

**FINAL**  
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**NATIONAL  
TRANSPORTATION  
SAFETY  
COMMITTEE**

**Aircraft Accident Investigation Report**

**Sinar Mas Super Air  
Fletcher FU-24-950 ; PK-PNZ  
Libo Airstrip, Samsam Village, Kandis, Riau  
Republic of Indonesia  
5 October 2007**



**NATIONAL TRANSPORTATION SAFETY COMMITTEE  
MINISTRY OF TRANSPORTATION  
REPUBLIC OF INDONESIA  
2014**

This Final report was produced by the National Transportation Safety Committee (NTSC), 3<sup>rd</sup> Floor Ministry of Transportation, 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 Organization, the Indonesian Aviation Act (UU No. 1/2009) and Government Regulation (PP No. 62/2013).

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## ABBREVIATIONS AND DEFINITIONS

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AD	:	Airworthiness Directive
AFM	:	Airplane Flight Manual
AGL	:	Above Ground Level
ALAR	:	Approach-and-Landing Accident Reduction
AMSL	:	Above Mean Sea Level
AOC	:	Air Operator Certificate
ATC	:	Air Traffic Control
BMKG	:	<i>Badan Meteorologi Klimatologi dan Geofisika/</i> Indonesia Agency Meteorology Climatology & Geophysics
BOM	:	Basic Operation Manual
CAMP	:	Continuous Airworthiness Maintenance Program
CASO	:	Civil Aviation Safety Officer
CASR	:	Civil Aviation Safety Regulation
CPL	:	Commercial Pilot License
COM	:	Company Operation Manual
CRM	:	Cockpit Recourses Management
CSN	:	Cycles Since New
DGCA	:	Directorate General Civil Aviation
EFIS	:	Electronic Flight Instrument System
ICAO	:	International Civil Aviation Organization
IFR	:	Instrument Flight Rules
ILS	:	Instrument Landing System
MTOW	:	Maximum Take-off Weight
Nm	:	Nautical mile(s)
KNKT / NTSC	:	<i>Komite Nasional Keselamatan Transportasi /</i> National Transportation Safety Committee
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
TT/TD	:	Ambient Temperature/Dew Point
UTC	:	Universal Time Coordinate
VFR	:	Visual Flight Rules
VMC	:	Visual Meteorological Conditions

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## INTRODUCTION

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### SYNOPSIS

On 5 October 2007, a Fletcher FU24-950M aircraft operated by PT. Sinar Mas Super Air, registered PK-PNZ was conducting aerial agriculture spraying activities at palm plantations of Rokan Estate, Pekanbaru, Riau.

The agricultural flight was in two sessions. Session #1 was in the morning conducted 27 cycles and session #2 was in the afternoon conducted 28 cycles.

There was one pilot on board in the aircraft.

The session #1 was carried out with normal and safely.

The session #2, the aircraft was take-off at 06:35 using runway 18. During climbing, the pilot turns to the left to the area of plantation and he felt strong wind from the right of the aircraft. Then the aircraft was descended and the left wing touched the tops of the palm tree. The aircraft was crashed into the palm trees on the left runway 18 about 238 meters from the end of runway.

The aircraft was substantial damaged. The pilot suffered minor injured.

The weather of that day was clear and wind speed around 6 – 10 knots.

There was a private airstrip operating by PT. Sinar Mas Super Air in the palm plantation area and equipped with wind shock. However, the windsock was lower than the trees.

PT. Sinar Mas Super Air advised the NTSC that it had taken safety action to agriculture flight operational followed to the Directorate General Civil Aviation CASR 137 and has approval from DGCA.

PT. Sinar Mas Super Air advised the NTSC that it had taken safety action to airstrip in the fertilization area that the runway safety area at the end of the runway and refer to the applicable regulations. The windsock has been located end of runway and the position higher than the palm trees. Distance between palm trees beside the runway becomes wider and the runway width 45 meters.

The Directorate General Civil Aviation advised the NTSC that had been taken safety action to published Civil Aviation Regulation (CASR) Part 137 Agricultural Aircraft Operations dated 10 July 2008 as Ministry Decree No. KM 32 Year 2008 and on his website [www.hubud.kemehub.go.id](http://www.hubud.kemehub.go.id)

The National Transportation Safety Committee recommends to the Directorate General Civil Aviation should evaluate the equipment of agriculture pilot other than single engine aircraft requirement.

