

FINAL

KNKT 08.01.02.04

**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 7th 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 / NTSC	Komite Nasional Keselamatan Transportasi / National Transportation Safety Committee
PIC	Pilot in Command
QFE	Height above aerodrome elevation (or runway threshold elevation) based on local station pressure
QNH	Altitude above mean sea level based on local station 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

¹ 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, 2nd Floor,
Jakarta, Indonesia

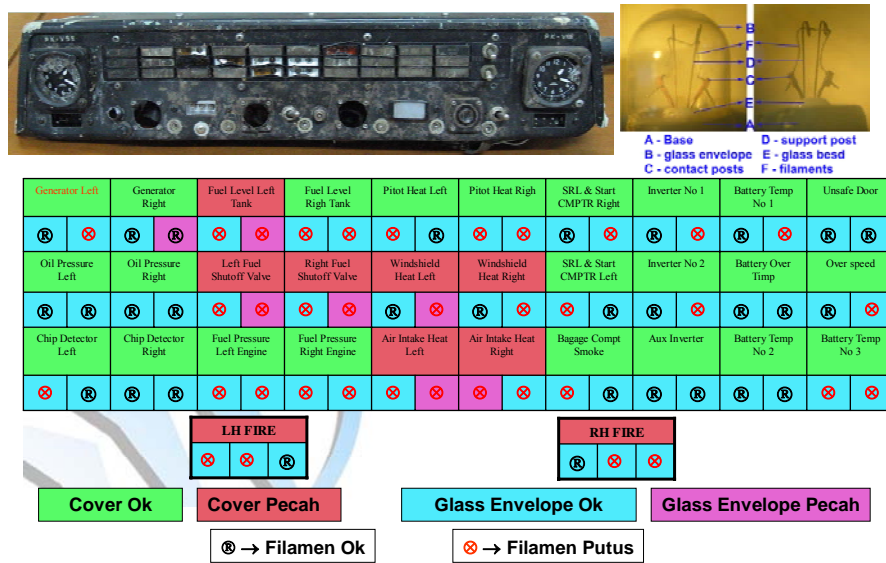
Aircraft Operator Certificate number: AOC/135-014

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.