FINAL REPORT ON ACCIDENT TO CARVER AVIATION CESSNA-152 AIRCRAFT, VT-ACC, AT BARAMATI ON 14/3/2008.

1. Aircraft

Type : Cessna-152

Nationality : INDIAN

Registration : VT - ACC

2. Owner/ Operator : M/s. Academy of Carver Aviation

3. Pilot – in –Command : Indian PPL Holder

Extent of injuries : Minor

4. Passengers on Board : 01

Extent of injuries : Minor

5. Place of accident : Neera River near village Mekhli Baramati.

Long: 18º 05' N

Lat: 74 º 38' E

6. Date & Time of accident : 14th March, 2008;
0630 UTC Approx.

SUMMARY:

On 14th March 2008, M/s Carver Aviation Cessna-152 aircraft, VT-ACC was engaged in local flying training at Baramati airstrip. The Training flight was authorized for Trainee Pilot holder of Private Pilot Licence (PPL) by the CFI for one hour Solo local general flying. However there was another trainee student pilot on board the aircraft as a passenger.

The aircraft was cleared for take off by local M/s Carver Aviation ATC at around 05:30 UTC to fly north of airfield. After 10 minutes the aircraft reported North of air field and after 20 minutes of flying VT-ACC requested the local ATC permission to proceed toward south of airfield, the request was approved and was asked to maintain altitude 3500ft and report established south of airfield within 5Nm. At around 06:20 UTC, VT-ACC reported established south of airfield maintaining altitude 3500ft and all operations normal. At 06:27 UTC a call was received by the Carver ATC that an aircraft had fallen in the Neera River, near village Mekhli, south of Baramati airstrip. Immediately a call was given on RT to VT-ACC but there was no reply.

1. FACTUAL INFORMATION.

1.1 History of flight

On 14th March 2008, M/s Carver Aviation Cessna-152 aircraft, VT-ACC was engaged in local flying training at Baramati airstrip. The sortie was authorized for Trainee Pilot, holder of PPL No. 6816 by the CFI for one hour local general flying. The student Pilot (PIC) had about 275:15 hour on the type prior to the accident flight.

The aircraft had carried out four sorties since morning uneventfully. The Daily Inspection schedule on the aircraft. VT-ACC, was done by the AME before the first flight. The student flight (PIC) had done one solo sortie earlier in the morning and it was uneventful this was his second sortie. The PIC before going for the flight took one of the student pilot on the flight as a passenger without the knowledge of the CFI or the PII. He infact also did not inform the local Carver ATC that the POB was 2 at the time of take off clearance. The aircraft was cleared for take off by local Carver ATC at around 05:30 UTC and after 10 minutes of flying reported north of airfield within 5Nm and established altitude of 4500ft. After approximately 20 minutes of flying north of airfield, PIC requested local ATC for proceeding towards south of airfield. VT-ACC was asked to maintain altitude 4500ft and crossover overhead and descend to altitude 3500ft and report established south of airfield within 5Nm. At around 06:20 UTC VT-ACC reported established south of airfield maintaining altitude 3500ft and all operations normal. The aircraft was informed by the local ATC to call every 10 minutes to report all operations normal.

At about 06:27 UTC a Telephonic call was received by local ATC from G.M. Administration of Carver Aviation that information received from Baramati Police Station that one Aircraft has fallen in Neera river south of Baramati at Village Mekhli. Immediately a call was given on R/T to VT-ACC as VT-ACC was the only aircraft flying at that time south of Airfield. Finding no response from VT-ACC, ATC asked all the local aircraft in the air to give a call to VT-ACC to know his position but there was no response from VT-ACC. Subsequently G.M. Admin. was informed that most likely it may be M/s Carver Aircraft only. At around 06:30 UTC ATC informed CFI and QCM that their aircraft has met with an accident. All the training aircrafts doing local flying were called back to base. The accident was also informed to Mumbai FIC and Pune ATC.

Both persons on board sustained minor injuries and were admitted to the local hospital for treatment. Both of them were administered First Aid. Tests and X-rays were carried out and once found satisfactory both were discharged from the hospital the next day morning.

