

**FINAL INVESTIGATION REPORT ON SERIOUS INCIDENT TO TB-20 AIRCRAFT VT-EMG OF M/S INDIRA GANDHI RASHTRIYA UDAN ACADEMY,RAEBARELI AT FURSATGANJ AIRFIELD ON 08.04.2008**

1.	Aircraft Type	Trinidad TB-20
2.	Manufacturer	Socata Groupe Aeropatiale, France
3.	Registration	VT-EMG, A/C S/N - 703
4.	Operator	IGRUA, Fursatganj, Rae Bareli, U.P.
5.	Owner	IGRUA, Fursatganj, Rae Bareli, U.P.
6.	Type of Operation	Local Flying
7.	Place of Incident	Fursatganj Airfield
8.	Time of Incident	1508 hrs. (IST), 08.04.2008
9.	Passengers	None
10.	Injuries	None
11.	Flight Crew: PIC	One trainee pilot SPL No.IGRUA-163 (A)
12.	Phase of Flight	Landing

**SYNOPSIS:**

The TB-20 aircraft VT-EMG belonging to M/s Indira Gandhi Rashtriya Udan Academy, Fursatganj was operating circuit flying (local) on 08.04.08 at Fursatganj Airfield, Rai Bareli, UP, with trainee Pilot, Flt. Cdt. SPL-IGRUA 163(A). The aircraft took-off at 1502 Hrs from R/W 27 and after reporting normal position asked for the landing Clearance. The aircraft was cleared for landing on R/W 27, visual Approach and wind information passed by ATC Fursatgunj was 310 / 11 knots. The landing was Normal at 1508 hrs IST. Soon after landing the aircraft swung to the left vigorously and stopped near the fencing after hitting number of trees. Safety Services were immediately informed and reached the site. The Pilot came out of the aircraft unhurt. The aircraft received substantial damages. There was no Fire.

**1. FACTUAL INFORMATION:**

1.1 History of Flight:

TB-20 aircraft VT-EMG belonging to M/S Indira Gandhi Rashtriya Udan Academy, Fursatganj was operating circuit flying on 08.04.08 at Fursatganj Airfield, Rai Bareilly, UP, with trainee pilot SPL-IGRUA 163(A). The aircraft had earlier done 02 sorties by other pilots with 05 landings., on the day of the incident. The total fuel on board before the subject incident flight was 276 litres (200 kgs. Approx. at S.G.=0.725 kg/ltr.). Trainee pilot was authorized for Solo Circuit landing on 08.04.08 on this aircraft in the afternoon. Before the flight, all external checks and internal checks were carried out and were reported normal by trainee pilot. ATC, Fursatganj cleared the aircraft for take-off from R/W 27 and wind information passed to the aircraft were 310 deg. / 11 knots.

The aircraft lifted-off from R/W Surface at 0932 UTC at about 70 knots. On rotation (Un-stick) she experienced the controls were 'Hard'. Immediately after the take-off the aircraft had a tendency to go to the left. Right Rudder was applied and Aileron control was used to bring the aircraft on the Westerly heading. After completion of take-off checks Rudder was Trimmed and Landing Gear was raised. Speed maintained was 95 knots on climb. The rest of the circuit was reported normal. The approach of the aircraft on R/W 27 was Normal. PAPI indications were Two Red Two White (viz. Normal). Speed on approach was 83 to 85 knots. All the checks were complied. ATC gave clearance to land on R/W 27 with winds reported 310 deg./11 knots. Round-off was on normal height on R/W centerline at time 0938 UTC. Engine throttle was cut and the aircraft was brought gradually in landing attitude. The Touch-Down was smooth, on the Main Wheels. As the Nose Wheel touched the ground the aircraft got airborne again and bounced. The throttles were checked to be fully closed. The Control Stick was held – back with force. The aircraft started drifting to the left. Right Rudder was applied however, the aircraft bounced once again. As the aircraft was in the air, the Throttles were opened and the aircraft was attempted to be airborne. Full-right rudder was applied to bring the aircraft towards the right. However, the aircraft swung to the left uncontrollably and went in the 'kucha', rolled and came to a stop after colliding with few trees at the perimeter wire fence, that was after crossing over the dry drain and perimeter airport road. May-Day call was given but avionics did not respond. As soon as the aircraft stopped the pilot Jumped out from the aircraft unhurt. Safety Services were immediately informed and reached the site. The aircraft received substantial damages. There was no Fire.

