

**FINAL**

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# NATIONAL TRANSPORTATION SAFETY COMMITTEE

*Aircraft Accident Investigation Report*

**PT. Travel Express Aviation Services (ExpressAir)**

**Dornier 328-100 ; PK-TXN**

**Tanah Merah Airport, Boven Digoel, Papua  
Republic of Indonesia**

**14 June 2009**



NATIONAL TRANSPORTATION SAFETY COMMITTEE  
MINISTRY OF TRANSPORTATION  
REPUBLIC OF INDONESIA  
2012

This Final report was produced by the National Transportation Safety Committee (NTSC), Ministry of Transportation Building 3<sup>rd</sup> Floor, Jalan 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, Indonesian Law (UU No.15/1992), and Government Regulation (PP No. 3/2001).

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## GLOSSARY OF ABBREVIATIONS

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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
ATPL	Air Transport Pilot License
ATS	Air Traffic Service
Avsec	Aviation Security
BMKG	<i>Badan Meterologi, Klimatologi, dan Geofisika /</i> Climatology Meteorology and Geophysycs Agency
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 Co-pilot
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	<i>Komite Nasional Keselamatan Transportasi</i> / 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

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# INTRODUCTION

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## SYNOPSIS

On 14 June 2009, a Dornier 328-100 aircraft, registration PK-TXN, was being operated by PT. Travel Express Aviation Services (Expressair), flight number XN-9001, on a scheduled passenger flight from Jayapura to Tanah Merah. The flight departed from Jayapura at 2230 UTC (07:30 local time) with an estimated arrival time at Tanah Merah of 0017. There were 36 people on board; two pilots, one cabin crew, and 33 passengers.

The pilot in command (PIC) was pilot flying and the copilot was the support/monitoring pilot.

The crew flew the aircraft overhead Tanah Merah and joined left downwind at 900 feet. Final approach was reported to have been normal with VREF 105 knots.

The aircraft touched down at 0017, towards the departure at end of the runway 25 touchdown zones at Tanah Merah Airport, Boven Digoel, Papua. The crew reported that the touched down was normal.

During the landing roll the PIC used reverse thrust to slow the aircraft. After a landing roll of approximately 500 meters, reverse thrust was reduced and the condition levers were selected to minimum. The crew reported that without warning, the aircraft diverged abruptly to the right and they were not able to arrest the swing using full left rudder and left brake. The aircraft left the runway and stopped on the shoulder approximately 10 meters away from the edge of runway, and approximately 600 meters from touchdown area.

The right wheels sank into the soft ground of the runway shoulder, and the left wheels and the nose wheels were on the shoulder. The right propeller blades fractured as they struck the ground and the propeller assembly was torn from the engine and came to rest approximately 4.5 meters from the right engine. The right engine was substantially damaged.

The investigation is continuing and will include a detailed review of flight recorder data, and operational procedures to determine if they may have contributed to this accident. The State of Manufacture and the Dornier Type Certificate holder are assisting the investigation.



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# 1 FACTUAL INFORMATION

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## 1.1 History of the Flight

On 14 June 2009, a Dornier 328-100 aircraft, registration PK-TXN, was being operated by PT. Travel Express Aviation Services (Expressair), flight number XN-9001, on a scheduled passenger flight from Jayapura to Tanah Merah. The flight departed from Jayapura at 2230 Coordinated Universal Time/UTC<sup>1</sup> (07:30 local time) with an estimated arrival time at Tanah Merah of 0017. There were 36 people on board; two pilots, one cabin crew, and 33 passengers. The pilot in command (PIC) was pilot flying and the copilot was the support/monitoring pilot.

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<sup>1</sup> The 24-hour clock is used in this report to describe the local time of day, Eastern Indonesia Standard Time (Waktu Indonesia Timur (WIT)) as specific events occurred. Eastern Indonesian Standard Time is Coordinated Universal Time (UTC) + 9 hours.



**Figure 1: PK-TXN, Dornier 328-100 at Sentani Airport on 14 June 2009 before the accident**

An emergency evacuation was performed while the left propeller was still wind milling after engine shut down. All but three occupants disembarked through the aircraft's passenger door (L1) and used the air stairs. Three passengers left the aircraft through the left emergency exit L2. There were no injuries.

The investigation did not find defects recorded in the maintenance log book that would have contributed to the landing accident at Tanah Merah.



**Figure 2: Wheel marks on the muddy runway shoulder**



**Figure 3: Tire marks on runway starting to roll to right**



**Figure 4: Final position of the aircraft**

## 1.2 Injuries to Persons

Injuries	Flight crew	Passengers	Total in Aircraft	Others
Fatal	-	-	-	-
Serious	-	-	-	-
Minor	-	-	-	-
Nil injuries	3	33	36	-

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<b>TOTAL</b>	<b>3</b>	<b>33</b>	<b>36</b>	<b>-</b>
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### 1.3 Damage to aircraft

The right hand engine and propeller were substantially damaged and right hand wing tip rest on the ground, suspected to be damage.



