

**FINAL**

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**NATIONAL  
TRANSPORTATION  
SAFETY  
COMMITTEE**

**Aircraft Accident Investigation Report**

**PT. Dirgantara Air Service**

**PK-VSE**

**Casa 212-200**

**En-route Tarakan – Long Apung**

**East Kalimantan**

**Republic of Indonesia**

**26 January 2008**



**NATIONAL TRANSPORTATION SAFETY COMMITTEE  
MINISTRY OF TRANSPORTATION  
REPUBLIC OF INDONESIA  
2010**



This Draft Final Accident Investigation Report was produced by the National Transportation Safety Committee (NTSC), Karya Building 7<sup>th</sup> Floor Ministry of Transportation, Jalan Medan Merdeka Barat No. 8 JKT 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, Aviation Act (UU No.1/2009), and Government Regulation (PP No. 3/2001).

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## **GLOSSARY OF ABBREVIATIONS**

|        |   |
|--------|---|
| 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                                 |
| ATPL   | Air Transport Pilot License                         |
| ATS    | Air Traffic Service                                 |
| ATSB   | Australian Transport Safety Bureau                  |
| Avsec  | Aviation Security                                   |
| BMG    | Badan Meterologi dan Geofisika                      |
| BOM    | Basic Operation Manual                              |
| °C     | Degrees Celsius                                     |
| 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                                    |
| CVR    | Cockpit Voice Recorder                              |
| DFDAU  | Digital Flight Data Acquisition Unit                |
| DGCA   | Directorate General of Civil Aviation               |
| DME    | Distance Measuring Equipment                        |
| EEPROM | Electrically Erasable Programmable Read Only Memory |
| EFIS   | Electronic Flight Instrument System                 |
| EGT    | Exhaust Gas Temperature                             |
| EIS    | Engine Indicating System                            |
| FL     | Flight Level  |
| F/O    | First officer or Copilot                            |
| FDR    | Flight Data Recorder                                |
| FOQA   | Flight Operation Quality Assurance                  |

|                |   |
|----------------|---|
| GPWS           | Ground Proximity Warning System   |
| hPa            | Hectopascals  |
| ICAO           | International Civil Aviation Organization   |
| IFR            | Instrument Flight Rules   |
| IIC            | Investigator in Charge  |
| ILS            | Instrument Landing System   |
| Kg             | Kilogram(s)   |
| Km             | Kilometer(s)  |
| Kt             | Knots (NM/hour)   |
| Mm             | Millimeter(s)   |
| MTOW           | Maximum Take-off Weight   |
| NM             | Nautical mile(s)  |
| KNKT /<br>NTSC | Komite Nasional Keselamatan Transportasi / National<br>Transportation Safety Committee              |
| PIC            | Pilot in Command  |
| QFE            | Height above aerodrome elevation (or runway<br>threshold elevation) based on local station pressure |
| QNH            | Altitude above mean sea level based on local station<br>pressure                                    |
| RESA           | Runway End Safety Area  |
| RPM            | Revolution Per Minute   |
| SCT            | Scattered   |
| S/N            | Serial Number   |
| SSCVR          | Solid State Cockpit Voice Recorder  |
| SSFDR          | Solid State Flight Data Recorder  |
| TS/RA          | Thunderstorm and rain   |
| TAF            | Terminal Aerodrome Forecast   |
| TSN            | Time Since New  |
| TT/TD          | Ambient Temperature/Dew Point   |
| TTIS           | Total Time in Service   |
| UTC            | Coordinated Universal Time  |
| VFR            | Visual Flight Rules   |
| VMC            | Visual Meteorological Conditions  |

## **SYNOPSIS**

On 26 January 2008, a Casa 212-200 aircraft, registered PK-VSE, was being operated by PT. Dirgantara Air Service as a cargo charter flight from Tarakan Airport to Long Apung Airport. There were three persons on board; two pilots and one aircraft maintenance engineer/load master. The aircraft was certified as being airworthy prior to departure.

The aircraft departed from Tarakan at 0011 UTC (08:11 local time), and the estimated time arrival at Long Apung was 0136. At 0411 the pilot of another aircraft received a distress signal and informed air traffic services at Tarakan.

Searchers subsequently found the aircraft wreckage at an elevation of 2,766 feet, about 3.4 NM from Long Apung Airport. The coordinates of the accident site were 01° 39.483' S and 115° 00.265' E near Lidung Payau Village, Malinau, East Kalimantan. The accident site was on the left downwind leg of the runway 35 circuit.

Witnesses reported that at the time of the occurrence the downwind leg of the circuit for Runway 35 at Long Apung Airport was obscured by low cloud.