The incident occurred in day light hours at 0938 UTC and aircraft landed in the cross wind conditions.

**1.2 Injuries to Person :** Nil

**1.3 Damage to Aircraft :** Substantial

The fuselage interior was found almost intact. The firewall partitioning the engine at the nose section was found broken. The wings were not found to be twisted or bent. There were no signs of skin surface bending/denting/cracking /shear. The details of damage are as under:

- a) Due to the massive impact, the engine along with the propeller was ripped off the Engine firewall as the Engine Tubular mount sheared off its attachment and the engine was found lying away from the aircraft in damaged condition. The O- frame i.e. the engine firewall at engine mount attachment points and engine cowlings, both top and bottom, were found torn apart.
- b) Due to the prop strike and subsequent effect of the impact, both the propeller blades were found severely scraped at the tips and were bent in a 'bow' shape.
- c) The Nose Landing Gear was found broken and extensively damaged at the attachment points as well as the nose steering mechanism were found broken and badly damaged.
- d) Front portion of the fuselage structure under the cockpit found badly damaged.
- e) Complete structure of the RH wing including the wing spar was found twisted at the outboard end covering last four ribs.
- f) The LH wing was found torn and the flap and aileron installed at the trailing edge of the wing was found broken and the wing trailing edge section severely damaged. The wing itself got dislodged from the aircraft structure at the outboard section of the wing covering last four ribs, the wing spar and the wing tip were found to have extensive damages.
- g) The empennage section got totally disintegrated from the fuselage. The fuselage skin and frames 7, 8 and 9 were found torn while the tail plane and the fin found sheared off from its attachment points. The stabilizer and the rudder found smashed under the effect of impact. The extent of damage in rear portion of the aircraft is beyond repair.
- h) Inside the cockpit the instruments and radio equipment either got broken or got dislodged from their respective installations.
- i) The LH Flap and the LH Aileron had sheared off the aircraft.

- j) There were various bents & dents & skin tears observed on the fuselage skin and on the wing surfaces.
- k) Almost all the damages were observed to be due to impact with trees before the boundary wire fence. Marks of the aircraft rolling on the grass were also observed. However, there was a patch of delamination & removal of skin of the Nose Cowling under section, which appeared to have been possibly caused due to runway abrasion
- l) All the controls were found free and disconnected from the respective servos / actuators / control surfaces, including all Engine controls. The thrust lever was found fully forward (max), the Prop RPM Lever was at Max RPM position, the Mixture lever was missing from place, the Flap lever was at T/O FLAPS. The H. Stabilizer was Trimmed to T/O position, & the Rudder Pitch was Trimmed Full right (for T/O).
- m) Fuel transfer tubes was found broken after the incident and fuel was found dripping from it.

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

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

Trainee pilot, Age 20 years,

License No. SPL No. IGRUA – 163-A, valid upto 18.04.2012;

FRTOL No.10328 valid upto 17.07.2012;

RTR (Aero) No.11450 valid upto 15.03.2012;

Medical valid upto 10.09.08.

Total Flying done on TB-20 Aircraft: 149.50 hrs.

Total flying on type – Dual- 62.00 hrs & Solo – 87:50 hrs. (Including 53.40 hours of solo cross-country).

#### **1.6 Aircraft Information:**

Socata, France TB-20 aircraft is single engine driven (piston & 2 bladed propeller), low cantilever wing aircraft, entirely made of metal. The engine (aircraft nose mounted) make is Lycoming, type : IO-540-C4 D5D, 06 cylinders rated 250 BHP. Propeller is Hartzell make type: HC-C2YK-IBF/F8477-4, variable pitch constant speed type. Wing Flaps type – recoil and slotted. They are retracted or extended by positioning to the desired flap deflection position. The flap control located on the pedestal, on RH side of the switch breakers. The Positions of the flap are Up( 0 Deg), T/O( 10 Deg.) and Landing ( 40

Deg.) detents on flap lever. It has a Tricycle retractable landing gears with Nose gear telescopic, wheel is interconnected with rudder pedals for steering. Landing gear extension or retraction is accomplished by actuators powered by and electrically driven hydraulic power pack i.e. electro-hydraulic pump. Aircraft Braking is achieved by wheel Brakes, differential hydraulic disc type brakes. Parking brake is also available.