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# 1 FACTUAL INFORMATION

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## 1.1 History of the Flight

On 5 October 2007, a Fletcher FU24-950M aircraft operated by PT. Sinar Mas Super Air, registered PK-PNZ was conducting aerial agriculture spraying activities at palm plantations of Rokan Estate, Pekanbaru, Riau.

The aerial agriculture spraying divided into two sessions. Session #1 was in the morning at 23:35 UTC<sup>1</sup> (06:35 LT) and conducted 27 cycles<sup>2</sup> for about 3 hours flight. Session #1 was in the afternoon after day break at 05:00 UTC and conducted 28 cycles.

The session #1 was carried out with normal and safely.

One Pilot was on-board in the aircraft.

The session #2, the aircraft was take-off at 05:00 using runway 18. After take-off, the pilot turned to the left to the fertilization area. The fertilization area was on the left of the runway.

The pilot informed while the aircraft turned to the left, he felt the strong wind from the right. Then the aircraft was descending and the left wing hit the palm tree. After losing the wing tip, the aircraft difficult to control and crashed into the palm trees on the left runway for about 238 meters from the end of runway 18.

The aircraft was substantial damaged. The pilot suffered minor injured.

The weather of that day was clear and wind speed around 6 – 10 knots.



Figure 1: Aircraft accident site

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1 The 24-hour clock in Universal Time Coordinate (UTC) is used in this report to describe the local time as specific events occurred. Indonesia Western Standard Time (*Waktu Indonesia Barat/ WIB*) is UTC +7 hours

2 Cycles means takeoff and landing of an aircraft.



## 1.2 Injuries to Persons

Injuries	Flight crew	Passengers	Total in Aircraft	Others
Fatal	0	0	0	0
Serious	0	0	0	0
Minor	1	0	1	0
None	0	0	0	0
<b>TOTAL</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>

## 1.3 Damage to Aircraft

The aircraft was substantial damaged.



Figure 2: The aircraft crash in the oil palm plantation

## 1.4 Other Damage

One of palm tree was collapse.

## 1.5 Personnel Information

The Pilot in Command (PIC) was male and Indonesian. He held valid Commercial Pilot License (CPL). He had completed and aircraft type rating for Aeroplane Class Single & Multi Engine Type Casa 212. There was no information that the pilot has training and check for agricultural operation.

## **1.6 Aircraft Information**

### **1.6.1 General**

The aircraft registered PK-PNZ was a New Zealand Aerospace Industries Limited Fletcher FU24-950M agriculture aerospace, manufactured in 2004. On 5 October 2007, the aircraft had total of 14,333 hours 9 minutes flight hours since manufactured. The aircraft has Certificate of Airworthiness valid until 9 April 2008 and Certificate of Registration until 21 December 2008.

### **1.6.2 Maintenance**

There was no system malfunction recorded or reported.

## **1.7 Meteorological Information**

The visual weather informed was clear and no cloud. The wind speed approximately 6 – 10 knots.

## **1.8 Aids to Navigation**

Not relevant to this accident.

## **1.9 Communications**

Not relevant to this accident.

## **1.10 Aerodrome Information**

There was a private airstrip operating by PT. Sinar Mas Super Air in the palm plantation area. The runway was 800 meters length and 12 meters width, the strip width was 30. Runway direction was 18 and 36. The runway surface was hardness ground (see Figure 3)

The runway equipped with wind shock, however, the wind shock was lower than the palm tree trunks (see Figure 4). There were palm trees at both side of runway, approximately 30 meters from centerline and with an average height 15 meters.

The strip was configuring as palm three tunnels on the left and right.