The copilot twice warned the PIC “be careful sir, there is a hill”. It is likely that the pilots were unable to keep the runway in sight during the maneuvering on downwind for runway 35.

The investigation determined that it is likely that the pilots did not maintain visual flight procedures, and flew the aircraft into instrument meteorological conditions prior to colliding with the terrain.

As a result of this investigation, the National Transportation Safety Committee issued recommendations to address safety issues identified in this report. Specifically with respect to the operators pilot training and checking, to ensure that it covers the use of the Flight Safety Foundation (FSF) (or similar) Approach-and-landing Accident Reduction (ALAR) and Controlled Flight Into Terrain (CFIT) awareness training material.



# 1 FACTUAL DATA

## 1.1 HISTORY OF THE FLIGHT

On 26 January 2008, a Casa 212-200 aircraft, registered PK-VSE, was being operated by PT. Dirgantara Air Service as a cargo charter flight from Tarakan Airport to Long Apung Airport. There were 3 persons on board; two pilots and one aircraft maintenance engineer/load master. The aircraft was certified as being airworthy prior to departure.

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**Figure 1: PK-VSE accident site**

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<sup>1</sup> The 24-hour clock in Coordinated Universal Time (UTC) is used in this report to describe the local time as specific events occurred. Local time in the area of the accident, Centre Indonesia Standard Time (Waktu Indonesia Tengah (WIT)) is UTC +8 hours.

## 1.2 INJURIES TO PERSONS

Table 1: Injuries to persons

| Injuries     | Flight crew | Passengers | Total in Aircraft | Others         |
|--------------|-------------|------------|-------------------|----------------|
| Fatal        | 3           | -          | 3                 | -              |
| Serious      | -           | -          | -                 | -              |
| Minor        | -           | -          | -                 | Not applicable |
| Nil Injuries |             | -          |                   | Not applicable |
| TOTAL        | 3           | -          | 3                 | -              |

The aircraft occupants were Indonesian citizens.

## 1.3 DAMAGE TO AIRCRAFT

The aircraft was destroyed by impact forces. The right wing root was substantially damaged by a post-impact fire.

## 1.4 OTHER DAMAGE

The accident occurred in the forest and some trees were damaged.

## 1.5 PERSONNEL INFORMATION

### 1.5.1 Pilot in Command

Age : 58 years  
Gender : Male  
Type of licence : Airline Transport Pilot License  
Valid to : 30 April 2008  
Rating : Casa 212-100 & 200, BN 2A  
Total flying time : 21,019 hours 40 minutes  
Total on this type : 14,234 hours 56 minutes  
Total last 90 days : 146 hours 22 minutes  
Total on type last 30 days : 56 hours 43 minutes  
Total on type last 7 days : Not provided by the operator  
Total on the type last 24 hours : 1 hours 25 minutes  
Last proficiency check : Not provided  
Medical class : Class one  
Last medical examination : 22 October 2007

### **1.5.2 Copilot**

Age : 50 years  
Gender : Male  
Type of licence : Commercial Pilot License  
Valid to : 31 March 2008  
Rating : Casa 212-100 & 200  
Total flying time : 16,849 hours 46 minutes  
Total on this type : 16,849 hours 15 minutes  
Total last 90 days : 189 hours 35 minutes  
Total last 30 days : 56 hours 43 minutes  
Total on type last 7 days : Not provided  
Total on the type last 24 hours : 1 hours 25 minutes  
Last proficiency check : Not provided by the operator  
Medical class : Class one  
Last medical examination : 31 March 2007

### **1.5.3 Engineer**

Age : 43 years  
Gender : Male  
Type of licence : Aircraft Maintenance Engineer  
License  
Valid to : 26 August 2008

## **1.6 AIRCRAFT INFORMATION**

### **1.6.1 General**

Aircraft manufacturer : Casa / Indonesia Aerospace  
Model : Casa 212-200 CC4  
Serial number : 092N/412  
Date of manufacture : 30 July 1993  
Nationality and registration mark : Indonesia, PK-VSE  
Name of the owner : PT. Dirgantara Air Service  
Name of the operator : PT. Dirgantara Air Service  
Certificate of Airworthiness Valid to : 20 May 2008  
Certificate of Registration Valid to : 10 June 2008  
Total flying hours : 11,750 hours 53 minutes  
Total cycle : 13,749 cycles  
Last Inspection (A3 on 16 January 2008) : 11,693 hours

The aircraft was maintained in accordance with the PT. DAS Continuous Airworthiness Maintenance Program, and the aircraft was certified as being airworthy prior to departure.

