

**FINAL**  
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# NATIONAL TRANSPORTATION SAFETY COMMITTEE

*Aircraft Serious Incident Investigation Report*

**PT. Ekspres Transportasi Antarbenua (Premi Air)**

**Cessna C208B Grand Caravan; PK-RJS**

**Kobakma Airstrip, Papua  
Republic of Indonesia**

**09 July 2010**



NATIONAL TRANSPORTATION SAFETY COMMITTEE  
MINISTRY OF TRANSPORTATION  
REPUBLIC OF INDONESIA  
2014

This Final Report was produced by the National Transportation Safety Committee (NTSC), Transportation Building 3<sup>rd</sup> Floor, 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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## GLOSSARY OF ABBREVIATIONS

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ALAR	:	Approach and Landing Accident Reduction
AOC	:	Air Operator Certificate
ATC	:	Air Traffic Control
°C	:	Degrees Celsius
CPL	:	Commercial Pilot License
CRM	:	Crew Recourse Management
CSN	:	Cycles Since New
CVR	:	Cockpit Voice Recorder
DGCA	:	Directorate General of Civil Aviation
FDR	:	Flight Data Recorder
ICAO	:	International Civil Aviation Organization
KHz	:	Kilo Hertz
Mbs	:	millibars
MHz	:	Mega Hertz
MTOW	:	Maximum Take-off Weight
KNKT / NTSC	:	<i>Komite Nasional Keselamatan Transportasi</i> / National Transportation Safety Committee
PF	:	Pilot Flying
P/N	:	Part Number
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
S/N	:	Serial Number
SOP	:	Standard Operating Procedure
TSN	:	Time Since New
USA	:	United States of America
UTC	:	Universal Time Coordinate
VFR	:	Visual Flight Rules
WIT	:	<i>Waktu Indonesia Timur</i> (East Indonesian Standard Time)

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# INTRODUCTION

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## SYNOPSIS

On 9 July 2010, a Cessna 208B Grand Caravan aircraft registered PK-RJS was being operated by PT. Ekpress Transportasi Antarbenua (Premi Air) as a charter flight, from Wamena Airport (WMX / WAJW) Papua, to Kobakma Airstrip (KOB) Mamberamo, Papua. There were one flight crew and 9 passengers.

The flight departed from Wamena at 21.46 UTC (06.46 WIT) to Kobakma. This was the second flight of the day with the same destination for the pilot.

Normal flight conditions reported until approach the Kobakma Airstrip that it was covered with fog. The pilot decided to hold until the fog appeared to be clear. After approximately 20 minutes of holding, the pilot reported that fog covered the key point on the final was disappearing. The pilot continued to join the left downwind Runway 09 than left base and aircraft touched down with slight stall warning horn engaged.

The aircraft landed at Kobakma Airstrip at 22.23 UTC (07.23 WIT). During landing roll about near end of Runway 09, a small muddy gravel spot with stone rooted to the ground hit the aircraft left main wheel which caused the aircraft veer to the left out of the runway.

The aircraft start veered to the left of out of the runway about 20 meters before the end marker and stop at 15 meters before left end marker. The aircraft stuck with pile of stones along the side of the runway.

These stones were stack there in the purpose of runway hardener development project. The project did not start until the day of occurrence.

The damage of the aircraft were all three propeller blades damage, lower cargo port fairing damage, left main landing fairing damaged and a hole on the left lower flap which caused fuel leaked out.

All passengers were disembarked safely and no one was injured in this serious incident.

The investigation concluded that the contributing factors of this serious incident are as follows:

- The aircraft either was coming well above the normal approach profile or floating over the runway resulted to the insufficient remaining landing distance.
- The complacency elements influenced to the pilot decision making.
- The deceleration value of the left main tire was greater than the right main tire causing the aircraft veer off to the left.

At the time of issuing this final report, the National Transportation Safety Committee has not been informed of any safety actions resulting from this serious incident.

Included in this report, the National Transportation Safety Committee (NTSC) has issued several safety recommendations addressed to the Indonesian DGCA and PT. Ekspress Transportasi Antarbenua (Premi Air).