Runway 18

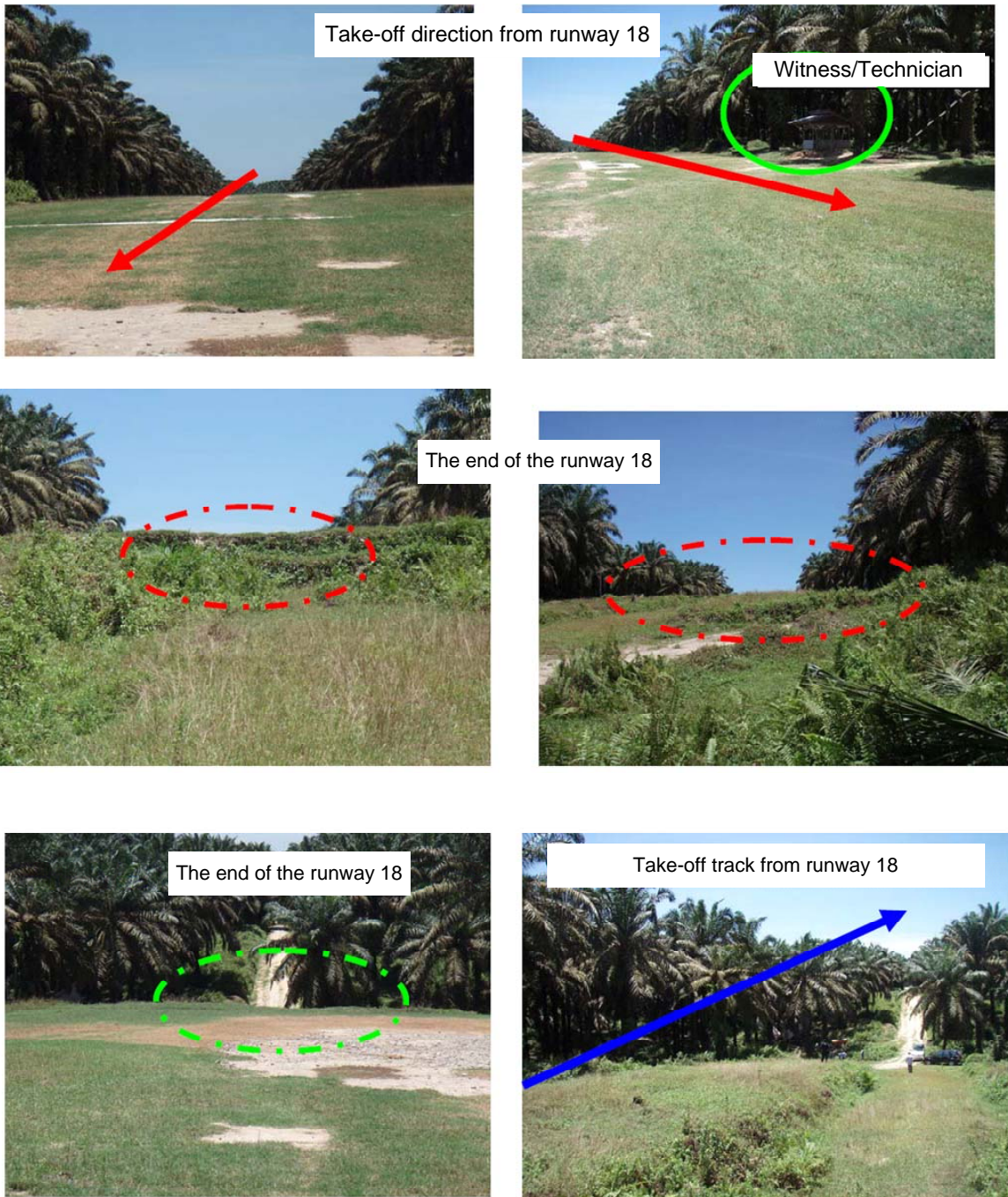


Figure 3: Runway condition



Figure 4: The wind shock location at the time of accident

### 1.11 Flight Recorders

The aircraft was not fitted with a flight data recorder or cockpit voice recorder. Neither recorder was required by current Indonesian aviation regulations.

### 1.12 Wreckage and Impact Information

The aircraft was destroyed during the accident and had come to rest in an inverted, nose down altitude. The damaged was as follows:

- The nose landing gear was detached from the nose section of the fuselage, the main landing gear still attached to the fuselage.
- The fuselage was damaged.
- The left and right wings were broken. There was damage consistent with left wing was hit the palm tree.
- All propeller blade was bent, none detached from the engine.





Figure 5: The aircraft last position



Figure 6: The aircraft damaged

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

No medical or pathological investigations were conducted as a result of this occurrence, nor were they required.

### **1.14 Fire**

There was no evidence of fire in-flight or after the aircraft impacted.

### **1.15 Survival Aspects**

Not relevant to this accident.

## 1.16 Tests and Research

No other tests or research were required to be conducted as a result of this occurrence.

