PRELIMINARY
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NATIONAL TRANSPORTATION SAFETY COMMITTEE

Aircraft Accident Investigation Report

PT. Trigana Air Service
PK – YRP
ATR 42-320
Samboja Area, Km 41 Balikpapan
East Kalimantan
Republic of Indonesia

11 February 2010

NATIONAL TRANSPORTATION SAFETY COMMITTEE
MINISTRY OF TRANSPORTATION
REPUBLIC OF INDONESIA
2010

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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 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
Hrs	:	Hours

ICAO	:	International Civil Aviation Organization
IFR	:	Instrument Flight Rules
IIC	:	Investigator in Charge
ILS	:	Instrument Landing System
Kg	:	Kilogram(s)
Km	:	Kilometer(s)
Kts	:	Knots (nm/hours)
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 airport 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 Minutes
R/W	:	Runway
ROV	:	Remotely Operated Vehicle
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
TPL	:	Towed Pinger Locator
TSN	:	Time since New
TT/TD	:	Ambient Temperature/Dew Point
UTC	:	Universal Time Coordinate
VFR	:	Visual Flight Rules
VMC	:	Visual Meteorological Conditions

INTRODUCTION

SYNOPSIS

On 11 February 2010, an Avions de Transport Regional ATR 42-300 aircraft, registered PK-YRP, was being operated by Trigana Air Service on a scheduled passenger service between Kalimarau Airport Berau (BEJ) and Samarinda (SRI) as flight TGN162. There were 52 persons on board; two pilots, one engineer, two flight attendants, one flight dispatcher and 46 passengers (43 adults, one child, and two infants).

During the final approach for runway 04, the left ECU[1] light illuminated followed by low oil pressure and torque indications. The Pilot in Command (PIC) decided to go around, divert to Balikpapan, and carry out the QRH engine shut-down procedure.

They commenced the climb to 4000 ft with the left engine inoperative. Approximately 16 Nm from Balikpapan Airport, while climbing through 3,800 feet, the right ECU light illuminated, immediately followed by low oil pressure and low torque indications. The right engine then failed. The crew broadcast a MAYDAY to Balikpapan Approach and decided to conduct a forced landing into a clear field in the Samboja area, about 16 Nm from the Balikpapan Airport.

After the aircraft came to a stop, the PIC initiated an evacuation. One passenger was seriously injured.

The investigation is continuing and includes the engines and engine related systems, including the fuel system to determine the reason(s) for the fuel starvation/exhaustion and related engine failures. Fuel samples are also being analyzed. The investigation is also examining operational and training documentation.

1 ECU – Engine Control Unit

1 FACTUAL INFORMATION

1.1 HISTORY OF THE FLIGHT

On 11 February 2010, an Avions de Transport Regional ATR 42-300 aircraft, registered PK-YRP, was being operated by Trigana Air Service on a scheduled passenger service between Kalimarau Airport Berau (BEJ) and Samarinda (SRI) as flight TGN162. There were 52 persons on board; two pilots, one engineer, two flight attendants, one flight dispatcher and 46 passengers (43 adults, one child, and two infants).

The aircraft departed from Berau at 0230 UTC[2] and climbed to Flight Level (FL) 140. Balikpapan approach cleared the crew to track from en-route Way Point LOLOT direct to Samarinda. After transferring to Temindung Tower, Samarinda, the crew was cleared to track direct to left downwind for runway 04. The controller informed them that the wind was 060/12 knots. The crew did not report any abnormalities and the aircraft operation appeared to be normal.

During the final approach for runway 04, the left ECU[3] light illuminated followed by low oil pressure and torque indications. The Pilot in Command (PIC) decided to go around, divert to Balikpapan, and carry out the QRH[4] engine shut-down procedure.

They commenced the climb to 4000 ft with the left engine inoperative. Approximately 16 Nm from Balikpapan Airport, while climbing through 3,800 feet, the right ECU light illuminated, immediately followed by low oil pressure and low torque indications. The right engine then failed. The crew broadcast a MAYDAY to Balikpapan Approach and decided to conduct a forced landing into a clear field in the Samboja area, about 16 Nm from the Balikpapan Airport.

The PIC gave instructions to the Flight Attendant to prepare the passengers for an emergency landing. After the aircraft came to a stop the PIC initiated an evacuation.