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# 1 FACTUAL INFORMATION

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## 1.1 HISTORY OF THE FLIGHT

On 9 July 2010, a Cessna 208B Grand Caravan aircraft registered PK-RJS was being operated by PT. Ekpress Transportasi Antarbenua (Premi Air) as a charter flight, from Wamena Airport (WMX / WAJW) Papua, to Kobakma Airstrip (KOB) Mamberamo, Papua<sup>1</sup>. There were one flight crew and 9 passengers.

The flight departed from Wamena at 21.43 UTC<sup>2</sup> (06.43 WIT) to Kobakma. This was the second flight of the day with the same destination for the pilot.

According to the pilot report: the en-route weather was fine the mountains, airstrip and Kobakma town was visible, however a small cloud was blocking the final check point of runway 09.

The pilot decided to hold over Kobakma at 5,500 feet (airstrip elevation 2,900 feet) until the fog appeared to be clear. After approximately 20 minutes of holding, the pilot reported that fog covered the final check point on the final runway 09 was disappearing. The pilot continued to join the left downwind and selected the flap to 10° and speed was 120 knots then when on base leg, to 20° and speed was 95 knots.

The flap 30° selected when the aircraft was on final runway 09 and aircraft touched down with stall warning horn sounded.

At 22.23 UTC (07.23 WIT) the aircraft landed at Kobakma Airstrip, the touchdown mark was about 450 meters from the beginning of Runway 09.

The tire marks shown that the left deeper than the right, the aircraft start veered to the left of runway about 150 meters before the end of Runway 09. The aircraft was stop by the pile of stones along the side of the runway.

The aircraft hit the pile of stones on the side of the runway and stopped at 15 meters before left end marker.

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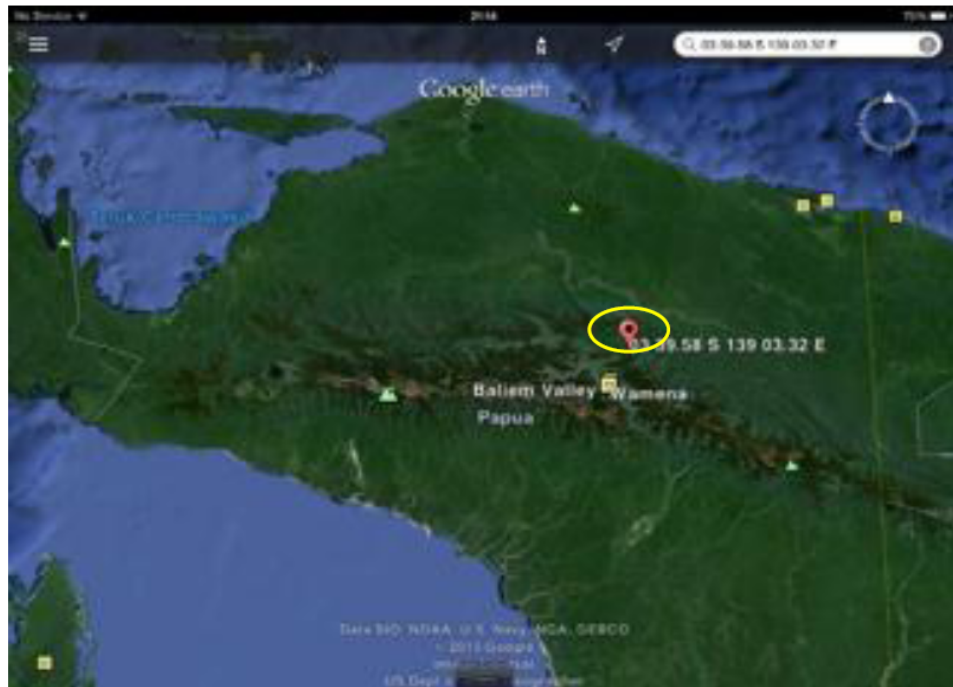
<sup>1</sup> Kobakma Airstrip (KOB) Mamberamo, Papua is referred to as 'Kobakma' in this report.

<sup>2</sup> The 24-hours clock in Universal Time Coordinated (UTC) is used in this report to describe the local time as specific events occurred. Local time is UTC+9 hours.





The airport officer and local people moved the aircraft to the apron.