## 1.17 Organizational and Management Information

Aircraft Operator : PT. Sinar Mas Super Air  
Address : Plaza BII Tower 2, 30<sup>th</sup> Floor  
JI. MH. Thamrin No. 50 Jakarta  
Air Operator Certificate : The operation at the time of accident was under general operating rule safe on each aircraft.

## 1.18 Additional Information

### 1.18.1 Agriculture flight

The agriculture flight for palm fertilization carried out more than 30 cycles every day and 500 kg payload capability aircraft in each flight.

Table 1: Fertilization flight activity last a month.

No	Date	Flight hours	Cycles
1	10-09-2007	05:00	33 Cycles
2	11-09-2007	01:90	13 Cycles
3	22-09-2007	03:00	25 Cycles
4	24-09-2007	03:35	48 Cycles
5	25-09-2007	07:10	59 Cycles
6	25-09-2007	07:10	59 Cycles
7	26-09-2007	04:05	25 Cycles
8	27-09-2007	07:35	49 Cycles
9	28-09-2007	06:25	35 Cycles
10	29-09-2007	06:05	30 Cycles
11	01-10-2007	07:15	58 Cycles
12	02-10-2007	09:35	60 Cycles
13	03-10-2007	04:05	35 Cycles
14	04-10-2007	04:15	38 Cycles
Total	14 days	76:00	627 Cycles

Base on Table 1, the fertilization activity were 44 cycles or 5 hours every day.

At the time of the accident, the morning flight activity carried out 27 cycles. After break and Friday praying the pilot had been carried out 28 cycles.

Normal operation for agriculture flight per day was more than 60 cycles.

#### **1.18.2 Procedure for Pilot Training**

The operator pilot training was only cover the aircraft type ratted; the investigation did not found the agriculture operation training to master the specific operation.

There was no requirement in CASR related to agriculture pilot requirement.

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

The investigation was 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 analysis part of this Final Report will discuss the relevant issues resulting to the aircraft sink and hit the palm three, The investigation determined that there were no issues with the aircraft and all systems were operating normally. The analysis will therefore focus on the following issues:

- Flight technique
- Environmental awareness
- Agriculture pilot training

### 2.1 Flight technique

The pilot had successfully completed the morning session aerial manueing, but during the flight that afternoon, the weather had strong and cross wind from the right reported by the pilot.

During climbing and turning to the left, suddenly the strong wind from the right side of the aircraft, so when the aircraft takeoff and climbing below the palm tree, the cross wind effect did not sensed due to tunneling effect.

The cross wind was not realized by the pilot due to the wind sock was not in his visibility or covered by the palm tree leaves, it was late since the aircraft sink and the left wing hit the palm tree, which caused the wing tip and separated of the left wing was collapsed. The aircraft crashed between of the palm trees, within + 238 meters from the end of runway 18.

It most likely, that the pilot did not have understanding of flight technique on an agriculture operation.