VT-EMG TB-20 Aircraft bearing a manufacturer S/No. 703 was manufactured in year 1986 and was having valid Certificate of Airworthiness & Certificate of Registration at the time of incident. As per C of A the aircraft is categorized in Normal Passenger Category and the Minimum crew to fly the aircraft required is one. The Max All up weight authorized was 1400 kgs.

As per the aircraft weight schedule, last weighing done on 25.01.2005, revealed the aircraft empty weight as 880.80 kgs and the maximum All-Up weight (AUW) as 1400.00 kgs with the CG (Centre of Gravity) position at 0.984 mtrs Aft of Datum (equivalent to 13.85 % MAC). The CG Range is 0.913 mtrs to 1.205 mtrs. Aft of Datum (equivalent to 10.983 to 31.967 % MAC), as per POH.

The maximum AUW at the time of take off was 1158 kgs. Approx. (As per the aircraft weight schedule the empty weight includes the oil & unusable fuel; the weight of the cockpit crew is considered as 77 kgs and fuel weight as 200 kgs).

The aircraft had done TSN 9655.35 hrs./19327 landings & 292:40 hrs/670 landings since renewal of C of A till the time of incident. The aircraft is fitted with an Engine S/N L-26553-48 A, which had done TSN 1691:30 hrs. / TSO – 451:30 hrs. The Propeller S/N CH-29254, TSN-5115:25 hrs. / 1202:25 hrs. TSO. The Aircraft had done 52 hrs since last major inspection. The aircraft had done 2:20 Hrs. since last minor Inspection i.e. 50 hrs. / 3 months Inspection Schedule at 9653:15 hrs. TSN, on 08.04.2008.

Last major Test Flight was carried out, for C of A renewal, on 10.7.2007. The total weight of the aircraft was 1387.15 kgs and CG position calculated was 1.12 mtrs. Aft of Datum. The pilot's observations for the control Rigging was satisfactory. Both ailerons

were at Neutral position. Banking and Yawing tendency were reported satisfactory. The Auto-Pilot pre-flight test was satisfactory. The Auto-Pilot Mode Select for Heading, Altitude, Up/Down, Navigation and Approach Modes were found to be satisfactory. The Climb Speed, the Rate of Climb and the Stalling Speeds at various Flap settings were found satisfactory.

The last flight undertaken on this aircraft was on 30.3.2008, by Pilot Instructor, IGRUA and there was “Nil” snag reported on Pilot’s defects. There was no Control Surface Rigging work done on the aircraft after the C of A renewal and before the subject incident. There was “Nil” Snag reported in the Flight Report Book during the last 15 days.

#### **1.7 Meteorological Information:**

One hourly Metar is issued by IMD, Met Office, Fursatganj. The Met report by Fursatganj Airfield on 08.04.08, issued at 0900 UTC, indicates surface winds 320 deg / 15 knots, visibility 07 kms. Cloud few 20000 feet, Temperature 35 deg C DP 11 deg C, QNH 1007 Hpa, QFE 995 Hpa. The Met report issued at time 0800 UTC indicated Surface Winds of 340 deg / 15 knots. The current / information read from wind instruments passed by ATC Fursatganj on R/T to the aircraft during take-off clearance and landing clearance, at about 0932 & 0938 UTC respectively were surface Winds 310 deg / 11 knots. The runway in use was 27.

Winds were changing in speed/direction before and at the time of incident and aircraft landed in crosswind conditions on R/W 27.

#### **1.8 Aids to Navigation:**

Non Instrument rated Flight, VFR, PAPI aids were available.

#### **1.9 Communication:**

The aircraft was in contact with ATC, Fursatganj on VHF R/ T during the conduct of flight.