*Map courtesy of Google Earth*

Figure 2. The location of Kobakma airstrip in yellow circle



Figure 3. The aircraft condition and parked on the apron

## 1.2 INJURIES TO PERSONS

Injuries	Flight crew	Passengers	Total in Aircraft	Others
Fatal	-	-	-	-
Serious	-	-	-	-
Minor	-	-	-	Not applicable
Nil Injuries	1	9	10	Not applicable
TOTAL	1	9	10	-

## 1.3 DAMAGE TO AIRCRAFT

The parts of aircraft damages were as follows:

- All three propeller blades damaged,
- Lower cargo port fairing damaged,
- Left main gear fairing damaged,
- Left lower flap surface holed.



Figure 4. Lower Cargo Fairing



Figure 5. Cessna 208 PK-RJS Propeller Blades

#### 1.4 OTHER DAMAGE

The field observation found that excavated line starting 450 meters from the beginning of runway 09 and the tire marks shown that the left deeper than the right.



Figure 6. Excavated line

## 1.5 PERSONNEL INFORMATION

### 1.5.1 Pilot

Gender	:	Male
Nationality	:	Philippine
License type	:	CPL
Aircraft type rating	:	Cessna 208
Valid to	:	31 January 2011
Medical certificate	:	First Class
Valid to	:	07 June 2011
Last proficiency check	:	12 January 2010
Total hours	:	5,422 hours 36 minutes
Total on type	:	1,792 hours 52 minutes
This flight	:	34 minutes

## 1.6 AIRCRAFT INFORMATION

### 1.6.1 General

Aircraft manufacturer	:	Cessna Aircraft Company, USA
Aircraft model/type	:	C208B Grand Caravan
Serial number	:	208B – 1057
Year of manufacture	:	2004
Aircraft registration	:	<b>PK-RJS</b>
Certificate of Registration	:	2365
Valid to	:	18 January 2012
Certificate of Airworthiness	:	2365
Valid to	:	26 June 2011
TSN	:	2,870 hours 15 minutes
CSN	:	3,202 cycles
MTOW	:	8,750 lbs
Last Major Inspection	:	OPS-2 inspection dated 23 May 2010 at 2,794 hours and 3,064 cycles

### **1.6.2 Engine**

Engine type	: Turboprop
Manufacturer	: Pratt &Whitney, Canada
Model	: PT6A-114
Serial Number Engine	: PSPC1096
TSN	: 2,870 hours
CSN	: 3,199 cycles

### **1.6.3 Propeller**

Propeller type	: Turboprop variable pitch
Manufacturer	: McCauley
Model	: 3GFR34C703-B
Serial Number Propeller	: 080041
TSN	: 1,366 hours 42 minutes
CSN	: Not recorder by operator

## **1.7 METEOROLOGICAL INFORMATION**

Kobakma Airstrip did not provide the weather information, however there was a radio station in Kobakma which could give the informal information surrounding Airstrip visibility.

On the day of this serious incident, condition prevailed at the time of the serious incident, the radio operator inform the pilot that he saw hill on the final area of runway 09.

## **1.8 AIDS TO NAVIGATION**

There were no navigation aids for the approach and landing at Kobakma. Approach and landing must be conducted under the VFR.

## **1.9 COMMUNICATIONS**

Air traffic communication services provided when operating into Kobakma as advisory only.

The two-way communication between Kobakma Radio for the incoming and outgoing flight will available when the flight within the narrow range to Kobakma.

## 1.10 AERODROME INFORMATION

Aerodrome Code	: KOB / WAXX
Airport Name	: Kobakma Airstrip
Airport Address	: Bandara Perintis Kobakma Mamberamo, Papua
Airport Authority	: Kobakma Local Government ( <i>Pemerintah Kabupaten Kobakma</i> )
Type of Traffic Permitted	: VFR
Coordinates	: 03° 39' 58" S, 139° 03' 32" E
Elevation	: 2,850 - 2,980 feet
Runway Length	: 730 meters
Runway Width	: 22 meters
Azimuth	: 27 - 09
Slope	: 6 %
Runway Surface	: Grass over clay

## 1.11 FLIGHT RECORDERS

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

## 1.12 WRECKAGE AND IMPACT INFORMATION

The NTSC investigator, who arrived the next morning, found some tires marks on the runway surface. The aircraft touchdown indicated about 450 meters from the beginning of Runway 09.