**Figure 5: Right engine without propeller**



**Figure 6: Propeller position 4.5 meters away from the engine**



**Figure 7: The Right Propeller and part of gear box**



**Figure 8: The right wing tip damage, no wrinkles on wing**



**Figure 9: The right side of the aircraft**

## **1.4 Other damage**

There was no damage to other property, except the muddy shoulder.

## **1.5 Personnel information**

### **1.5.1 Pilot in command**

Gender : Male  
Date of birth : 4 June 1952  
Nationality : British  
Date of joining company : 24 March 2009  
License : UK/ATPL/200012A/A  
Val.2/1129/KAOPS/LIC/VI/09  
Valid to : 24 March 2009  
Type rating : Dornier 328  
Instrument rating : Yes  
Date of last medical : 8 January 2009  
Medical certificate valid to : 8 January 2010  
Last line check : 19 May 2009  
Last proficiency check : 24 March 2009  
FLIGHT TIME  
Total time : 9,880 hours  
This make & model : 1,300 hours  
Last 90 days : 133 hours 41 minutes  
Last 60 days : 133 hours 41 minutes  
Last 24 Hours : 1 hour

### **1.5.2 Copilot**

Gender : Male  
Nationality : Indonesia  
Date of birth : 7 December 1978  
Date of joining company : March 2007  
License : ATPL  
Valid to : 30 June 2009  
Type rating : Dornier 328  
Instrument rating : Yes  
Date of last medical : 31 December 2008

Last line check : February 2009  
 Last proficiency check : May 2009  
**FLIGHT TIME**  
 Total time : 5,600 hours  
 This make & model : 500 hours  
 Last 90 days : 260 hours  
 Last 60 days : 157 hours 13 minutes  
 Last 24 Hours : 1 hour

## **1.6 Aircraft information**

### **1.6.1 Aircraft Data**

Registration Mark : PK-TXN  
 Manufacturer : Dornier  
 Country of Manufacture : Germany  
 Type/ Model : Dornier 328-100  
 Serial Number : 3030  
 Date of manufacture : January 1995  
 Certificate of Airworthiness  
     Issued : 5 December 2008  
     Valid to : 5 December 2009  
 Certificate of Registration  
     Issued : 4 December 2008  
     Validity : 3 December 2009  
 Category : Transport  
 Crew (Cockpit/Cabin) : 2 / 1  
 Time Since New : 24,706 hours  
 Cycles Since New : 22,363 cycles  
 Last C-4Check : 26 November 2008 (TSN=23,852 hrs)

### **1.6.2 Engine Data**

Manufacturer : Pratt and Whitney  
 Type/Model : PW 119B  
 Serial Number-1 engine : 116084

- Time Since New : 23,736 hours.
- Cycles Since New : 21,452 cycles
- Serial Number-2 engine : 116041
- Time Since New : 19,495 hours
- Cycles Since New : 21,481 cycles

### **1.6.3 Weight and Balance**

Load and centre of gravity were within the allowable limits for the landing.

### **1.6.4 Maintenance**

Records indicated that maintenance had been carried out in accordance with the operators approved maintenance schedule.

There was no evidence that maintenance contributed to this accident.

## **1.7 Meteorological information**

The meteorological data from BMKG local office recorded at 0000 UTC, wind calm, wind direction 300 degree and speed 4 knots. The visibility was 8,000 meters, the weather was scatter at 210 meters and cloud BKN at 1,000 meters.

## **1.8 Aids to Navigation**

Not relevant to this accident.

## **1.9 Communications**

Not relevant to this accident.

## **1.10 Aerodrome Information**

### **1.10.1 General**

Aeronautical Information Publication Amdt 3 dated 10 November 2006, current at the time of drafting the Preliminary Factual Report, listed the following data:

- Airport Name : Tanah Merah Airport
- Airport Identification : WAKT / TMH
- Coordinate : 06° 05' 55,50" S 140° 18' 03,91" E
- Elevation : 75,46 feet above Sea Level
- Airport Operator : DGCA
- Class : Category



Runway Direction : 25 – 07  
Runway Length : 1,050 meters  
Runway Width : 20 meters  
Surface : Asphalt  
Address : Tanah Merah Airport  
Boven Digoel, Papua

The investigation found data from other airline operator that was a variance with the AIP data. Specifically, aerodrome coordinates runway surface and dimensions, and aerodrome elevation.

## **1.11 Flight Recorders**

The flight recorders were recovered from the aircraft on 14 June 2009 under the supervision of NTSC investigators. The data download and analysis was conducted by Aero Nusantara Indonesia at Curug facility, witnessed by NTSC, 25 June 2009 and successfully download.