The PIC, has stated that, he had taken the student pilot as passenger on the flight since he (PIC) was a PPL holder and had earlier taken permission from PII for carrying a passenger on a flight. However on the day of accident no specific permission was taken from PII to carry the passenger and also it was not authorized by the CFI to carry the passenger. He further mentioned that after they were cleared south of airfield for flying at 3500ft, and after he had established south of airfield he informed local ATC that all operations normal and then he actually started descending from the assigned altitude of 3500ft to do low flying over the river for fun and descended very low and was actually flying around 50 ft above the river. He also stated that since he was flying east, the sun was directly in his eyes and also he had knowledge about the bridge which was about 100ft high over the river but had no knowledge about the high tension electric cables which were at a height of about 50ft before the bridge and running across the river. He further stated that he was only concentrating and looking at the bridge in order to pull the aircraft up over the bridge. As he was flying east and sun was directly into his eyes, sighting the high tension cables was also difficult. He noticed the high tension cables very late and tried to pull the aircraft but it was too late and the high tension cables got entangled in the main landing gear and thereafter the aircraft tail section broke and the aircraft fell into the river in upside down position. The student pilot who was on board the aircraft as passenger had stated that before going on the flight, she had enquired from PIC whether he had taken permission from CFI to take her on board the aircraft, the PIC informed her that he had already taken permission from PII earlier and he could take passenger on board since he was a PPL holder. She also stated that she was not aware that any entry was made in the flight authorization book by the CFI as the PIC informed her that permission was already there.

Eyewitness informed that two persons on the bridge after seeing the aircraft falling in the river immediately jumped into the river and rescued both the occupants. Due to power cut at that time there was no current in the high tension electric cables. The local villagers immediately informed the police about the accident and the police within few minutes informed the M/s Carver Academy about the accident.

PII has stated that he had not given any such permission to PIC or to any of the student pilot for carrying a passenger during the training flight without specific authorization.

The CFI also stated that he had authorized PIC for one hour of Solo local general flying and he was not even aware that there was another student pilot on board the aircraft as a passenger.

1.2 **Injuries to persons.**

INJURIES	**CREW**	**PASSENGERS**
FATAL	Nil	Nil
SERIOUS	Nil	Nil
MINOR	1	1

1.3 **Damage to aircraft.**

The aircraft sustained substantial damage.

1.4 **Other damage.:** The high tension electrical cable which was running across the river was broken**.**

1.5 **Personnel information:**

1.5.1 **Pilot – in – Command:**

AGE	: 23 years (Date of Birth;07/07/1984)
Licence	: PPL
Date of Issue	: 10/06/2005
Valid up to	: 09/06/2015
Category	: Aeroplane
Class	: Single Engine- land
Endorsements as PIC	: Cessna-152
Date of Med. Exam.	: 24/08/2007
Med. Exam valid upto	: 23/08/2009
FRTO Licence No.	: 273
Date of issue	: 24/10/2003
Valid up to	: 23/10/2013

Total flying experience : 275:15 hours

Experience on type : 275:15 hours

Experience as PIC on type : 195 hours

Total flying experience during last 90 days : 88:10 Hrs.

Total flying experience during last 30 days : 50:25 Hrs

Total flying experience during last 07 Days : 15:05 Hrs

Total flying experience during last 24 Hours : 02:10 Hrs

1.6 **Aircraft information:**

1.6.1 The aircraft was manufactured by M/s Cessna Aircraft Company USA in 1979 and was 29 years old. Cessna 152 aircraft is powered with one Avco Lycoming, 4 cylinder, O-235-N2C normally-aspirated, direct drive, air cooled and horizontally opposite, carburetor equipped engine. The engine has a Horsepower rating of 108 BHP with engine speed of 2550 RPM. The aircraft is fitted with fixed pitch McCauley Propellers of model No. 1A103/TCM6958 with 2 blades. The aircraft has a seating capacity for two persons including cockpit crew. The aircraft is certified for a single pilot operation. There are two doors. The aircraft has a total fuelling capacity of around 90 liters and a total endurance of about 4:30 hours.

1.6.2 Scrutiny of the Airframe and Engine log books of the aircraft revealed that on the day of accident, the aircraft had done 15871:30 hrs airframe hrs since new and 1221:30 hrs since the renewal of last C of A. The engine had logged 1577:30 hrs since last overhaul and 10397:30 since new. The last C of A was done on 24/7/07 and was valid till 24/7/08. The aircraft was registered under Normal category subdivision Passenger. The highest inspection schedule on this aircraft is 100 hrs/6 months which was carried out on the aircraft on 02/3/2008 at Baramati.