The tire marks shown that the left deeper than the right, the aircraft start veered to the left of runway about 150 meters before the end of Runway 09. The aircraft was stop by the pile of stones along the side of the runway.





Figure 7. Cessna 208 PK-RJS after the Occurrence

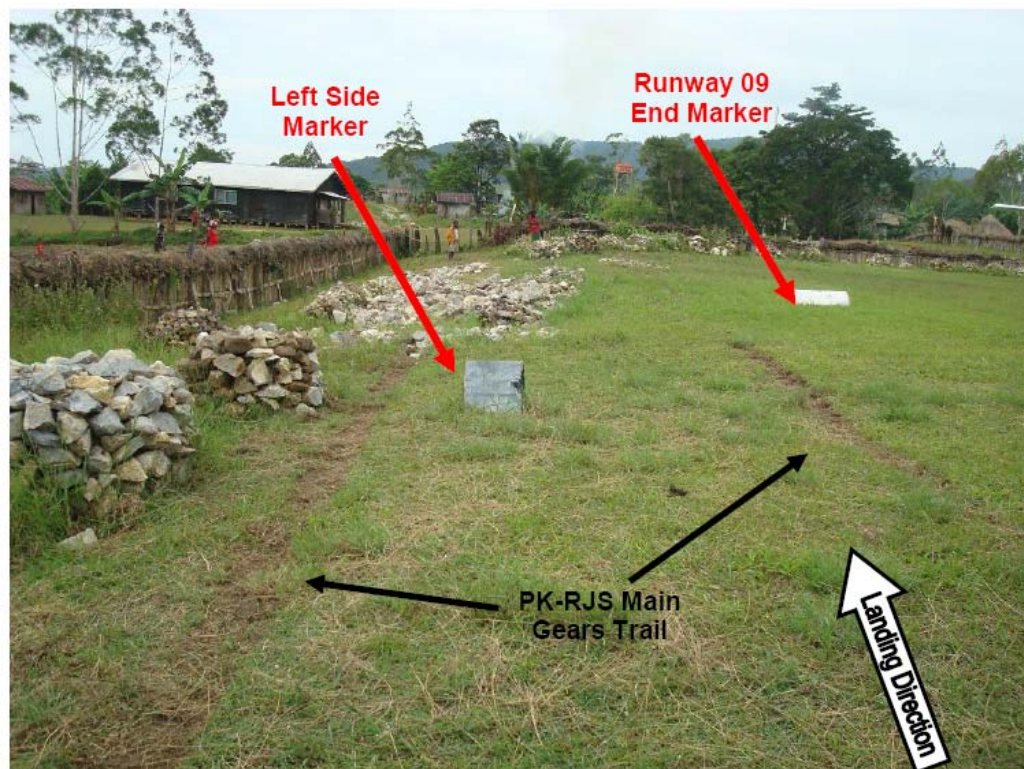


Figure 8. End of runway 09 Condition



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

Not relevance to this serious incident.

### **1.14 FIRE**

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

### **1.15 SURVIVAL ASPECTS**

It was a survivable occurrence.

### **1.16 TESTS AND RESEARCH**

Not relevant for this investigation.

### **1.17 ORGANISATIONAL AND MANAGEMENT INFORMATION**

Aircraft Owner	:	PT. Ekspres Transportasi Antarbenua (Premi Air)
Aircraft Operator	:	PT. Ekspres Transportasi Antarbenua (Premi Air)
Address	:	Terminal Building Ground Floor Halim Perdanakusuma Airport Jakarta 13610 Indonesia
AOC Number	:	AOC 135-032

### **1.18 ADDITIONAL INFORMATION**

#### **1.18.1 Operator Audit for Kobakma Airstrip**

Kobakma Airstrip was decided as a no fly zone by some operators that operated in Papua such as Adventist Aviation, Susi Air, Association Mission Aviation (AMA) and Premi Air since 7 April 2010, due to the airstrip condition was very slippery and muddy during raining or wet season. These operators agreed not to fly to Kobakma as long as the airstrip has not been improved.