#### **1.6.2 Engine Data**

|                         |                          |
|-------------------------|--------------------------|
| Engine type             | : Turbo Propeller        |
| Manufacturer            | : Casa 212-200 CC4       |
| Type/Model              | : TPE 331-10R-512 C      |
| Engine number 1 (Left)  |                          |
| Serial number           | : P-37410 C              |
| Time since new          | : 8,988 hours 47 minutes |
| Cycles since new        | : 8,926 cycles           |
| Time since overhaul     | : 6,252 hours            |
| Time between overhaul   | : 7,000 hours            |
| Engine number 2 (Right) |                          |
| Serial number           | : P-37436 C              |
| Time since new          | : 6,510 hours            |
| Cycles since new        | : 4,881 hours            |
| Time since overhaul     | : 3,664 hours            |
| Time between overhaul   | : 5,400 hours            |

#### **1.6.3 Propeller data**

|                            |                          |
|----------------------------|--------------------------|
| Propeller type             | : Variable Pitch Prop    |
| Manufacturer               | : Dowty Propeller        |
| Type/Model                 | : P/N R334/4/82/F/13     |
| Propeller number 1 (Left)  |                          |
| Serial number              | : DRG-1377/90            |
| Time since new             | : 21 hours 38 minutes    |
| Time since overhaul        | : 21 hours 38 minutes    |
| Time between overhaul      | : 5,000 hours            |
| Propeller number 2 (Right) |                          |
| Serial number              | : DRG-1458/90            |
| Time since new             | : 2,525 hours 40 minutes |
| Cycles since new           | : 2,525 hours 40 minutes |
| Time between overhaul      | : 5,000 hours            |

#### **1.6.4 Weight and balance**

The load sheet indicated that the aircraft was loaded within weight and balance limits at the time of the departure.

### **1.6.5 Defects**

The maintenance documents showed no evidence of mechanical defects that could have contributed to the accident.

## **1.7 METEOROLOGICAL INFORMATION**

The weather forecast for Long Apung at 0000 was wind calm, visibility 1500 meters, and cloud 6 octas at 1,000 feet.

Witnesses at the airport reported that at the time of the occurrence the downwind leg of the circuit for Runway 35 at Long Apung Airport was obscured by low cloud.

## **1.8 AIDS TO NAVIGATION**

The flight was being conducted under the visual flight rules. There were no ground-based navigation aids for the route.

## **1.9 COMMUNICATIONS**

The pilot broadcast his flight departure and estimated arrival time on the very high frequency channel for the area. There was no communication equipment at Long Apung Airport.

## **1.10 AERODROME INFORMATION**

|                        |                                    |
|------------------------|------------------------------------|
| Airport Name           | Long Apung                         |
| Airport Identification | WALP                               |
| Coordinate             | 01° 03.0' S and 114° 58.0' E       |
| Elevation              | 2,010 feet                         |
| Airport Operator       | Directorate General Civil Aviation |
| Runway Direction       | 17/35                              |
| Runway Length          | 900 meters                         |
| Runway Width           | 23 meters                          |
| Surface                | Asphalt                            |

## **1.11 FLIGHT RECORDERS**

### **1.11.1 Flight Data Recorder**

The aircraft was not fitted with a flight data recorder (FDR) nor was one required by current Indonesian regulations.

### **1.11.2 Cockpit Voice Recorder**

Manufacturer : Fairchild Aviation Recorder,  
Model : A100A  
Serial number : 5301

The CVR contained good quality data that was transcribed by NTSC investigators.

### **1.11.3 Notable facts CVR**

From the conversation between the PIC and the copilot, there was no sign of an aircraft abnormality.

Seven seconds before the final impact, the copilot warned the PIC, “be careful sir, there is a hill”. At 30:18 CVR time, the copilot again warned the PIC about the hill.

Six seconds later, the first impact sound and a shout were recorded.

This was followed a second later by an impact sound and the signal from the Emergency Locator Transmitter were recorded.

## **1.12 WRECKAGE AND IMPACT INFORMATION**

The aircraft impacted trees and the terrain and wreckage was confined to the immediate accident site.



**Figure 2: Arrow shows first impact with tree**

### **1.13 MEDICAL AND PATHOLOGICAL INFORMATION**

No medical or pathological investigations were conducted on the flight crew.

### **1.14 FIRE**

There was no evidence of pre-impact fire. A post-accident fuel-fed fire substantially damaged the right wing root area. No rescue fire fighting services attended the accident site nor were they available in the remote location.

### **1.15 SURVIVAL ASPECTS**

The accident was not survivable.