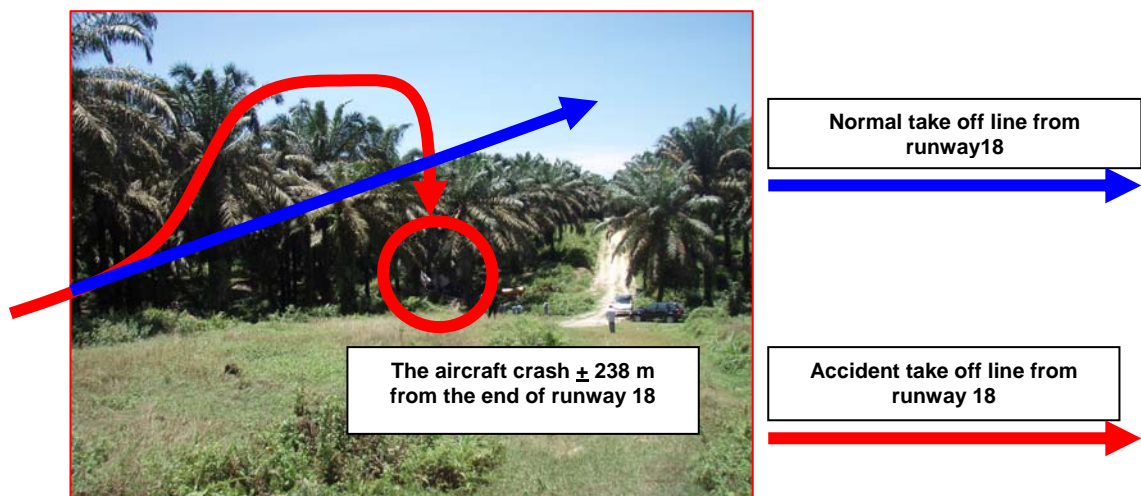


Figure 7: The aircraft normal take-off and accident tracking



## **2.2 Environmental awareness**

### **Airstrip**

The airstrip condition was between the palm trees, so that the airstrip looked like a tunnel, which the lower wind was not the same between the surface and above the trees.

The wind sock was covered by the palm tree leaves and it was not visible from the aircraft.

It is most likely that the pilot did not know that the cross wind may have an effect on the steep bank at low altitude and speed, this indicated the pilot encountered a downdraft.

## **2.3 Agriculture pilot training and qualification**

The pilot was trained for Fletcher aircraft type rated and the investigator did not get the information or data of the agriculture flight operation training.

There was no regulation related to the agriculture flight operation prior to the accident.

There was no requirement in CASR related to agriculture pilot requirements.

It is most likely that the pilot did not have the skill and experience to perform the agriculture flight operation.

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## **3 CONCLUSIONS**

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### **3.1 Findings**

#### **1. AIRCRAFT**

- The aircraft had a valid Certificate of Airworthiness and Certificate of Registry.
- The aircraft was airworthy when dispatched for the flight.
- There was no system malfunction recorded or reported on the maintenance record.

#### **2. PILOTS**

- The pilot was held valid licensed.
- There was no information that the pilot has been trained for agricultural operation.

#### **3. FLIGHT Technique**

- The very low level and speed turning was potentially high risk to be sank while the cross wind came through.
- When the aircraft take-off and then turned to the left, the strong wind was blowing in the right wing. The pilot encounter of the downdraft while climbing
- The pilot's actions indicated that his knowledge and understanding of the flight technique was inadequate.

#### **4. OPERATIONS**

The operator did not have training syllabus and program for new pilot other than for the agriculture experience pilot.

#### **5. Airstrip**

- Wind shock position was under the palm trees, so that the wind speeds different from above and under the palm trees, the wind direction could not be observed by pilot prior takeoff.
- The runway strip width was 12 meters and the palm trees between the airstrip for about 30 meters and height 15 meters. It indicated the airstrip look likes a tunnel.

### **3.2 Contributing Factors<sup>3</sup>**

The pilot was not well train on the agriculture operation

The pilot failed to encounter the aircraft experienced a sinking during very low level and speed.

The operator did not have training syllabus and program for new pilot other than for the agriculture experience pilot.

There were no agriculture operation regulations prior the accident.

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<sup>3</sup> “Factors” is defined as events that might cause the occurrence. In the case that the event did not occur then the accident might not happen or result in a less severe occurrence.

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## **4 SAFETY ACTION**

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At the time of issuing this final investigation report, the National Transportation Safety Committee had been informed of safety actions resulting from this occurrence.

### **4.1 PT. Sinar Mas Super Air**

The Sinar Mas Super Air informed the National Transportation Safety Committee that Sinar Mas Super Air issued a response to the NTSC recommendation, as follows:

1. The operator has been submit a Standard Operating Procedure (SOP) for agriculture flight and has approval from Directorate General Civil Aviation (DGCA);
2. The operator conduct and implementation of the type rating training for the aerial maneuvering.
3. The operators ensure the runway safety area at the end of the runway and refer to the applicable regulations.
4. The windsock has been located end of runway and the position higher than the palm trees.
5. Distance between palm trees beside the runway becomes wider, the runway width 18 meters and airstrip width 60 meters.
6. The operator has an annual currency proficiency check for agricultural operation.

### **4.2 Directorate General Civil Aviation**

The Directorate General Civil Aviation published Civil Aviation Regulation (CASR) Part 137 Agricultural Aircraft Operations dated 10 July 2008 as Ministry Decrees No. KM 32 Year 2008 and on their website [www.hubud.kemehub.go.id](http://www.hubud.kemehub.go.id).

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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 Directorate General Civil Aviation should evaluate the requirement of agriculture pilot other than single engine land requirement.