1.6.3 Scrutiny of the aircraft records further revealed that all the modifications on the aircraft were found to be complied with at the time of accident.

1.6.4 Scrutiny of the snag register reveled that there was no snag reported on the aircraft before the accident flight.

1.6.5 Scrutiny of the Flight Authorization book revealed that the accident flight was duly authorized by the CFI as Solo flight for the trainee student.

1.7 **Meteorological information:**

The Metar at 0530 UTC prior to take off from the Baramati strip was, variable winds 06 knots , visibility 8Km, temp 32deg, sky clear QNH 1010 Hpa. The Metar at the time of accident at 0630 UTC at Baramati was reported to be, prevailing wind variable 07 knots, visibility 8 Km, temp 32.8deg, QNH 1010 Hpa. The weather was fine and therefore not a factor to the accident.

1.8 **Aids to navigation:**

There is no Navigational aid available at Baramati airstrip other than the windsock, aerodrome beacon and VHF communication. The aircraft was cleared for local general flying within 5Nm south of airfield maintaining 3500ft.

1.9 **Communications:**

There was two way communications between the aircraft and the local Carver ATC prior to accident and VT-ACC had reported all operations normal maintaining 3500ft and the same was acknowledge by the ATC. The aircraft did not respond to ATC after it fell into the river.

1.10 **Aerodrome information.**

There is one airstrip at Baramati 11/29 and is owned by MIDC. Both runways are in use depending upon the wind direction. The strip is an uncontrolled airstrip. The M/s Carver aviation for the operation of their training aircrafts has setup a local ATC which is manned by the retired ATC controllers from Airforce during flying training. There are no navigational aids available on the airstrip other than the VHF communication and the wind sock. The emergency services

ie. the fire fighting vehicle and the medical emergency is manned by the M/s Carver Aviation personnel's. The mean sea level at Baramati is around 2000ft.

1.11 **Flight recorders:** Neither fitted nor required

1.12 **Wreckage and impact information.**

During examination of the wreckage at site, it was observed that the aircraft was lying in the river in the upside down condition. The aircraft was pulled from the river with the help of the crane and put on the bridge. The wreckage was confined around the point of impact with the high tension electric cable above the river indicating that there was no in-flight disintegration of the aircraft. One of the cockpit door was found missing in the water. The Aircraft has broken in two pieces at station no.95.00. The Right wing tip was broken. At station no.76.44 below rear window, fuselage was dented, sheared and damaged. The Vertical fin and rudder bent towards left side and the Vertical fin had sheared off. The Instrument panel was uprooted, dented and was damaged. The top engine cowling was dented, sheared and Engine mount and push rod shroud was bent. The Propeller had bent forward and had deep rubbing marks of high tension electric cables and the Propeller spinner had sheared off from attaching screws. The Windshield plexi was broken. The LH & RH wing leading edge was entirely dented and compressed inward. The Station No.0 (firewall) was damaged and pushed back toward cabin. The Internal furnishing was broken in numerous pieces.

1.12.1. In the cockpit, the throttle levers were found to be in the forward position and the mixture was full rich and the flaps were down.

1.12.2. Examination of the electric cable over the river revealed they were running across the river from one bank to the other at a height of about 50 ft, and the aircraft was also flying at that height. The main landing gear got entangled into the cables which resulted into the aircraft falling into the river. Due to power cut in the village at the time of accident there was no current in the cables.

1.12.3 The propeller was rotated by hand and was moving freely indicating that the engines had not seized.

1.13 **Medical and pathological Information:**

After the accident, the PIC and the passenger sustained minor injuries and were admitted to the local hospital for treatment and also for medical examination. The clinical examination was carried out and both of them were not found to be under the influence of alcohol.

1.14 **Fire:**

There was no fire.

1.15 **Survival aspects:**

Both the persons on board escaped with minor injuries. The accident was survivable.

