

**INVESTIGATION REPORT**

SERIOUS INCIDENT TO M/S PHHL  
DAUPHIN HELICOPTER VT-PHR  
AT PATNA AIRPORT ON 15.10.2010

AIR SAFETY DIRECTORATE  
O/o DIRECTOR GENERAL OF CIVIL AVIATION  
OPP. SAFDARJUNG AIRPORT, NEW DELHI

CONTENTS		
Sl. No.	Subject	Page
	Synopsis	1-2
<b>1</b>	<b>FACTUAL INFORMATION</b>	1-10
1.1	History of flight	2-3
1.2	Injuries to persons	4
1.3	Damage to aircraft	4
1.4	Other damage	4
1.5	Personnel information	4-6
	Pilot – in –Command	4-5
	Co-pilot	5
1.6	Aircraft information	6-7
1.7	Meteorological information	8
1.8	Aids to navigation	8
1.9	Communications	8
1.10	Aerodrome information	8-9
1.11	Flight recorders	9
1.12	Wreckage and impact information	9
1.13	Medical and pathological Information	9
1.14	Fire	9
1.15	Survival aspects	9
1.16	Tests and research	9
1.17	Organizational and management information	10
1.18	Additional information	10
1.19	Useful or effective investigation techniques	10
<b>2</b>	<b>ANALYSIS</b>	10-12
2.1	Airworthiness Aspect	10-11
2.2	Operational Aspect	11-12
<b>3</b>	<b>CONCLUSIONS</b>	13-14
3.1	Findings	13-14
3.2	Probable cause of the incident	14
<b>4</b>	<b>SAFETY RECOMMENDATIONS</b>	14
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**FINAL INVESTIGATION REPORT OF SERIOUS INCIDENT TO M/S  
PHL DAUPHIN HELICOPTER VT-PHR AT PATNA AIRPORT ON  
15.10.2010.**

	Aircraft	
	Type	AS 365 N3 Dauphin Helicopter.
	Nationality	Indian
	Registration	VT-PHR
2	Owner	M/s Pawan Hans Helicopters Limited, New Delhi-110003.
3	Operator	M/s Pawan Hans Helicopters Limited, New Delhi-110003.
3	Pilot – in –Command	
	License Type	CPL ( H ) Holder
	Extent of injuries	Nil
4	Co Pilot	
	License Type.	CPL ( H ) Holder
	Extent of injuries	Nil
5	No. of Passengers on board	01
	Extent of Injuries	Nil
6	Last point of Departure	Patna Airport
7	Intended landing place	Patna Airport
8	Place of Incident	Patna airport
9	Date & Time of Incident	15.10.2010, 1810hrs. IST approx

### SYNOPSIS

AS 365 N3 Dauphin Helicopter VT-PHR owned and operated by M/s Pawan Hans Helicopters Limited, New Delhi was involved in a serious incident on 15.10.2010 at Patna airport at about 1810 hrs IST.

The helicopter was engaged in the election flying of Bihar Assembly Election 2010. On 15.10.2010, the Helicopter VT-PHR was planned to operate Patna – Phulparas – Saharsa – Purnea – Patna. After uneventful day's flying the helicopter landed at Patna Airport at approx 1750 hrs and the passengers deplaned safely. Helicopter was under the command of CHPL (H) Pilot and there was co-pilot on board the helicopter.

At approx 1804 hrs the helicopter requested for start up to reposition it on the apron in front of Bihar Govt Hangar. In the process of repositioning, the helicopter came very close to the hangar and hit the vertical steel column of the hangar.

The tip fairing of all the four main rotor blade got damaged. The persons on board the helicopter escaped unhurt.

The incident occurred after sunset. Subsequently the operator notified the occurrence to the DGCA. The occurrence was classified as serious incident and an investigation ordered under Rule 77C of Aircraft Rules 1937 by appointing Inquiry Officer.

The incident occurred due "Error in judgement of the pilot while turning, under power, very close to the hangar to park in a congested space resulted into the incident".