#### **1.10 Aerodrome Information:**

Fursatganj Aerodrome is maintained by IGRUA Academy. It has only one Runway 09/27 which is approx. 8000 feet long. Runway surface is made from tar / asphalt. The runway condition during the incident was 'Dry'. The Fursatganj airfield is equipped with ILS, DVOR, DME facilities for the IGRUA aircraft operations.

#### **1.11 Flight Recorders:**

Not applicable.

#### **1.12 Wreckage & Impact Information:**

Light and uniform braking marks of both the tires were observed on the runway, beginning from close to the centerline towards the left side of RWY 27, at approx. 1500 feet after the Touch Down Zone. The brake marks initially went to the left and then to the right and again to the left on the runway. Thereafter there were no marks for some distance and then there were 02 deep cut marks on the runway from the propeller blades impact. There was also 01 abrasion mark observed close to the two propeller cut marks on the runway. The marks were at approx. 2500 feet elapsed distance of RWY 27, on the left side of the centerline close to the runway edge. The abrasion mark was probably due to the Nose Cowl under section rubbing against the runway surface after the propeller blades strikes the r/w surface and got bent. This appeared to have occurred during the landing after the bounce with a nose-down attitude, as the engine power was opened for attempted take-off.

The entire wreckage was confined to the area of impact, where the aircraft came to a stop after colliding with trees just before the airport perimeter wire fence, after crossing over a dry pucca drain and the perimeter road that are inside along the airport boundary. The wreckage was located towards the left side of RWY 27, before the runway middle mark, that is at approx. 3500 feet RWY distance from RWY 27 Touch Down zone (RWY 27 / 09 available length is approx. 8000 feet.). Almost all the damages to the aircraft were observed as a result of collision with trees before the boundary wire fence, where the aircraft came to a stop.

- The impact on the aircraft activated the ELT (Emergency Locator Transmitter). (Note: the ELT design activation load is over 5 G).

- The aircraft magnetic compass heading showed 330 deg.
- The landing gears and all 03 wheels were in position, on ground
- The cockpit / Cabin was intact from inside. The windows were intact.

Flaps ( LH side) were found in full extended position in the aircraft wreckage.

From the wreckage examination it is evident that the aircraft after bounce was in go-around mode executed by the pilot which was indicated by selection of flaps, stabilizer and rudder pitch trim controls for the take-off mode including the engine controls but has not reached the T/O position when the aircraft finally came to halt.

**1.13 Medical & Pathological Information :** N/A

**1.14 Fire :** None

**1.15 Survival Aspects :** The trainee pilot was the sole occupant who survived in the incident.

**1.16 Tests and Research:** Not applicable.

**1.17 Organizational and management information:**

Indira Gandhi Rashtriya Udan Academy was established as an autonomous body in year 1985 with an objective to improve the flying training standards in the Civil Aviation Industry and to impart line oriented flying training of International standards as per ICAO norms. It is located at Fursatganj, Dist. Raibareli, U.P. The Academy is headed by a Director who is assisted by Dept. head of operations, services, finance and HR. The academy is equipped with modern and sophisticated trainer aircraft , flight simulators and audiovisual training aids for imparting effective ground and flying training. It has total fleet of 29 aircraft with 5 TB-20, 6 Zlin, 2 King Air C-90A, 14 Diamond DA-40 aircraft and 2 diamond DA-42 aircraft. Academy has its own airfield equipped with Radio Navigational aids like ILS/VOR & DME , Night landing facilities, Engg. workshop, a flight operation center and refueling station. It has 4 ground instructors with one Chief ground instructor and seven flying instructors with one Chief flying instructor. IGRUA has entered into a management contract with Global Aviation agent –CAE, Canada for service to the nation at par with International Standards.

**1.18 Additional information:**



The Flight Manual of the TB-20 aircraft states the following information:  
Normal Check-List sequence for Approach – Landing:

For final Approach:

IAS- 86 to 92 KIAS; Flaps – T/O Position; L/G-Down; fuel Pump – “On”; Mixture – Full Rich; Propeller – Full Low Pitch; Brakes – check.

