

**FINAL**  
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# NATIONAL TRANSPORTATION SAFETY COMMITTEE

*Aircraft Accident Investigation Report*

**PT. Perkebunan Nusantara II  
Piper Pawnee PA 25-235; PK-PNM  
Klumpang Tobacco Plantation, Deli Serdang,  
Medan, North Sumatra  
Republic of Indonesia**

**12 May 2007**



NATIONAL TRANSPORTATION SAFETY COMMITTEE  
MINISTRY OF TRANSPORTATION  
REPUBLIC OF INDONESIA  
2013

This Final Report was produced by the National Transportation Safety Committee (NTSC), Ministry of Transportation 3rd Floor, Jalan Medan Merdeka Timur No. 5 Jakarta 10110, Indonesia.

The report is based upon the investigation carried out by the NTSC in accordance with Annex 13 to the Convention on International Civil Aviation, the Indonesian Aviation Act (UU No. 1/2009) and Government Regulation (PP No. 3/2001).

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## GLOSSARY OF ABBREVIATIONS

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ALAR	:	Approach-and-Landing Accident Reduction
AOC	:	Air Operator Certificate
ATC	:	Air Traffic Control
ATPL	:	Air Transport Pilot License
ATS	:	Air Traffic Service
°C	:	Degrees Celsius
CASR	:	Civil Aviation Safety Regulation
CRM	:	Cockpit Recourses Management
CVR	:	Cockpit Voice Recorder
DME	:	Distance Measuring Equipment
F/O	:	First officer or Copilot
FCOM	:	Flight Crew Operation Manual
FDR	:	Flight Data Recorder
ICAO	:	International Civil Aviation Organization
IFR	:	Instrument Flight Rules
ILS	:	Instrument Landing System
KNKT / NTSC	:	Komite Nasional Keselamatan Transportasi / National Transportation Safety Committee
MNA	:	Minimum Descend Altitude
NM	:	Nautical mile(s)
NOTAM	:	Notice to Airmen
PIC	:	Pilot in Command
PF	:	Pilot Flying
PM	:	Pilot Monitoring
QFE	:	Height above airport elevation (or runway threshold elevation) based on local station pressure
QNH	:	Altitude above mean sea level based on local station pressure
SSCVR	:	Solid State Cockpit Voice Recorder
SSFDR	:	Solid State Flight Data Recorder
TT/TD	:	Ambient Temperature/Dew Point
UTC	:	Universal Time Coordinate
VOR	:	VHF Omnidirectional Range radio

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## INTRODUCTION

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### SYNOPSIS

On 12 May 2007, a Piper Pawnee PA 25-235 aircraft operated by PT Perkebunan Nusantara II (PTPN II), registered PK-PNM conducted a series of agriculture spray operation flight on Klumpang tobacco plantation, Deli Serdang, Medan, North Sumatra.

At 09.30 LT (02.30 UTC) on the third flight, the aircraft was spraying in area number 5 and number 6 that have 16 lines of tree. After conducted spray on line 1, the aircraft was climbed to 200 feet and turned to right to the next target on line no. 9. While passed 150 feet, the pilot felt the aircraft lost its power and altitude. The pilot pushed the throttle to full to recover the aircraft power and altitude.

During recovering climb, the aircraft could not avoid bamboo tree clusters. The aircraft struck into bamboo trees and lost its control than crashed at the bamboo cluster area>

The pilot was suffered minor injuries, and the aircraft was major damage.

The plantation surfaces generally flat, however, in some places, there were a river using for irrigation, tobacco and others plant as bamboo, oil palm, and teak. In this area, has a building higher than the plantation.

The higher group of plantation might built turbulence when the strong wind blown through.

At the time the accident, the witness who is an aircraft maintenance engineer informed that the wind blow extremely and the aircraft most likely lost of control. The wind came from direction about 300 degrees sporadically

The investigation conclude that the aircraft had experienced entering a trubulance at low altitude and uncontrolled hit the bamboo tree, then the aircraft crash

As a result of the accident investigation NTSC issue a safety recommendation to improve the agriculture operation safety and to prevent a similar occurrence in the future.

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# 1 FACTUAL INFORMATION

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## 1.1 History of the Flight

On 12 May 2007, a Piper Pawnee PA 25-235 aircraft operated by PT Perkebunan Nusantara II (PTPN II)<sup>1</sup>, registered PK-PNM conducted a series of agriculture spray operation flight on Klumpang tobacco plantation, Deli Serdang, North Sumatra.