## 1. FACTUAL INFORMATION.

### 1.1 History of flight

AS 365 N3 Dauphin Helicopter VT-PHR owned and operated by M/s Pawan Hans Helicopters Limited, New Delhi was engaged in the election flying for Bihar Assembly Election 2010. On 15.10.2010, the Helicopter VT-PHR was planned to operate Patna – Phulparas – Saharsa – Purnea – Patna.

The pilot in command informed that the helicopter took off from Patna at approx 1215 hrs, one and half hour after the scheduled programme. There were six persons on board the helicopter including the pilot in command and co-pilot. The passengers include one Hon'ble M.P and one former Minister. As per programme, the helicopter landed at Phulparas, Saharsa and finally at the given co-ordinate near Purnea at 1630 hrs. After the pilot switched off

the helicopter, the political leaders expressed that it was not the right place where they had to assemble for election campaign. Hence pilot started the helicopter and flew down to Purnea Airfield approx 3 Nautical Mile (NM) away.

The helicopter subsequently departed from Purnea at approx 1645 hrs. After an uneventful flying for the day the helicopter was on the final leg to Patna. The pilot contacted Patna ATC at approx 1720 hrs and requested for change over to IFR from VFR as the sunset time was 1723 hrs; which was subsequently approved by the ATC. The helicopter landed at Patna Airport at approx 1750 hrs and the passengers disembarked safely. Patna ATC further informed the pilot that there is no space available at the Bihar Govt apron and asked for the plan of next day. At approx 1802 hrs the pilot informed ATC that his ground crew had coordinated and arranged space at Bihar Govt Apron and further requested for engine start up for repositioning. On reconfirmation for the availability of the space, from the pilot, ATC approved engine start up at 1804 hrs and taxi with caution.

The pilot taxied safely up to the apron and continued power approach very close to the hangar to park the helicopter. However the parking space at the apron i.e in front of the hangar was full to its capacity and it was hardly possible to accommodate any more helicopters even by towing/pushing. While negotiating the left turn, very close to the hangar, the pilot misjudged and main rotor tip of all the four main rotor blades hit the vertical steel column of the Hangar. The helicopter continued turning for parking and then switched off the engine after positioning in the bay.

On enquiring by the ATC about their position they just informed as "switching off Bihar Govt Hangar". They did not report the incident subsequently to the ATC.

Consequent of the strike of the main rotor tip with the steel structure, tip fairing of all the four blades got damaged. No injuries to any of the persons on board the helicopter.

## **1.2 Injuries to persons.**

<b>INJURIES</b>	<b>CREW</b>	<b>PASSENGERS</b>	<b>OTHERS</b>
<b>FATAL</b>	Nil	Nil	Nil
<b>SERIOUS</b>	Nil	Nil	Nil
<b>MINOR/NIL</b>	02	01	

## **1.3 Damage to aircraft:**

All 4 main rotor tip caps/fairings got damaged. One of the Tail Rotor Blade was also found damaged due to ingress of foreign matter.

## **1.4 Other damage:**

Nil.

## **1.5 Personnel information:**

### **1.5.1 Pilot – in –Command**

Age	59 Yrs 4 months.
Licence	CHPL
Date of Issue	15.09.1995
Valid up to	11-05-2013
Category	Helicopter
Endorsements as PIC	Chetak, Dauphin SA 365 N & N3
Date of last Med. Exam	05.07.2010
Med. Exam valid up to	04.01.2011
FRTA Licence No	5448
Date of issue	15.09.1995
Valid up to	11.05.2013
Proficiency Check done	22.05.2010
Proficiency check due	22.11.2010

IR test done	20.12.2009
IR test due	19.12.2010
Total flying experience	12165:25 hrs
Experience on type	3672:05 hrs
Total flying experience during last 90 days	163:05 hrs
Total flying experience during last 30 days	61:40 hrs
Total flying experience during last 07 Days	21:50 hrs
Total flying experience during last 24 Hours	04:00 hrs