On 28 June 2010, the Kobakma Local Government (*Pemerintah Kabupaten Kobakma*) sent an invitation letter to operators to conduct a further inspection of the Kobakma airstrip and mentioned that the condition of airstrip was dry during dry seasons and suitable for Caravan C208B operation.

Premi Air represented by a senior pilot and Papua Base Manager conducted inspection and stated of the airstrip was safe for operation on dry condition only.

After the inspection, there was no airstrip improvement project. No things improved and no development ever carried out to improve the runway condition.

#### **1.18.2 Operator's SOP for Papua**

The operator's SOP for Papua Chapter 9 "Airstrip Classification, Data and Pilot Checkout" stated that Kobakma airstrip as a Class 2 airstrip.

The meaning of class 2 airstrip is:

- a. Pilot with total 200 – 300 hours flying in Papua must perform a check flight with Check Pilot.
- b. Communication / navigation aids are not available. Traffic advisory on assigned VHF frequency for that area.
- c. Airstrip has a slope up to 5%, straight up and gravel surface.

### **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.

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## 2 ANALYSIS

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The analysis part of this final report will discuss the relevant issues resulting in this serious incident of PK-RJS.

On 10 July September 2010, a Cessna C208B Grand Caravan aircraft operated by Premi Air departed from Wamena to Kobakma.

The investigation had determined that there were some safety issues which will be discussed in this part of analysis.

All aircraft system could be assumed was operating normally since there were no reports or records observed the analysis will therefore focus on the following issues:

- Approach profile;
- Crew Recourse Management (CRM);
- Runway condition.

### 2.1 Approach profile

Refer to Cessna 208B Grand Caravan standard data, the required landing distance of Cessna 208B was 1,655 feet or about 550 meters. It means the actual landing distance would be refer to 50 feet altitude above threshold and the ground roll would be 60 % of 550 meters (330 meters).

The runway Kobakma Airstrip was 730 meters length and 22 meters width, and observation found that the aircraft was touchdown at about 450 meters from the beginning of runway 09, the remaining runway available was about 280 meters to the end runway 09. Refer to the actual landing distance required the remaining runway available was not sufficient.

The normal flight path was 3° as required to meet the correct landing distance, in fact the aircraft touched down at 450 meters from the threshold following by the stall warning horn sounded, where normally it should not sounded. It can be concluded that the aircraft either was coming well above the normal approach profile or floating over the runway.

## **2.2 Crew Recourse Management**

The flap 30° selected when the aircraft was on final runway 09 and aircraft touched down at 450 meters from the threshold following with stall warning horn sounded.

In general aircraft procedures the selection of landing flap (flap 30°) was an indication of decision to land.

The approach above the normal profile or floating over the runway was resulted to the stall warning horn sounded which was an indication improper speed for the particular of aircraft configuration.

Those particulars condition above indicated that the aircraft was not on the stabilize approach it was following by stall warning horn sounded but the pilot was continued to land the aircraft.

It can be concluded that the complacency elements influences in the pilot decision making.

## **2.3 Runway Condition**

The field investigation a day after occurrences found that: rain was occurred over the night which indicated by the dampness of the runway surface or even muddy spot at particular area on runway.

Moreover also found that there were some works in progress such as, runway hardness and piled supporting materials about 2 - 3 metre from runway's side marker along the side of runway.

The field observation found that the excavated lines starting 450 meters from the beginning of runway 09 and the tire marks shown that the left deeper than the right. The aircraft start veered to the left of runway about 150 meters before the end of Runway 09. The aircraft hit the stones piled on left side of the runway and stopped.

It could be concluded that the deceleration value of the left main tire was greater than the right main tire causing the aircraft veer off to the left.