For Short Finals:

Flaps – Landing Position; Speed – Standard speed = 73 KIAS; Landing Lights – “on”

Normal check-list sequence for Go-around:

Throttle – Full Throttle (N=2575 RPM); IAS -76 / 81 KIAS; L/G – “Up”,

Retract Flaps to T/O position – them fully ; Climb at 95 KIAS

Normal Check –List sequence for Take-off:

Align Aircraft – set directional; heading;

Set progressively to – Full throttle (N=2575 RPM);

Speeds – Standard Speed at Rotation = 68 KIAS, Speed at Climb Initiation = 75 KIAS

Check-List for landing with Cross Wind:

When landing with a strong cross wind, use minimum Flap setting required for the Landing Distance Available; Although the “Crab” or Combination method of Drift - Correction may be used, the low-wing method (viz. Roll) gives the best control. Maximum Bank Angle close to the ground is 15 degrees; After Touch Down to keep the Nose Wheel on Ground and to hold a straight course using Rudder Pedals.

For flight in turbulent air, Maximum Speed = 140 KIAS, Recommended Speed = 130 KIAS.

As per the IGRUA Standing order issued by Pilot Instructor’s in charge for the local solo training flying requirements mentions that weather minima for solo flying will be VMC:

- Visibility- 5 kms.
- Cloud base- 2000’
- Cross wind component- 15 kts and as per manual 25 kts.

This can be only waived off by the Director/Chief flying instructor/Pilot instructor in charge at their discretion.

**1.19 Useful or effective investigation techniques:** Not Applicable.

## 2. ANALYSIS :

### 2.1 Pilot factor:

The aircraft VT-EMG was operating circuit flying on 08.04.08 at Fursatganj Airfield, Rai Barelli, UP, with trainee Pilot, Flt. Cdt. SPL-IGRUA 163(A). The aircraft had earlier done 05 landings on the day, with no defects reported. For the subject incident sortie, the Pilot was authorized for Solo Circuit landing on 08.04.08 on VT-EMG in the afternoon. All external checks and internal checks were complied and were reported to be normal. The aircraft took-off at 1502 hrs IST, with take off clearance. The surface wind information passed by ATC Fursatganj was 310 / 11 knots. On rotation (Un-stick) she experienced that the controls were 'Hard'. Immediately after the take-off the aircraft had a tendency to go to the left. Right Rudder was applied and Aileron control was used to bring the aircraft on the Westerly heading. After reporting normal position the aircraft asked for Landing Clearance. The aircraft was cleared for landing R/W 27, visual Approach and wind information passed by ATC Fursatganj was 310 / 11 knots. The landing was Normal at 1508 hrs IST. During landing the Pilot had the elevator pulled and the throttle position back (Idle). The aircraft touched down on the main wheels and bounced. The aircraft was drifting to the left so right rudder was reportedly applied. Thereafter the aircraft was attempted to airborne by advancing the throttles (Power increase). However, the aircraft swung to the left uncontrollably and went into the 'kucha', rolled and came to a stop after colliding with few trees at the perimeter wire fence, that was after crossing over the dry drain and perimeter airport road.

As per the IGRUA Standing order issued by Pilot Instructor's in charge for the local solo training flying requirements mentions that weather minima for solo flying will be VMC:

Cross wind component- 15 kts and as per manual 25 kts. and beyond which the flights are to be stopped.

### 2.2 Aircraft factor:

The total fuel on board before the subject incident flight was 276 litres (200 kgs. Approx. at S.G.=0.725 kg/ltr.). There was only one pilot on

board. Thus the maximum AUW at take off was 1158 kgs. Approx. (As per the aircraft weight schedule the empty weight includes the oil & unusable fuel. The weight of the cockpit crew is considered as 77 kgs.

The aircraft weight schedule, last weighing done on 25.01.2005, revealed the aircraft empty weight as 880.80 kgs. And the maximum All-Up weight (AUW) as 1400.00 kgs with the CG (Centre of Gravity) position at 0.984 mtrs Aft of Datum (equivalent to 13.85 % MAC). The CG Range is 0.913 mtrs to 1.205 mtrs. Aft of Datum (equivalent to 10.983 to 31.967 % MAC), as per POH.