### 1.5.2 Co-pilot

Age	46 Yrs
Licence	CHPL
Date of Issue	29.03.2010
Valid up to	28.03.2015
Category	Helicopter
Endorsements as PIC	Dauphin SA 365 N & N3
Date of last Med. Exam	19.07.2010
Med. Exam valid up to	18.01.2011
FRTD Licence No	13608
Date of issue	23.07.2009
Valid up to	22.07.2014
Total flying experience	2158:40 hrs
Experience on type	1640:25 hrs
Total flying experience during last 90 days	206:48 hrs
Total flying experience during last 30 days	69:58 hrs
Total flying experience during last 07 Days	21:50 hrs
Total flying experience during last 24 Hours	04:00 hrs

Scrutiny of records did not reveal any exceedance of FDTL/FTL for both the pilots.

### 1.6 Aircraft information:

- 1.6.1 The Dauphin SA 365 N3 Helicopter VT-PHR has been manufactured by M/s Eurocopter, Marigane, France in 2007. Dauphin SA 365 N3 Helicopter bearing serial number MSN 6774 has been duly registered in the register of India with effect from 07.09.2007 and allotted with registration certificate No. 3592. The helicopter was registered under Normal category with "Passenger" subdivision.

The Dauphin SA 365 N3 Helicopter is a multipurpose semi metallic construction, powered by two Turbomeca Arriel free turbine engines driving a four blade main rotor and the tail rotor.

- 1.6.2. The scrutiny of the DGCA approved weight schedule revealed that the helicopter was last weighed on 09.07.2007 at Eurocopter France. The same was recomputed by approved AME on 17.09.2007 and was valid up to 08.07.2012. The computation of the weight schedule was carried out separately for offshore operation and land operation. It further revealed that the empty weight of the helicopter computed for land operation is 2659.77 Kg. The maximum authorizes all up weight, including crew, cargo, fuel and oil was not to exceed 4300 Kg. The helicopter was approved for maximum seating capacity of 11 passengers and 02 crew.

Further scrutiny of the record revealed that the pilot had filled up the load and trim sheet before undertaking the day's flight. The load and trim used did not have the approval number of the Director General of Civil Aviation. The total weight of the helicopter was 4263 Kg and the load and trim was duly calculated and was found to be within approved C.G range.

However the load and trim sheet for the repositioning flight from main apron of Patna airport to Bihar Govt hangar was not filled up by the pilot as it was not required. As stated by the pilot one of the ground crew was also on board the helicopter during repositioning flight besides both the crew members.

- 1.6.3 Scrutiny of the Airframe log book of the helicopter revealed that it had completed 2658:17 hrs before the incident flight. The helicopter was

powered by two Turbomeca Arriel free turbine engines driving a four blade main rotor and the tail rotor. The engine #1 was bearing Sl. No. 24008 and completed 3598:36 Hrs; engine #2 bearing Sl. No. 24140 had completed 4706:20 Hrs before the incident flight. The Certificate of Airworthiness issued to the helicopter revealed that the C of A No. 3001 was revalidated on 12.09.2007 till 03.05.2012 on the strength of export C of A No. 2/554 dated 04.05.2007 issued by DGAC France. The helicopter had completed 2252:29 total time since new at the time of C of A inspection i.e 12.09.2007. The helicopter was in possession of Aeromobile Licence No. A-020/001-RLO (NR) which was valid up to 31.12.2011.

The maintenance details as recorded from the scrutiny of the documents are appended below:

S/N	Inspection	Airframe Hrs.	Date
1	1200Hrs.	2385:29	12.07.2010
2	25 Hrs.	2407:41	19.07.2010
3	50 Hrs.	2428:29	26.07.2010
4	25 Hrs.	2451:35	01.08.2010
5	100 Hrs.	2475:29	11.08.2010
6	25 Hrs.	2496:53	18.08.2010
7	50 Hrs.	2519:11	24.08.2010
8	25 Hrs.	2541:53	31.08.2010
9	50 Hrs.	2566:53	10.09.2010
10	100 Hrs.	2574:59	13.09.2010
11	25 Hrs.	2599:17	22.09.2010
12	50 Hrs.	2621:59	30.09.2010
13	100 Hrs.	2640:29	07.10.2010

Approved Pre Flight (Before First Flight) Inspection Schedule was duly carried out by appropriately approved AME on 15.10.2010 and the helicopter was declared airworthy.