The aircraft started the spray operation flight from area number 1 and number 2, that have 9 lines of tree and landed for refuel and refill the pesticide.

At 09.30 LT (02.30 UTC)<sup>2</sup> on the third flight, the aircraft was spraying in area number 5 and area number 6 that have 16 lines of tree. After conducted spray on line 1, the aircraft climbed to 200 feet and turned to right to the next target on line number 9 and crash. While the aircraft was climbing and passing 150 feet, the pilot felt that the aircraft lost its power and begin to loss the altitude. The pilot pushed the throttle to full to recover the aircraft power and altitude.

During recovering climb, the aircraft could not avoid bamboo tree. The aircraft struck into bamboo trees and lost its control than fall through the bamboo trees. The pilot shut-down the engine prior impact to the ground.

The pilot (single occupant) was suffered minor injuries.

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<sup>1</sup> PT Perkebunan Nusantara II (PTPN) is a state agricultural company. They have their own agricultural spray fleet.

<sup>2</sup> The 24-hour clock is used in this report to describe the local time of day, Waktu Indonesia Barat (WIB) or West Indonesian Standard Time, as particular events occurred. WIB is Coordinated Universal Time (UTC) + 7 hours.





Figure 1: The occurrence site on the tobacco plantation area

## 1.2 Injuries to Persons

Injuries	Flight crew	Passengers	Total in Aircraft	Others
Fatal	-	-	-	-
Serious	-	-	-	-
Minor/None	1	-	-	-
<b>TOTAL</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>-</b>

## 1.3 Damage to Aircraft

The aircraft was substantially damaged.



**Figure 2: The aircraft last position**

## **1.4 Other Damage**

No other damage was reported.

## **1.5 Personnel Information**

### **1.5.1 Pilot in command**

Gender	: Male
Age	: 31 years
Nationality	: Indonesia
License	: Commercial Pilot License
Aircraft type rating	: PA 25-235, PA 18, PA 36-300
Medical certificate	: Class 1
Date of medical	: 05 March 2007
Valid to	: 05 September 2007
Last proficiency check	: 31 March 2007
Flight Time	: This information was not made available to the investigation.

## **1.6 Aircraft Information**

### **1.6.1 General**

Registration Mark	:	PK-PNM
Manufacturer	:	Piper Aircraft Corporation, USA
Type/ Model	:	PA 25-235 Pawnee (Agriculture)
Serial Number	:	25-2114
Date of manufacture	:	1966
Certificate of Airworthiness	:	220
Valid to	:	06 April 2008
Certificate of Registration	:	220
Valid to	:	14 July 2009
Time Since New (TSN)	:	6,191 hours 55 minutes
Cycles Since New (CSN)	:	5,395 cycles
Last Minor Inspection	:	06 May 2007 (50 hours inspection)

### **1.6.2 Engine**

Engine type	:	Piston engine
Manufacturer	:	Lycoming
Model	:	O-540 B2B5
Serial Number	:	L-13606-40
Time Since New (TSN)	:	This information was not made available to the investigation.
Time Since Overhaul (TSO)	:	This information was not made available to the investigation.

### **1.6.3 Weight and Balance**

The aircraft was loaded with 100 Liters pesticide and refuel 100 Liters. Considered these load the aircraft was being operated within the approved weight and balance limitations.

## **1.7 Meteorological Information**

The weather on Klumpang Tobacco Plantation, reported by local meteorological office was as follows:

Wind : 120° / 8 knots  
Visibility : 9 Km  
Cloud : 5 – 7/8 Cu 1700

The witnesses noticed that the wind at the time of the accident was significantly strong.

The PF reported while the aircraft descend over the river, the aircraft has experience of down draft and the right wing hit the bamboo trees.

At the time the accident, the witness who is an aircraft maintenance engineer informed that the wind blow extremely and the aircraft most likely loss of control. The wind came from direction about 300 degrees sporadically.

## **1.8 Aids to Navigation**

Not relevant to this accident.

## **1.9 Communications**

Not relevant to this accident.

## **1.10 Aerodrome Information**

Not relevant to this accident.

## **1.11 Flight Recorders**

The aircraft was not equipped with a Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR). Neither recorder was required by current Indonesian Civil Aviation Safety Regulations.

## **1.12 Wreckage and Impact Information**

### **1.12.1 Wing**

The right wing, left wing and wing strut was broken and damaged.

The left wing tip was hit a top of the bamboo trees and then impacted with ground (see Figure 3).