2 The 24-hour clock used in this report to describe the time of day as specific events occurred, is in Coordinated Universal Time (UTC). Local time, Western Indonesian Standard Time (WITA) is UTC+ 8 hours.

3 ECU – Engine Control Unit

4 QRH – Quick Reference Handbook

1.2 INJURIES TO PERSONS

Table 1: Injuries to persons

Injuries	Flight crew	Passengers	Total in Aircraft	Others
Fatal	-	-	-	-
Serious	-	1	1	-
Minor	-	1	1	Not applicable
Nil Injuries	6	44	50	Not applicable
TOTAL	6	46	52	-

The occupants were Indonesian citizens.

1.3 DAMAGE TO AIRCRAFT

- Main and Nose Landing gear and surrounding structure were substantially damaged.
- The nose wheel penetrated the fuselage floor and was found in the passenger cabin.
- The cabin overhead lining was damaged and there was mud throughout the passenger cabin.
- The four propeller blades on the right propeller were substantially damaged

1.4 OTHER DAMAGE

There was no other damaged to property and/or the environment.

1.5 PERSONNEL INFORMATION

1.5.1 Pilot in command

Gender	:	Male
Date of birth	:	13 August 1962
Nationality	:	Indonesia
License	:	Airline Transport Pilot License No: 3503

Date of issued	:	23 May 1991
Valid to	:	31 July 2010
Aircraft type rating	:	Casa 212-200/100, SKA-100, DHC-6, BAe-ATP, F-27, ATR-42 and ATR-72
Medical certificate	:	Class 1
Date of last medical	:	1 February 2010
Valid to	:	1 August 2010
Last proficiency check	:	15 January 2009
Flying Experience		
Total hours	:	12,000 hours
Last 90 days	:	96 hours 17 minutes
Last 7 days	:	13 hours 14 minutes
Last 24 hours	:	7 hours 43 minutes
This flight	:	3 hours 22 minutes

1.5.2 Copilot

Gender	:	Male
Date of birth	:	15 March 1973
Nationality	:	Indonesia
License	:	Commercial Pilot License, No: 5427
Date of issued	:	29 December 1999
Valid to	:	1 July 2010
Aircraft type rating	:	DHC-4, F-27, ATR 42 and ATR 72
Medical certificate	:	Class 1
Date of medical	:	18 January 2010
Valid to	:	18 July 2010
Last proficiency check	:	4 May 2009
Flying Experience		
Total hours	:	2000 hours
Last 90 days	:	133 hours 22 minutes
Last 7 days	:	13 hours 14 minutes
Last 24 hours	:	3 hours

This flight : 3 hours

1.6 AIRCRAFT INFORMATION

1.6.1 Aircraft Data

Aircraft manufacturer	:	Avions de Transport Regional (ATR)
Country of manufacturer	:	France
Aircraft model/type	:	ATR 42-300
Serial number	:	050
Year of manufacture	:	1987
Aircraft registration	:	PK-YRP
Certificate of Registration	:	2255
Valid to	:	2 July 2010
Certificate of Airworthiness	:	2255
Valid to	:	1 August 2010
Total time since new	:	34,414 hours 10 minutes
Total cycles since new	:	42,107 cycles

1.6.2 Engines

Engine type	:	Turboprop
Manufacturer	:	Pratt and Whitney
Model	:	PW 121
Engine number 1 (Left)		
Serial Number	:	PCE – 121040
Total time since new	:	495 hours 13 minutes
Total time since overhaul	:	N/A
Engine number 2 (Right)		
Serial Number	:	PCE – 121201
Total time since new	:	25, 200 hours 55 minutes
Total time since overhaul	:	1,796 hours 55 minutes

1.6.3 Propellers

Propeller type and model	:	14SF-5
Manufacturer	:	Hamilton Standard
Propeller number 1 (Left)		
Serial Number	:	1480-5
Total time since new	:	11,289 hours 11 minutes
Total time since overhaul	:	1,261 hours 1 minute
Propeller number 2 (Right)		
Serial Number	:	156
Total time since new	:	Not provided by the operator
Total time since overhaul	:	6,675 hours 43 minutes

1.6.4 Weight and Balance (W&B)

The operator provided the following completed weight and balance sheet that was used for the accident flight.