1.6.4 Scrutiny of the helicopter records further revealed that all the Modifications and Service Bulletin was complied with at the time of incident.

1.6.5 Scrutiny of the snag register revealed that there was no snag pending for rectification on the helicopter before the incident flight.

### **1.7 Meteorological information:**

The Met Report issued at 1150 UTC on 15.10.10 at Patna Airport revealed winds Calm, visibility 4 KM, FEW 3000Ft (900 m), SCT 1800Ft (540m), QNH 1004 HPA and QFE 0998 HPA.

The Met Report issued at 1220 UTC on 15.10.10 at Patna Airport revealed winds Calm, visibility 3.5 KM, FEW 3000Ft (900 m), SCT 1800Ft (540m), QNH 1004 HPA and QFE 0998 HPA.

The sunset time circulated by the IMD Patna for 15.10.2010 was 1153 UTC i.e 1723 Hrs IST.

### **1.8 Aids to navigation:**

N/A.

### **1.9 Communications:**

The helicopter was in contact with Patna ATC on R/T at frequency 121.1 MHz.

### **1.10 Aerodrome information:**

Jai Prakash Narayan Airport Patna is controlled and maintained by Airport Authority of India. The airport is located at 5 Kilometre from Patna railway station. Patna airport coordinates are 253537.0 N, 0850531.0E at the elevation 51.78 Meters. The single runway at the airport has two end designated as 07 and 25, used depending on the wind direction. The dimension of the runway is 1954X45 Meters (M) and total runway length is 1954 M. However due to restrictions in the approach and takeoff funnel the runway length available is restricted up to 1677M and 1820M for R/W 07 and R/W 25 respectively. There is no established area for landing of the helicopters.

The Director Aviation, Govt of Bihar informed that the apron in front of Bihar Govt Hangar has enough space to park 12 helicopters by using ground equipments and six helicopters under power. The pilot landed on the main

apron as advised by the ATC and after disembarking of the passengers decided to park the helicopter in front of Bihar Govt hangar. There were already 12 helicopters parked on the apron before this helicopter approached for parking. No representatives of M/s PHL ever approached Director Aviation, Govt of Bihar to coordinate for requirement of parking space. As per the ATC tape transcript the pilot informed ATCO Patna that PHL Representative has coordinated for parking space in front of Govt. of Bihar.

#### **1.11 Flight recorders:**

The helicopter was fitted with the CVR and DFDR bearing part number 980-6021-066 and S/No. 694 as per Civil Aviation Requirements. However the replay revealed that CVR has recording of area mike only and no recording of pilot and co-pilot channel of the incident flight.

The DFDR recording did not show any deviations in the engine parameters post impact of the main rotor tip with the hangar structure.

#### **1.12 Wreckage and impact information:**

N/A. There was no disintegration of any parts except the damage to the main rotor blade tip fairings.

#### **1.13 Medical and pathological Information:**

Both the crew underwent the pre-flight medical examination and found that they were not under influence of alcohol.

#### **1.14 Fire:**

There was no evidence of post or pre-incident fire.

#### **1.15 Survival aspects:**

All the persons on board the helicopter escaped unhurt.

#### **1.16 Tests and research:**

N/A

### **1.17 Organizational and management information:**

Pawan Hans Helicopters Limited, a public Sector Enterprise of Govt of India provides helicopter services in the country. It has a mixed fleet of Dauphin, MI-172, Bell and Ecureuils. The Corporate Office of PHHL is located at New Delhi. It has main bases at Delhi and Mumbai and sub bases at Guwahati, Itanagar and Gangtok.

The Dauphin SA 365 N3 Helicopter VT-PHR is duly registered in the register of India with effect from 07.09.2007 and allotted with registration certificate No. 3592. The aircraft is subsequently endorsed for operation on the Non Scheduled Operators Permit No. 2/1998 held by M/s Pawan Hans Helicopters Limited, Safadarjung New Delhi from 13.09.2007.