The aircraft stopped at about 50 meters from the impacted bamboo trees with left wing on top at an angle about 90° and fuselage at an angle about 45° relative to the ground (see Figure 2)



**Figure 3: The bamboo trees affected by the aircraft wing**

### **1.12.2 Windshield**

The aircraft windshield was broken.



**Figure 4: The broken windshield**

### **1.12.3 Engine**

The aircraft engine cowling was broken. The lower engine cowling was broken and bamboo pieces in the engine cowling.



**Figure 5: Bamboo pieces in the engine cowling**

The aircraft engine mount was bent.

The propeller blades were bent.

The propeller dome was broken due to ground impact.

Some fuel and pesticide was spilled and smell around the wreckage.

### **1.13 Medical and Pathological Information**

There was no evidence of physiological factors affected the pilot performance.

### **1.14 Fire**

There was no pre or post impact fire.

### **1.15 Survival Aspects**

This accident was survivable.

### **1.16 Tests and Research**

Not relevant for this investigation.

### **1.17 Organisational and Management Information**

Aircraft Owner : PT. Perkebunan Nusantara II

Aircraft Operator : PT. Perkebunan Nusantara II

Address : Jl. Tanjung Morawa Km. 16.5, Medan, North Sumatra

Operator Certificate number : OC 91 (general aviation)

### **1.18 Additional Information**

Klumpang tobacco plantation, Deli Serdang, North Sumatra area is 12,816 hectare.

In that areas are building for drying tobacco leaves, the bamboo tress, teak trees and palm trees.

The planned spray operation flight on Klumpang tobacco plantation was area number 1, 2, 3, 4, 5, 6, 7, 8 and 9. The Klumpang plantation is a flat ground surrounded by a small river and a road. There was bamboo tree on the plantation.

### **1.19 Useful or Effective Investigation Techniques**

The investigation is being conducted in accordance with the NTSC approved policies and procedures, and in accordance with the standards and recommended practices of Annex 13 to the Chicago Convention.



## 2 ANALYSIS

The plantation surfaces generally flat, however, in some places, there were a river using for irrigation, tobacco and others plant as bamboo, oil palm, and teak. In this area, has a building higher than the plantation.

The higher group of plantation might built turbulence when the strong wind blown through.

At the time the accident, the witness who is an aircraft maintenance engineer informed that the wind blow extremely and the aircraft most likely lost of control. The wind came from direction about 300 degrees sporadically; meteorology data informed wind direction 120 degrees and speed 8 knots.