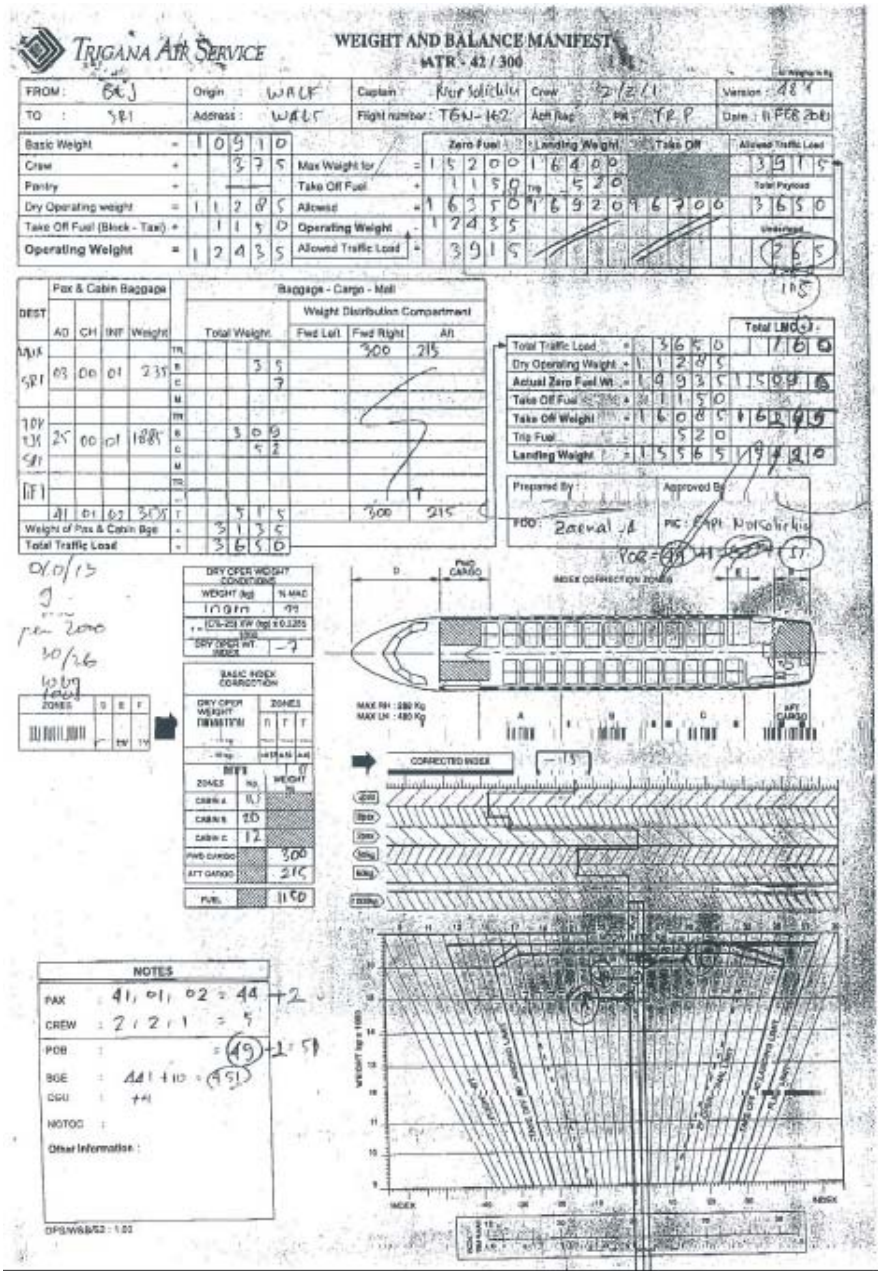

Figure 1: Load sheet supplied by the operator

1.7 METEOROLOGICAL INFORMATION

The weather information at Balikpapan Airport[5] on 11 February 2010 at 0227 was reports as:

Surface wind	:	10/13 Kts
Visibility	:	9 Km
Cloud	:	Few 2000
Temperature	:	30 C
Due Point	:	26
QNH	:	1009 Mbs
QFE	:	1008 Mbs

1.8 AIDS TO NAVIGATION

Not relevant to this accident investigation.