### **1.18 Additional information:**

N/A.

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

Nil

## **2. ANALYSIS**

### **2.1 Airworthiness Aspect:**

The Dauphin SA 365 N3 Helicopter VT-PHR had completed 2658:17 airframe hrs since new before the incident flight and 405:48 hrs since the renewal of last C of A. The last renewal of the C of A was done on 12.09.2007 at 2252:29 airframe hours and was valid till 03.05.2012. The helicopter is powered by two Turbomeca Arriel free turbine engines driving a four blade main rotor and the tail rotor. The engine #1 was bearing Sl. No. 24008 and completed 3598:36 Hrs; engine #2 bearing Sl. No. 24140 had completed 4706:20 Hrs before the incident flight.

The helicopter was in possession of Aeromobile Licence No. A-020/001-RLO (NR) which was valid up to 31.12.2011.

The last major inspection i.e. 1200Hrs inspection was done on 12.07.2010 at 2385:29 Airframe Hrs. Last 100 hrs, 50 hrs and 25 hrs inspections were carried out on 07.10.2010, 30.09.2010 and 22.09.2010 respectively at 2640:29, 2621:59 and 2599:17 airframe hours. The last 100 hrs inspection also includes the lower schedule inspections.

Approved Pre Flight (Before First Flight) Inspection Schedule was duly carried out by appropriately approved AME on 15.10.2010 and the helicopter was airworthy. The pilot had completed the load and trim sheet before undertaking the flight. The helicopter was loaded within the limit and C. G was within approved range.

All the modifications and SB's were complied with before undertaking the flight on 15.10.2010. No snag was pending for rectification before the incident flight.

It can be concluded that the helicopter was maintained properly and it was airworthy to take the flight. Thus maintenance aspect of the helicopter doesn't seem to be the factor of the incident.

The recordings of the CVR were lost because immediately after the incident the CVR CB was not pulled out by the crew/ arrival AME in order to switch off the CVR.

## **2.2 Operational Aspect**

The operating crew, the pilot in command and the co-pilot had the endorsement of Dauphin SA 365 N3 Helicopter. They had all other requirements/licenses such as Medical, FRTD/Instrument Ratings/Proficiency Checks etc valid before operating the incident flight. The pilot in command had a total flying experience of 12165:25 hrs and type experience was 3672:10 hrs. The co-pilot had total flying experience of 2158:40 hrs and type experience was 1640:25 hrs. Both the crew underwent the pre-flight medical examination and found that they were not under influence of alcohol.

Before accepting the helicopter in the morning the pilot in command made sure that it had valid Certificate of Airworthiness and Flight Release. All the instruments and the equipments as prescribed were installed. The helicopter was loaded within the limit with the centre of gravity (C.G) being within

approved range. It had sufficient fuel and oil to complete intended flight. There was no apparent damage observed during walk around inspection by the pilot. There was no snag pending for rectification on airframe or engines. The flight controls were moving freely and in correct direction. However during the incident flight load and trim sheet was not prepared probably because it was a repositioning flight from main apron at Patna airport to the apron near Bihar Govt Hangar.

After an uneventful flying for the day the helicopter was on the final leg to Patna. The pilot contacted Patna ATC at approx 1720 hrs and requested for change over to IFR from VFR as the sunset time is 1723 hrs which was subsequently approved by the ATC. The helicopter landed at Patna Airport at approx 1750 hrs and the passengers disembarked safely. Patna ATC further informed the pilot that there is no space available at the Bihar Govt apron and asked for the plan of next day. At approx 1802 hrs the pilot informed ATC that his ground crew had coordinated and arranged space at Bihar Govt Apron and further requested for engine start up for repositioning. On reconfirmation for the availability of the space, from the pilot, ATC approved engine start up at 1804 hrs and taxi with caution.