1.16 **Tests and research:** NIL

1.17 **Organizational and management information:**

M/s Academy of Carver Aviation is a Flying Training school. The school has one CFI, one PII, and four API for imparting training to the trainee pilots. The academy has a total of 15 Cessna aircraft out of which 4 are Cessna 152 and 11 are

Cessna 172 aircrafts. All the aircrafts are registered in the Normal Category, subdivision Passenger.

1.18 **Additional information***:*

During investigation it was known that as per the procedures every student who is schedule for flight goes to the CFI room which is in the Hanger for signing of the flight authorization book. Once he signs the flight authorization book then he proceeds to the aircraft which is parked on the tarmac and is about 100M away from the CFI room. All the aircraft parked on the tarmac are not visible from the CFI room. The CFI only decides for the student to be released for Solo flight or the instructor will accompany the student. The tarmac is a restricted area and other than the students no other person can enter that area. At any given time there are about seven to eight aircraft on the tarmac which are engaged in local flying training. Apart from student there are API and PII who are detailed on the particular aircraft by the CFI for the flying training as per the flight authorization book. Every movement is recorded in the flight authorization book. The final supervision on the tarmac activities and the flight authorization book is the responsibility of the CFI who is makes numerous rounds to the tarmac to monitor the flying activities and also to his room for the signing of the flight authorization book for authorizing the flight.

The girl who accompanied the trainee pilot on the Solo flight without taking any permission from the CFI as passenger was present on the tarmac. At that particular time the CFI was not present on the tarmac and was in his room to authorize other flight.

Further the M/s Carver Aviation has a laid down Standard Operating Procedure (SOP) for the operation of the training flight south of Airfield and North of airfield which also includes procedures for recovery from "Situation of Position unknown (Lost) in south and north of airfield. There is also laid down procedure to carry out force landing south or north of airfield in case of engine failure. Since the visual contact with the aircraft is not practical as the height of the tower is less than 50 feet there is a procedure existing to monitor the training aircraft through RT.

Every student before being released for the solo flight in the north or south of airfield is taken for the flight by the instructor for the familiarization of the topography so that in case of any excengiency he could follow the standard SOP for safe operation.

1.19 **Useful or effective investigation techniques:** NIL

2. ANALYSIS

2.1 Serviceability of the aircraft

The aircraft was manufactured by M/s Cessna Aircraft Company. USA in 1979. The aircraft was issued with Indian Certificate of Registration (C of R) no.2798 on 12/12/1996 under category 'A' in the name of Academy of Carver Aviation Pvt Ltd. It also held valid Indian certificate of Airworthiness no. 2285, which was initially issued on 10/1/1997 under category Normal, Sub-Division Passenger. The C of A was revalidated on yearly basis. The last C of A renewal was done on 24/7/2007 and was valid till 24/7/2008. The aircraft had done 15871:30 airframe hrs since new and 1221:30 hrs since the renewal of last C of A. The engine had done in 1577:30 hrs since last overhaul and had done 10397:30 hrs since new. The aircraft held valid Flight Release Certificate which was issued on 14/3/2008 morning at Baramati. The highest inspection schedule on the aircraft was 100hrs/ 6months, which were carried out on 02/03/2008. There was no snag on the a/c after renewal of C of A. All the mandatory modifications/SB were found to be complied with.

On the day of the accident the Daily Inspection on the aircraft was carried on the aircraft by the AME at 00:30 UTC. Thereafter the aircraft was engaged in local flying until 05:30 UTC. The aircraft had done a total of four sorties for about 01:30 hours of flying since morning on the day of accident and no snag was reported on the aircraft. Two fresh first Solo were released on this aircraft and all

operation was normal. Thereafter it was allotted for the fifth sortie for Solo local general flying.

Examination of the wreckage revealed that it was confined around the place of impact indicating that there was no in-flight disintegration of any part of the aircraft. The propeller was rotated by hand and was moving freely indicating that the engine had not seized. Pieces of high tension electric cables were found entangled in the aircraft landing gear.

In view of the foregoing, it can therefore be inferred that serviceability of the aircraft is not a factor to the accident.