### **1.11.1 Digital Flight Data Recorder (DFDR)**

Manufacturer : Fairchild L3 Com  
Type/Model : FA 2100  
Part Number : 2100-4043-00  
Serial Number : 000121912

### **1.11.2 Cockpit Voice Recorder (CVR)**

Manufacturer : Fairchild  
Type/Model : A1001  
Part Number : 93-A100-80  
Serial Number : 61998

## 1.12 Wreckage and impact information



Figure 10: Propeller hit the mound, underneath the front of right gear



Figure 11: Wreckage taken from the air



**Figure 12: Final position 600 meters from touch down area**

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

Not relevant to this accident.

### **1.14 Fire**

There was no evidence of pre or post impact fire.

### **1.15 Survival aspects**

The investigation noted that the company standard operating procedures did not provide guidance or instruction for the cabin crew in the event of an evacuation to ensure passengers were directed away from turning propellers.

### **1.16 Test and Research**

Not relevant to this accident.

### **1.17 Organizational and Management Information**

#### **1.17.1 Travel Express Aviation Services (ExpressAir)**

Aircraft Operator : Travel Express Aviation Services  
(Expressair)  
Address : Jl. Benjamin Suaeb blok A11-12 Kemayoran  
Jakarta Pusat 10630  
Certificate Number : AOC 121

### **1.18 Additional Information**

Information found during the investigation with respect to check and training and

simulator training revealed a number of differing operational procedures. Some of the differences noted were in relation to checklists in the area of engine controls and aircraft landing roll speeds.

The investigation is continuing and will include a detailed review of flight recorder data, and operational procedures to determine if they may have contributed to this accident. The State of Manufacture and the Dornier Type Certificate holder are assisting the investigation.

### **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.

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## 2 ANALYSIS

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The aircraft touched down towards the departure end of the touch-down area of runway 25 at Tanah Merah.

The PIC reported that normal descent and approach were made from overhead the airfield and left down wind.

Normal final and cross threshold at V-REF 105 knts. Good touchdown and rolling on centre line. As speed reduced to 60 knots, PIC called for condition lever to be selected to minimum position. Aircraft immediately pulled hard to right, he applied maximum brake, nose wheel steering and emergency brake. Aircraft continued to pull right, off the runway on to wet grass and mud.

The investigation found the tire marks from touchdown area and along the center line of the runway up to approximately 500 meters, the aircraft swung to right, skidding and out of the runway at 600 meters and stopped.

The investigation found that PIC had no flight for the last year before joint the company, and he used to fly different aircraft at Europe.

The investigation revealed that the condition lever should be selected to minimum position at the aircraft speed not more than 30 knots. PIC called for condition lever to be selected to minimum position at aircraft speed at 60 knots, higher than 30 knots, that was not in accordance with procedure laid down in the “Operation Manual”. The aircraft could not be maintained straight roll at the runway, but it continued pull right, off the runway.

The corrected action was not success.

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## **3 CONCLUSION**

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### **3.1 Findings**

- The aircraft was maintained in accordance with approved schedule of maintenance.
- The Pilot in Command (PIC) was appropriately licensed as pilot in command of Dornier 328-100 aircraft.
- The copilot was appropriately licensed as a copilot of Dornier 328-100 aircraft.
- The PIC and copilot were paired for the first time on the occurrence flight
- The PIC did not follow correct procedures for reducing the condition lever, did call condition lever to be selected to minimum position at higher aircraft ground speed.
- The PIC lacked of confidence to land at Tanah Merah Airport, due to lack of flight experience using this type of aircraft and at the unusual condition of airport, not like the conditions of airport he used to fly in Europe.

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## **4 SAFETY RECOMMENDATIONS**

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As result of investigation into the Expressair, Dornier 328, PK-TXN, accident that occurred on 14 June 2009 at Tanah Merah, Boven Digoel, Papua, the National Transportation Safety Committee's (NTSC) issues the following recommendations to address the safety deficiencies identified in this report.

### **4.1 Recommendation to PT. Travel Express Aviation Services (Expressair)**

The National Transportation Safety Committee recommends that Expressair should review its training of flight crew to ensure they have adequate:

- a. technical knowledge of the Dornier 328 engine and propeller systems, with particular attention to the procedure of reducing the condition lever.
- b. PIC should have been check properly by Flight Instructor, including line check at Papua routes, before assigned as PIC.
- c. Experience at the same type rating in the recent past year.

### **4.2 Recommendation to Directorate General Civil Aviation**

The National Transportation Safety Committee recommends that the Directorate General Civil Aviation, as part of its safety audit/surveillance oversight of Expressair, assess the adequacy of PIC qualifications in the same type rating.