The pilot taxied safely up to the apron and continued power approach very close to the hangar to park the helicopter. However the parking space at the apron i.e in front of the hangar was full to its capacity and it was hardly possible to accommodate any more helicopters even by towing/pushing. The pilots were probably complacent of high flying experience and continued power approach. While negotiating the left turn, very close to the hangar, the pilot misjudged the distance between helicopter rotor tip and the hangar structure, as a result the main rotor tip of all the four main rotor blades hit the vertical steel column of the Hangar.

Investigation further revealed that no representative of PHHL ever approached the State Government for parking space.

From the above discussion it can be inferred that pilot misinformed the ATC about the coordination with Bihar Govt and availability of the space at the apron in front of Bihar Govt hangar. The decision of the pilot to continue power approach to park the helicopter after sunset at a congested space was the contributory factor to the incident.

### **3. CONCLUSIONS:**

#### **3.1 Findings:**

- 3.1.1 The helicopter was maintained in airworthy condition and no defect was pending for rectification.
- 3.1.2 All the MOD's & SB's were complied and there was no snag reported on the helicopter before the incident flight.
- 3.1.3 Appropriately approved AME carried out the Pre Flight (Before First Flight) Inspection Schedule of the helicopter as per approved schedule and it was declared airworthy before starting the flight on the day.
- 3.1.4 The recordings of the CVR were lost because of negligence of the AME who failed to pull out the CB in time, to switch it off.
- 3.1.5 The prevailing weather had no contribution to the incident.
- 3.1.6 The incident occurred after sunset.
- 3.1.7 Loading of the helicopter was not a contributory factor to the incident.
- 3.1.8 The pilots were appropriately licensed to undertake the flight. Their license, medical fitness certificate and the ratings were valid while they operated the incident flight.
- 3.1.9 Both the crew underwent pre-flight medical examination and found that they were not under influence of alcohol.
- 3.1.10 The pilot in command had a total flying experience of 12165:25 hrs and type experience was 3672:10 hrs. The co-pilot had total flying experience of 2158:40 hrs and type experience was 1640:25 hrs.
- 3.1.11 The pilot contacted Patna ATC and requested for change over to IFR from VFR as they were intending to land after the sunset; which was subsequently approved by the ATC.
- 3.1.12 The helicopter landed at Patna Airport and the passengers disembarked safely. Patna ATC further informed the pilot that there was no space available at the Bihar Govt apron and asked for the plan of next day.

- 3.1.13 The pilot informed ATC that his ground crew had coordinated and arranged space at Bihar Govt Apron and further requested for engine start up for repositioning. On reconfirmation for the availability of the space, from the pilot, ATC approved engine start up and taxi with caution.
- 3.1.14 The pilot taxied safely up to the apron and continued power approach very close to the hangar to park the helicopter.
- 3.1.15 The parking space at the apron i.e in front of the Bihar Govt hangar was full to its capacity and it was hardly possible to accommodate any more helicopters even by towing/pushing.
- 3.1.16 The pilots were probably complacent owing to their highflying experience, continued power approach very close to the hangar. While negotiating the left turn, very close to the hangar, the pilot's misjudgement resulted into all the four main rotor blade tips hitting the vertical steel column of the Hangar.
- 3.1.17 The pilot passed incorrect information to the ATC about the coordination with Bihar Govt and availability of the space at the apron in front of Bihar Govt hangar. The decision of the pilot to continue power approach to park the helicopter under the light at a congested space resulted into incident.

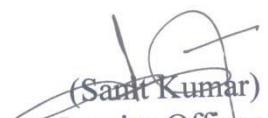
### 3.2 Probable cause of the incident:

"Error in judgement of the pilot while turning, under power, very close to the hangar to park in a congested space resulted into the incident".

### 4. SAFETY RECOMMENDATIONS:

- 4.1 The action as deemed fit against the pilots in view of findings 3.1.16 and 3.1.17.
- 4.2 The action as deemed fit against AME in view of finding 3.1.4.

Place: Kolkata  
Date: 02.12.2010



(Santi Kumar)  
Inquiry Officer  
VT-PHR