The last test Flight was carried out during C of A renewal, on 10.7.2007. The total weight of the aircraft was 1387.15 kgs and CG position calculated was 1.12 mtrs. Aft of Datum. The pilot's observations for the control Rigging was satisfactory. Both ailerons were at Neutral position. Banking and Yawing tendency were reported satisfactory. The Auto-Pilot pre-flight test was satisfactory. The Auto-Pilot Mode Select for Heading, Altitude, Up/Down, Navigation and Approach Modes were found to be satisfactory. The Climb Speed, the Rate of Climb and the Stalling Speeds at various Flap settings were found satisfactory.

The last instructional flight undertaken on this aircraft was on 30.3.2008, by (Pilot Instructor, IGRUA) and there was "Nil" report on Pilot's defects. There was No Control Surface Rigging work done on the aircraft after the C of A and before the subject incident.

### **2.3 Sequence of events**

Pilot stated that during take off, as the aircraft reached 70 knots, on rotation (Un-struck) trainee pilot experienced that the controls were 'Hard'. Immediately after the take-off the aircraft had a tendency to go to the left. Right Rudder was applied and aileron control was used to bring the Aircraft on the Westerly heading. After take-off checks were completed. Rudder was Trimmed and Landing Gear was raised. Speed maintained was 95 knots on climb. The rest of the circuit was reported to be normal.

She further stated that on Top-Of finals the aircraft was on-Profile. Visual Perspective on Approach was Normal. PAPI indications were Two Red Two White (viz. Normal). Speed on approach was 83 to 85

knots. All checks were completed. ATC gave clearance to land with winds reported 310 deg./11 knots. Round-off was on normal height on Centerline. Throttle was cut and the aircraft was brought gradually in landing attitude. The Touch-Down was smooth, on the Main Wheels. As the Nose Wheel touched the ground the aircraft got airborne again and bounced. The throttles were checked to be fully closed. The Control Stick was held – back with force. The aircraft was drifting to the left. Right Rudder was applied. The aircraft bounced once again. As the aircraft was in the air, the Throttles were opened and the aircraft was attempted to be airborne. Full-right rudder was applied to bring the aircraft towards the right. However, the aircraft swung to the left. The aircraft hit the fence and the trees. May-Day call was given but avionics did not respond. As soon as the aircraft stopped the Pilot jumped out and walked away from the aircraft.

During the post incident investigation the flaps were found fully extend condition. This implies that the trainee pilot has used full flaps during landing in cross wind conditions.

The aircraft was serviceable before the incident and no snag was reported by pilots before the incident flight and was having valid C of A. All up weight of the aircraft was 1158 Kgs which is considered to be light as compared to its Max. A.U.W of 1400 kgs and CG normal range is from .9123 metres to 1.205 meters aft of datum. For the AUW of 1158 Kgs the CG works out to be .95 meters aft of datum which is in forward range which were giving the pilot feel of controls hard during take-off.

As mentioned in the TB-20 aircraft pilot operating handbook, Check-List for landing with Cross Wind: When landing with a strong cross wind, use minimum Flap setting required for the Landing Distance Available; Although the “Crab” or Combination method of Drift - Correction may be used, the low-wing method (viz. Roll) gives the best control. Maximum Bank Angle close to the ground is 15 degrees; After Touch Down to keep the Nose Wheel on Ground and to hold a straight course using Rudder Pedals.

The surface wind existing at the time of take-off and landing were 310 / 11 knots thereby making cross winds for R/W 27.

As per the IGRUA Standing order issued by Pilot Instructor's in charge for the local solo training flying requirements mentions that weather minima for solo flying will be VMC with Cross wind component of 15 kts and as per airplane Flight manual the limit for crosswind is 25 kts and beyond which the flights are to be stopped.

Based on the analysis it is evident that at the time of landing the aircraft bounced and the improper bounce recovery technique by the trainee pilot resulted the aircraft going into kutchra with consequential damage to aircraft structure. The existence of cross winds and selection of full flaps during landing contributed to the incident.