2.2 Pilot handling of the aircraft:

The training flight for PIC was authorized by the CFI to do a Solo general flying for one hour. The PIC asked one of the student pilot to accompany him on the flight since he had permission from the PII to carry a passenger on board as he was a PPL holder. The student pilot also did not cross check with the CFI/PII that he had the permission to carry a passenger. The aircraft lined up runway at 05:30 UTC and requested permission from local Carver ATC for local general flying with POB 01. The PIC was at controls, and was also handling the R/T. The aircraft was cleared for take off by Carver ATC immediately and after 10 minutes of flying reported north of airfield within 5Nm and established altitude of 4500ft. After approximately 20 minutes of flying north of airfield, VT-ACC requested to proceed toward south of airfield which was granted by ATC. At around 06:22 UTC, VT-ACC reported established south of airfield maintaining altitude 3500ft and all operations normal. The Carver local ATC advised VT-ACC that he should report to ATC every 10 minutes all operations normal. The PIC after informing the ATC that he was maintaining 3500ft actually started descending. As the mean sea level at Baramati is around 2000ft the aircraft was actually flying 1500ft above the ground. The PIC started descending from the assigned altitude and came as low as around 50 ft over the river to do intentional low flying for fun. He was aware of the bridge over the river which was at a height of about 100ft but he was not aware of the high tension electric cables which were before the bridge and at a height

of around 50ft. As the PIC was only looking out for the bridge in order to pull up the aircraft before the bridge and also the sun was directly into the cockpit the sighting of the high tension cables was slightly difficult and by the time he noticed it was too late, he tried to pull up the aircraft but failed to do so and the main landing gear got entangled into the electric cable which subsequently resulted into the accident.

The pilot failed to notice the high tension cables in time and could not handle the aircraft properly resulting into the Main landing gear entangling into the high tension cables and subsequently the aircraft fell into the river.

Regarding carrying a passenger on board without the permission of PII/CFI and indulging into low flying over the river, the pilot stated that he indulged into low flying for fun and took the passenger on flight as he had taken the permission earlier from PII as he was a PPL holder. The PII/CFI however denied that they have given any such permission to PIC or to any of the student pilots for the same.

In view of the above, it can therefore be inferred that pilot handling of the aircraft is a contributory factor to the accident.

2.3 EXPERIENCE OF FLIGHT CREW

The PIC had a total flying experience of 275 hours and all on the type. The PPL was issued to the trainee pilot on 10/6/2005 and is valid upto 9/6/2015. The PIC had already completed the required 200 hours for CPL but had not applied for the CPL. Hence the experience and qualification is not a contributory factor to the accident.

2.4 Weather :

The Metar at 0530 UTC prior to take off from the Baramati strip was, variable winds 06 knots , visibility 8Km, temp 32deg, sky clear QNH 1010 Hpa. The Metar at the time of accident was at 0630 UTC at Baramati was reported to be, prevailing wind variable 07 knots, visibility 8 Km, temp

32.8deg, QNH 1010 Hpa. The weather was fine and therefore not a contributory factor to the accident.

2.5 Circumstances leading to the accident :

On 14th March, VT-ACC, Cessna 152 aircraft of M/s Carver Aviation Academy was engaged in a training flight at Baramati airstrip. The CFI had authorized the PIC for Solo local general flying for one hour. Before departure from Baramati airstrip the PIC had asked one of the student pilot to accompany him on the solo flight. Though the area is restricted and no outsider can enter the tarmac, one of the trainee student pilot present on the tarmac went on board the solo flight without the knowledge of CFI as had gone to his room for signing the flight authorization book for the other students. The PIC did not take any permission from PII/CFI for carrying passenger on board. At the time of take off from the Baramati strip he informed the ATC that person on board as one and requested general solo flying for one hour which was cleared by ATC. He was instructed to fly north of airfield maintaining 5000ft. After about 10 minutes VT-ACC reported north of airfield and maintaining altitude. After approximately 20 minutes of flying the PIC requested Baramati tower to proceed for south of airfield. VT-ACC was asked to maintain altitude 4500ft and crossover overhead and descend to altitude 3500ft and report established south of airfield within 5Nm. At around 06:22 UTC VT-ACC reported established south of airfield maintaining altitude 3500ft and all operations normal. As the mean sea level of Baramati is around 2000ft and the aircraft was asked to maintaining 3500ft, the aircraft was actually flying at 1500ft above the ground level. The PIC after informing ATC that he was maintaining 3500ft actually started descending and started flying very close over the river at around 50 ft over the river. The PIC was looking for the 100ft bridge over the river which he had the knowledge off and in doing so he overlooked the high tension electric cables which were before the bridge at a height of around 50 ft the altitude on which the aircraft was flying, by the time the PIC noticed it was too late he tried to pull the aircraft but the main landing gear got entangled into the electric cable which subsequently resulted into the accident. At the time of accident there was a power cut in the village and hence there was no current in the electric cables. The aircraft fell into the river in the upside down condition. Both occupants were rescued from the aircraft by the local villagers. Both received minor injuries.