1.9 COMMUNICATIONS

Time (UTC)	Contact	Description
0322		Temindung Tower informed Balikpapan Approach TGN 162 experience LEFT ENGINE FAILURE and divert to Sepinggan Airport ETA 03.44 UTC
0324	APP TGN 162 APP TGN 162 APP	TGN162 – BPN APP We now maintain 4000 feet R020 37 Nm BPN VOR ETA.03.44 UTC TGN 162 Identified Position Confirm RWY 07 Cleared direct, confirm maintain 4000 feet Affirm sir…….. Maintain 4000 feet Report ready for descend
0325	APP	TGN162 – BPN APP (call 2 times)
0326	APP TGN 162 APP TGN 162 APP	TGN162 – BPN APP Go ahead Confirm engine fail left or right Left sir…. Okay thank you
03.31	TGN 162 APP	BPN APP-TGN162 descend leaving 4000 feet passing 3300 feet 19 Nm avoid weather TGN162 descend to 2500 feet traffic chopper ten

5 Balikpapen Airport was the nearest airport to the accident site for weather information.

	TGN 162	a ‘clock 7 NM climbing to 2000 feet, expect join left downwind 07 Roger
03.31	TGN 162	Mayday Mayday PK correction TGN 162 both engine failure position 16 Nm Roger mayday, TGN 162 descend to circuit joint left downwind RWY 07 report Runway insight Roger mayday, TGN 162 descend to circuit joint left downwind RWY 07 report Runway insight
03.33	APP	TGN 162 descend to circuit join final RWY 07 report RWY in sight TGN 162-BPN APP TGN 162-BPN APP radio check (2 times)
03.34	APP	TGN 162-BPN APP radio check (3 times)

1.10 AERODROME INFORMATION

Not relevant to this accident investigation.

1.11 FLIGHT RECORDERS

1.11.1 Flight Data Recorder

The aircraft was equipped with a Flight Data Recorder (FDR) and 30 minute Cockpit Voice Recorder (CVR).

FDR Manufacturer	:	Fairchild
Model	:	FA 2100
Serial Number	:	01299
Part Number	:	2100-4043-00

Figure 2: Flight data recorder

1.11.2 Cockpit Voice Recorder

CVR Manufacturer	:	Fairchild
Model	:	A100A
Serial Number	:	62579
Part Number	:	93A100-83

Figure 3: Cockpit voice recorder

1.12 WRECKAGE AND IMPACT INFORMATION

Figure 4: Right main landing gear door was broken

Figure 5: Right main landing gear was broken

Figure 6: Aircraft at final position

Figure 7: View of passenger cabin damage

Figure 8: Nose wheel found inside the cabin

1.13 MEDICAL AND PATHOLOGICAL INFORMATION

One passenger was seriously injured (left leg fracture) and one passenger received minor injuries. Both were taken to a hospital for treatment. No medical or pathological investigations were conducted on the flight crew.

1.14 FIRE

There was no pre- or post- impact fire.

1.15 SURVIVAL ASPECTS

All of the occupants survived the accident. One passenger was seriously injured, and one passenger received minor injuries.

1.16 TESTS AND RESEARCH

Fuel samples from the pre-departure point of refuelling were sent to the Centre of Fuel Laboratory at Cepu (Laboratorium Penguji Pusdiklat MIGAS, Cepu) for detailed analysis.

Fuel tank sediment and other samples were taken from all the wing tanks, and were sent to the laboratory for testing and analysis.

The fuel quantity indicator and fuel tank indicator probes were also sent to the laboratory for testing.

1.17 ORGANIZATIONAL AND MANAGEMENT INFORMATION

Aircraft Owner	:	PT. Trigana Air Services
Aircraft Operator	:	PT. Trigana Air Services Kompleks Puri Sentra Niaga Jl. Wiraloka Blok D 68-69-70, Kalimalang Jakarta 13620, Republic of Indonesia.
AOC	:	121-006

1.18 ADDITIONAL INFORMATION

The investigation is continuing and includes the engines and engine related systems, including the fuel system to determine the reason(s) for the fuel starvation/exhaustion and related engine failures. Fuel samples are also being analyzed. The investigation is also examining operational and training documentation.

1.19 USEFUL OR EFFECTIVE INVESTIGATION TECHNIQUE

The investigation is being 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.