach speed management especially at high altitude helipads.

**4.1.2** Proper handling of recovery actions / go-around decisions.

**4.1.3** Adequate knowledge of power limitations and exceedance parameters.



Vishal Choudhary

SFOI, Member to Investigation,  
VT-RRH



Shashi Paul

Deputy Director Air Safety &  
IIC, VT-RRH