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## 3 CONCLUSION

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### 3.1 Finding

- The aircraft was airworthy prior to the departure.
- The pilot was flown several times to Kobakma airstrip.
- The occurrence flight is the second flight of the day with the same destination for the pilot.
- Kobakma airstrip has a grass over clay runway surface and 6 % slope.
- The rain was occurred over the night a day before occurrences.
- The runway surface was damp and muddy spots at particular area.
- There were some pile of stones along the right and left of the runway. Normal flight conditions reported until approach the Kobakma Airstrip that it was covered with fog.
- The pilot hold about 20 minutes until the fog appeared to be disappearing.
- The normal flight path as required to meet the correct landing distance was 3°.
- The flap 30° selected when the aircraft was on final runway 09.
- The complacency elements influences in the pilot decision making.
- The aircraft was not on the stabilize approach.
- The stall warning horn sounded.
- The required landing distance of Cessna 208B Grad Caravan was 1,655 feet or about 550 meters, refer to 50 feet altitude above threshold and the ground roll would be 60 % of 550 meters or 330 meters.
- The touchdown point was about 450 meters from the beginning of runway 09 the remaining runway available was about 280 meters to the end runway 09.
- The aircraft was coming well above the normal approach profile.
- The runway Kobakma Airstrip was 730 meters length and 22 meters width.
- The aircraft start veered to the left of runway about 150 meters before the end of Runway 09.
- The aircraft hit the pile of stones on the side of the runway and stop at 15 meters before left end markers.

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

- The aircraft either was coming well above the normal approach profile or floating over the runway resulted to the insufficient remaining landing distance.
- The complacency elements influenced to the pilot decision making.
- The deceleration value of the left main tire was greater than the right main tire causing the aircraft veer off to the left.

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<sup>3</sup> “Contributing factors” is an event or condition that, if it occurred in the future, would increase the likelihood of an occurrence and/ or severity of the adverse consequences associated with an occurrence.

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## 4 SAFETY ACTIONS

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At the time of issuing this final report, the National Transportation Safety Committee has been informed of any safety actions resulting from PT. Ekspres Transportasi Antarbenua (Premi Air) internal investigation and as part of the recommendations are as follow:

1. It's highly recommended to cease all flight to Kobakma for the time being until further notice and all investigation and requirement been established.
2. It's highly recommended that no flights to Kobakma airstrip before any development to the runway carried out suitably.
3. It's highly recommended that 2 (two) pilot operation be rectify once again for all Papua Operation. This will enable stronger decision making in time of crisis or distressed occasion. Single pilot operation may be active only for regular and controlled airstrip.
4. It's highly recommended proactive communication within Papua Base operation and Headquarters should be implemented and exercises from time to time. Any complacency must be removed. An accepted regular schedule must be publish by Operation Department on tele-conference meeting update which must be attended by OpsMan, QSM and GM Ops if available.
5. It's highly recommended a form of operational analysis be established for a thorough analysis of all future Papua operation need prior to commencement. For example new destination etc. This must be followed by HIRA (Hazard Investigation Risk Analysis). All analysis must be signed by assessor, base manager and approved by Operation Department.
6. It's highly recommended that a reporting culture be establish within Papua Operation. Risks and Hazards shall be communicated freely into OSMS system or other type of availability. QSS shall conduct reporting system socialization (OSMS usage) with the support of Operation Department.
7. It is highly recommended that the PIC undergo further training to complement his FSO status by attending CASO DGCA sponsored training.
8. It's highly recommended to socialize the use of AMA Papua Airfield Directory to all Caravans' pilot.
9. It is highly recommended that Papua Operation Standard Operating Procedures to be updated for all route or areas of PremiAir operation.
10. It is highly recommended that all airfields within Papua which currently operated by PremiAir shall be rated and assess thoroughly.
11. Base manager are recommended to at least conduct once a month safety meeting with all parties involved within the contract. MoM and all appropriate actions to be disseminate to QSS and relevant management.

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## 5 RECOMMENDATION

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The examination on the factual data and the associate findings which is known may have contributes in to this serious incident, the National Transportation Safety Committee (NTSC) issued several safety recommendations and some improvement suggestion addressed to

### 5.1 Director General of Civil Aviation

As the growing rate of the flight in Papua is become significant, it is necessary that a standard airstrip should be established refer to Director General Degree No. 3 Year 2005 Chapter VII (*SKEP Dirjen Hubud No. 3 Tahun 2005 Bab VII*). As such, the NTSC recommends:

- To improve ongoing process to identify the runway condition and the mitigation to ensure its condition meet the requirements.