Though the M/s Carver Aviation has a laid down Standard Operating Procedure (SOP) for the operation of the training flight south of Airfield and North of airfield which also includes procedures for recovery from "Situation of Position unknown" (Lost) in south and north of airfield. There is also laid down procedure to carry out force landing south or north of airfield in case of engine failure. Since the visual contact with the aircraft is not practical as the height of the tower is less than 50 feet there is a standard procedure existing to monitor the training aircraft through RT. Other than the RT monitor there is no other surveillance present on the training students who are flying either south or north of airfield.

Further student before being released for the solo flight in the north or south of airfield is taken for the flight by the instructor for the familiarization of the topography so that in case of any excengiency the student pilot could follow the standard SOP for safe operation.

3. **CONCLUSIONS:**

3.1 Findings:

a) The aircraft held valid certificate of Airworthiness.

b) The aircraft was serviceable and no abnormality was reported by the pilot before under taking the flight.

c) The pilot held valid licence to under take the flight.

d) The Daily Inspection schedule of the aircraft was carried out by the AME before the flight.

e) The aircraft had done about 1 ½ hours of training flying since morning, and nothing adverse was reported on the aircraft.

f) All SB/modification status was found to be current.

g) As per flight authorization book the aircraft was cleared for one hour of Solo for general flying.

h) The PIC took one student pilot on the Solo flight without the knowledge of the CFI and PII.

i) At the time of take off the PIC informed ATC persons on board as one.

j) The aircraft was initially cleared for flying North of airfield, however after 20 minutes of flying the PIC requested ATC to fly south of airfield.

k) The ATC had cleared VT-ACC to fly south of airfield and to maintain 3500ft and to inform every 10 minutes about all operations normal.

l) The PIC after reaching south of airfield, informed ATC all operations normal maintaining 3500ft, however he started descending the aircraft to do intentional low flying close to the river for fun.

m) The aircraft came as low as 50 ft over the river and was flying in the east direction facing the sun.

n) There was a bridge about 100 ft high over the river and the PIC was watching for to pull the aircraft over the bridge.

o) The pilot was late in noticing the electric cables which were before the bridge at about 50 ft over the river and were running across the river possibly as it was flying east directly into the sun.

p) The main landing gear got entangled in the high tension electric cable resulted in falling of the aircraft into the river.

q) Both occupants on board were rescued from the aircraft by the local villagers with minor injuries.

r) Flying experience of the crew is not the factor to the accident.

s) The responsibility for the flight authorization book for authorizing flight and monitoring of the tarmac is that of the CFI.

t) The Standard Operating procedure for flying either south or North of air field including various exigencies is existing and every student is taken on a flight along with an instructor for familiarization of the topography in order to make a safe landing during any exigency.

u) Since the height of the tower is less and the visual contact with the aircraft is not practical there is a standard procedure existing to monitor the training flight either south or north of airfield through RT only.

v) The weather was fine and not a factor to the accident.

3.2 **Probable cause of the accident**:

The pilot failed to notice the high tension cables while indulging into low flying, as a result the main landing gear got entangled into the high tension electric cables and subsequently the aircraft fell into the river.

4. **SAFETY RECOMMENDATIONS**:

1. Appropriate action may be taken against the PIC for engaging into intentional low flying and also carrying unauthorized passenger on board the aircraft.

2. Surveillance activities by the Flying training institutes to be enhanced to discourage low flying activities by the training student and to monitor flying activities on ground and in air.

3. An audit of M/s Carver Aviation may be carried out to check the procedure in place.

Place Mumbai

Date: 20th November 2008.

(A.X.Joseph)

Senior Air Safety Officer(E)

Inspector of Accidents(VT-ACC)