### **1.16 TESTS AND RESEARCH**

None required.

### **1.17 ORGANIZATIONAL AND MANAGEMENT INFORMATION**

#### **1.17.1 P.T Dirgantara Air Service**

Aircraft Owner : PT. Dirgantara Air Service

Aircraft Operator : P.T Dirgantara Air Service  
Halim Perdanakusuma Airport, 2<sup>nd</sup> Floor,  
Jakarta, Indonesia

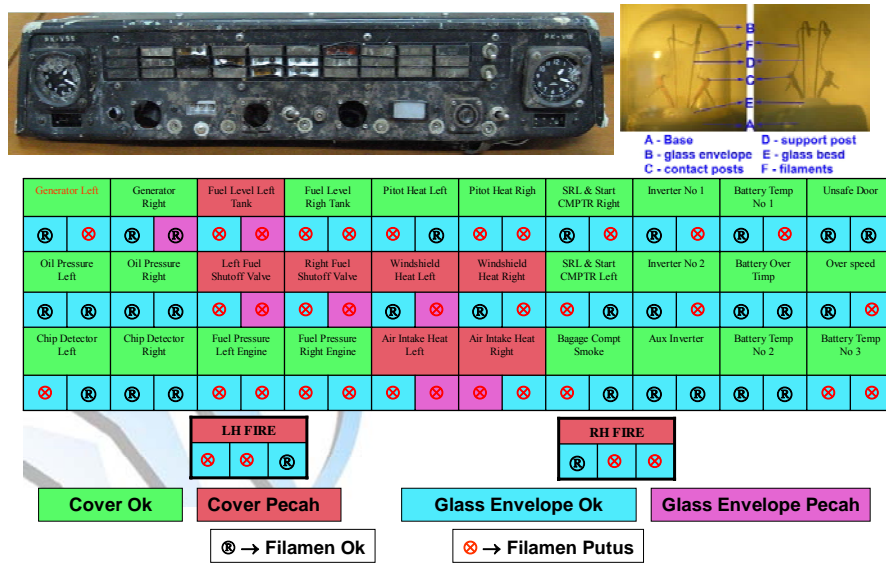
Aircraft Operator Certificate number: AOC/135-014

## 1.18 ADDITIONAL INFORMATION

The cargo moved during the impact. Investigators found that the cargo was not adequately restrained.

The bulb (filament) examination of the instrument panel warning/caution lights revealed no evidence of in-flight fire.

### Bulb Analysis Instrument Panel



## 1.19 USEFUL OR EFFECTIVE INVESTIGATION TECHNIQUES

The investigation was conducted in accordance with NTSC-approved policies and procedures, and in accordance with the Standards and Recommended Practices of Annex 13 to the Chicago Convention.

## **2 ANALYSIS**

At the time of the occurrence, it was reported that the left downwind leg of the circuit for runway 35 at Long Apung Airport was obscured by low cloud.

The copilot twice warned the PIC “be careful sir, there is a hill”. It is likely that the pilots were unable to keep the runway in sight during the maneuvering on downwind for runway 35.

The investigation determined that it is likely that the pilots did not maintain visual flight procedures, and flew the aircraft into instrument meteorological conditions prior to colliding with the terrain.



## **3 CONCLUSIONS**

### **3.1 FINDINGS**

- The aircraft was certified as being airworthy prior to departure.
- All crew members held appropriate and valid flight crew licenses.
- The pilots continued flight into instrument meteorological conditions.
- The aircraft impacted terrain in controlled flight.
- The cargo was not adequately restrained.

### **3.2 CAUSES**

The crew did not appear to have awareness of the aircraft's proximity with terrain until impact with terrain was imminent.

The pilot attempted to continue the flight in instrument meteorological conditions, below the lowest safe altitude.



## **4 SAFETY RECOMMENDATIONS**

### **4.1 SAFETY ACTIONS**

At the time of finalising this report, the National Transportation Safety Committee had not been informed of any safety action taken.

### **4.2 RECOMMENDATIONS**

As a result of the investigation into this accident, the National Transportation Safety Committee made the following recommendations.

#### **4.2.1 PT. Dirgantara Air Service**

The National Transportation Safety Committee recommends that PT. Dirgantara Air Service should review its pilot training and checking to ensure that it covers the use of the Flight Safety Foundation (FSF) (or similar) Approach-and-landing Accident Reduction (ALAR) and Controlled Flight Into Terrain (CFIT) awareness training material.

- The ALAR and CFIT awareness modules should be included in PT. Dirgantara Air Service recurrency training programs, and conduct initial ALAR and CFIT training for flight crew members who have not yet completed such training.