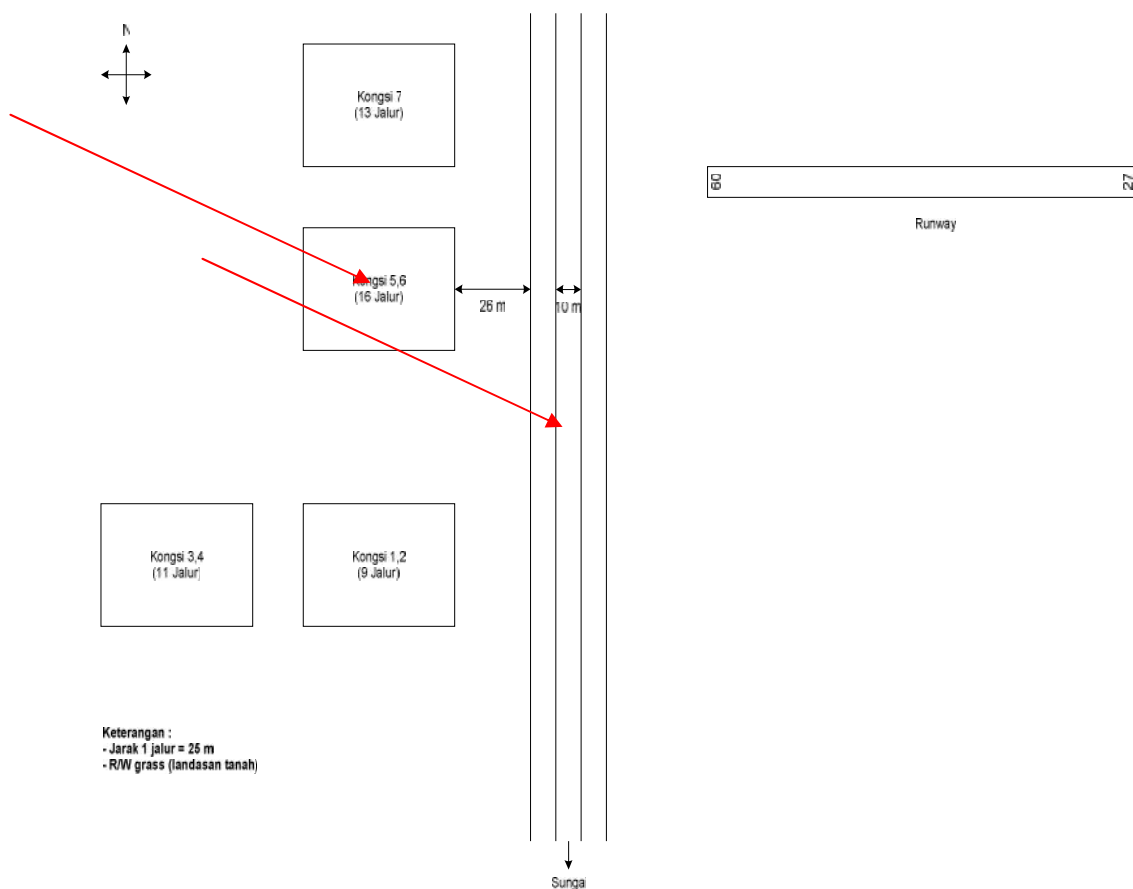


Figure 6: The wind direction scheme

The aircraft departure from the airstrip and then the aircraft climb turned to the right to chose the area plantation. After the aircraft reach altitude 200 feet, the aircraft descend and turn to the right to line 9 area plantations. While the aircraft descend over the river, the aircraft has experience of down draft and the right wing hit the bamboo trees, then the aircraft un-controlled and crash.



It might indicate that the aircraft was full load operating weight and entering the turbulence at the low altitude caused the aircraft lost of altituded and uncontrolled

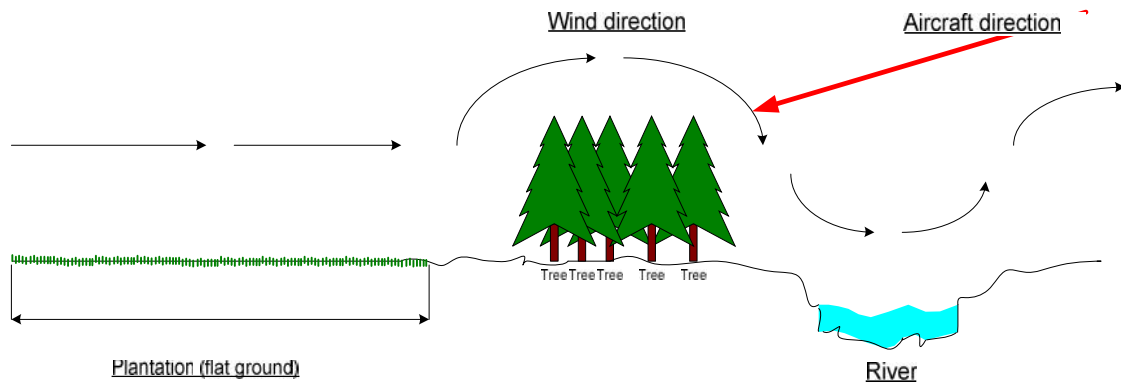


Figure 7: accident illustration (not scale)

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## **3 CONCLUSIONS**

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### **3.1 Findings**

- The aircraft was airworthy prior departure.
- The pilot has valid license.
- The accident flight was a third flight of the day to spraying a plantation area number 5 and number 6, and the accident is line 9 area plantations.
- The plantation area was flat ground, some places has a higher than tobacco trees.
- The witness informed while the aircraft flying in the tobacco plantation area, there was a wind with significant strong. The right wing hit a bamboo tree. And the aircraft became uncontroleda and crash

### **3.2 Causes**

The aircraft had experienced entering a trubulance at low altitude and uncontrolled hit the bamboo tree, then the aircraft crash in the bamboo trees area.

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## **4 SAFETY ACTIONS AND RECOMMENDATIONS**

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At the time of issuing this draft final investigation report, the National Transportation Safety Committee had not been informed of any safety actions resulting from this occurrence.

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## **5 SAFETY RECOMMENDATIONS**

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As a result of this investigation, the National Transportation Safety Committee issued safety recommendations to address safety issues identified in this report.

### **5.1 Directorate General Civil Aviation**

The National Transportation Safety Committee recommends that the Directorate General Civil Aviation should review and emphasize the agricultural pilot qualification, and licensing system related to the low level specific flight operationand.