### **3. CONCLUSION :**

#### **3.1 Findings:**

- (i)** The trainee pilot had valid license on type with valid medical.
- (ii)** The aircraft had a valid Certificate of Airworthiness and no snag was reported on the aircraft before the incident flight.
- (iii)** Prior to the incident flight aircraft had done 5 landings on the day of incident.
- (iv)** The aircraft had sufficient fuel to undertake the flight.
- (v)** The aircraft took-off, with single student pilot, at 0932 UTC with take-off clearance. The surface wind information passed by ATC Fursatgunj was 310 / 11 knots.
- (vi)** Immediately after take-off the aircraft had a tendency to go to the left . Right rudder was used applied and aileron control used to bring the aircraft on Westerly heading.
- (vii)** The aircraft was cleared for landing RWY 27, visual Approach and surface wind information passed by ATC Fursatgunj was 310 / 11 kts.
- (viii)** Visual Perspective on Approach was Normal PAPI indications were Two Red Two White (viz. Normal). Speed on Approach was 83 -85 knots. All checks were completed. Round-off was on Normal height on Centerline. Throttle was cut and the aircraft was brought gradually in landing attitude.
- (ix)** The Touch-Down was smooth, on the main wheels. As the Nose wheel touched the ground the aircraft got airborne again and bounced. The throttles were fully closed. The Control Stick was

held 'back' with force (Pull-up). The aircraft started drifting to the left, right Rudder was applied. The aircraft bounced once again.

- (x) As the aircraft was in the air, the Throttles were opened and the aircraft was attempted to be airborne. Full-right rudder was applied to bring the aircraft towards the right. However, the aircraft swung to the left and went into kuchha.
- (xi) Light and uniform braking marks of both tires were observed on the runway, beginning from close to the centerline towards the left side of RWY 27, at approx. 1500 feet after the Touch Down Zone. The brake marks initially went to the left and then to the right and again to the left on the runway. Thereafter there were no marks for some distance.
- (xii) There were 02 deep cut marks on the runway from the propeller impact. There was also 01 abrasion mark observed close to the two propeller cut marks on the runway. The marks were at approx. 2500 feet elapsed distance of RWY 27, on the left side of the centerline close to the runway edge.
- (xiii) The abrasion mark was probably due to the Nose Cowl under section rubbing against the runway surface after the propellers were hit and bent. This appeared to have occurred during the landing after the bounce with a nose-down attitude, as the engine power was opened for attempted take-off (Balked Landing).
- (xiv) Almost all the damages to the aircraft were observed as a result of collision with trees before the boundary wire fence, where the aircraft came to a stop.
- (xv) The aircraft before going into kutchha has bounced twice after making contact with R/W surface.
- (xvi) An hourly Metar is issued by the Met Office. The Met report at Fursatganj airfield on 08.4.08, issued at 0900 UTC, states surface winds 320 deg / 15 knots, visibility 07 kms. The Metar issued at 0800 UTC stated Surface Winds of 340 deg / 15 knots. The current / updated weather information, at about 0932 & 0938 UTC, was surface winds 310 deg / 11 knots. Some variability was observed in the wind direction, before & after the incident.
- (xvii) All up weight of the aircraft was 1158 Kgs which is considered to be light as compared to its Max. all up weight of 1400 kgs with Centre of Gravity in the forward range which gave the pilot feel the controls hard during take-off.
- (xviii) Crosswinds were existing at the time of take-off and landing.

- (xix) As per the Flight Manual for Landing in cross winds, use minimum Flap required the Landing Distance Available; Although the “Crab” or Combination method of Drift - Correction may be used, the low-wing method (viz. Roll) gives the best control.
- (xx) As per the IGRUA standing order for the training flight the limits for the Cross wind component is 15 kts and as per airplane Flight manual the limit for crosswind is 25 kts and beyond which the flights are to be stopped.
- xxi) During landing trainee pilot selected full flaps which aggravated the situation in cross winds.
- xxii) While landing the aircraft bounced and the improper bounce recovery technique by the trainee pilot resulted the aircraft going into kutcha with consequential damage to aircraft structure.
- xxiii) The existence of cross winds and selection of full flaps during landing contributed to the incident.

### **3.2 Probable Cause:**

During landing the aircraft bounced and pilot’s improper bounce recovery technique caused the aircraft to go into the kutcha and consequential damage.

Existence of cross winds and selection of wrong setting of flaps was the contributory factor to the incident.

## **4. RECOMMENDATIONS:**

Necessary corrective training to the Student Pilot, as deemed fit.

(M.J.Singh)  
Asstt. Director Air Safety  
Inquiry Officer.

Dated 27.8.2009