

PRELIMINARY
KNKT.15.10.25.04

**KOMITE
NASIONAL
KESELAMATAN
TRANSPORTASI**

Aircraft Serious Incident Investigation Report

**PT. Enggang Air Service
Cessna 208B Grand Caravan; PK-RSE
Sinak Airport, Papua
Republic of Indonesia
27 October 2015**



**KOMITE NASIONAL KESELAMATAN TRANSPORTASI
REPUBLIC OF INDONESIA
2016**

This Preliminary report was produced by the Komite Nasional Keselamatan Transportasi (KNKT), Transportation Building, 3rd Floor, Jalan Medan Merdeka Timur No. 5 Jakarta 10110, Indonesia.

The report is based upon the initial investigation carried out by the KNKT 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).

The preliminary report consists of factual information collected until the preliminary report published. This report will not include analysis and conclusion.

Readers are advised that the KNKT investigates for the sole purpose of enhancing aviation safety. Consequently, the KNKT reports are confined to matters of safety significance and may be misleading if used for any other purpose.

As the KNKT believes that safety information is of greatest value if it is passed on for the use of others, readers are encouraged to copy or reprint for further distribution, acknowledging the KNKT as the source.

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However, the KNKT fully recognizes that the implementation of recommendations arising from its investigations will in some cases incur a cost to the industry.

Readers should note that the information in KNKT reports and recommendations is provided to promote aviation safety. In no case is it intended to imply blame or liability.

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ABBREVIATIONS AND DEFINITIONS

AOC	:	Aircraft Operator Certificate
CPL	:	Cockpit Pilot License
DGCA	:	Directorate General of Civil Aviation
EPL	:	Emergency Power Lever
FCU	:	Fuel Control Unit
ft	:	Feet
KNKT	:	Komite Nasional Keselamatan Transportasi / National Transportation Safety Committee
PF	:	Pilot Flying
PIC	:	Pilot in Command
PLA	:	Power Lever Assembly
PM	:	Pilot Monitoring
SIC	:	Second in Command
SIL	:	Service Information Letter
TBA	:	To Be Advised
UTC	:	Universal Time Coordinated

INTRODUCTION

SYNOPSIS

On 27 October 2015, a Cessna 208B Grand Caravan aircraft registered PK-RSE was being operated by PT. Enggang Air Service on a charter flight from Wamena Airport, Papua (WAJW/WMX) to Sinak Airport, Papua (WABS/NKD) carried 1,178 kg cargo.

On board of this flight were two pilots. The Pilot in Command (PIC) acted as Pilot Flying (PF), and the Second in Command (SIC) acted as Pilot Monitoring (PM). This flight was the second experience for both pilots to fly to Sinak.

The following history of the flight was made according to the pilot report.

At 0002 UTC, the aircraft departed from Wamena and climbed to cruise at altitude of 13,000 feet via Tiom and Mulia.

At over Mulia, the aircraft started to descend, thereafter at about 12 Nm from Sinak, while passing altitude of 9,000 feet the pilot felt that the aircraft lost engine power. Furthermore, the PIC briefed the SIC regarding engine loss power procedures.

The pilot maintained speed at 95 knots and opened power lever three times, however there was no respond from the engine. The pilot continued to descend with rate of descend of 800 feet per minute.

During final approach on runway 26, the aircraft experienced head wind about 13 knots then changed to tail wind about 13 knots. The pilot had difficulty to control the aircraft in this condition and decided to perform emergency landing procedure.

The fuel shut of valve was closed a few seconds prior to touch down.

The aircraft landed at about 75 metres before beginning of runway 26 and veered to the left side. The aircraft stopped at about 10 meters on the left side of beginning runway 26.

All occupants evacuated and no one injured in this occurrence and the aircraft substantially damaged.

At the time of issuing this preliminary report, the *Komite Nasional Keselamatan Transportasi* (KNKT) has not been informed of any safety actions taken by relevant parties resulting from this occurrence.

According to factual information and findings, the *Komite Nasional Keselamatan Transportasi* (KNKT) issued safety recommendations to the aircraft operator.

The investigation is continuing and will include information of engine teardown. Should any further relevant safety issues emerge during the course of the investigation, KNKT will immediately bring the issues to the attention of the relevant parties and publish as required.

1 FACTUAL INFORMATION

1.1 History of the Flight

On 27 October 2015, a Cessna 208B Grand Caravan aircraft registered PK-RSE was being operated by PT. Enggang Air Service on a charter flight from Wamena Airport, Papua (WAJW/WMX)¹ to Sinak Airport, Papua (WABS/NKD)² carried 1,178 kg cargo.

On board of this flight were two pilots. The Pilot in Command (PIC) acted as Pilot Flying (PF), and the Second in Command (SIC) acted as Pilot Monitoring (PM). This flight was the second experience for both pilots to fly to Sinak.

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The pilot maintained speed at 95 knots and opened power lever three times, however there was no respond from the engine. The pilot continued to descend with rate of descend of 800 feet per minute.

During final approach on runway 26, the aircraft experienced head wind about 13 knots then changed to tail wind about 13 knots. The pilot had difficulty to control the aircraft in this condition and decided to perform emergency landing procedure.

The fuel shut of valve was closed a few seconds prior to touch down.

The aircraft landed at about 75 metres before beginning of runway 26 and veered to the left side. The aircraft stopped at about 10 meters on the left side of beginning runway 26.

All occupants evacuated and no one injured in this occurrence.

¹ Wamena Airport, Papua (WAJW/WMX) will be named as Wamena for the purpose of this report.

² Sinak Airport, Papua (WABS/NDK) will be named as Sinak for the purpose of this report.

³ 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 for Papua is Indonesia East Standard Time / Waktu Indonesia Timur (WIT) is UTC + 9.



Figure 1: The aircraft trail during landing roll

1.2 Damage to Aircraft

The aircraft substantially damaged with details as follows:

- Right outer wing bent upward and dented;
- Left landing gear shifted backward;
- Nose wheel burst;
- Propeller blades bent backward;
- Engine mounting strut bent;
- Lower nose cowling broken.



Figure 2: The damages to the aircraft

1.3 Personnel Information

1.3.1 Pilot in Command

Gender	: Male
Age	: 41 Years
Nationality	: Indonesian
Marital status	: Married
Date of joining company	: 20 August 2015
License	: Commercial Pilot License (CPL)
Date of issue	: 26 May 1998
Aircraft type rating	: Single Engine Land (SE Land)
Instrument rating	: 31 May 2016
Medical certificate	: First Class
Last of medical	: 20 August 2016
Validity	: 29 February 2016
Medical limitation	: Nil
Last line check	: 5 October 2015
Last proficiency check	: 14 May 2014
Flying experience	
Total hours	: 4,298 hours 41 minutes
Total on type	: 900 hours
Last 90 days	: 148 hours 17 minutes

Last 60 days : 143 hours 55 minutes
Last 24 hours : 3 hours 38 minutes
This flight : 45 minutes

1.3.2 Second in Command

Gender : Male
Age : 28 Years
Nationality : Indian
Marital status : Married
Date of joining company : 20 Mach 2013
License : Commercial Pilot License (CPL)
 Aircraft type rating : Single Engine Land (SE Land)
Instrument rating : *TBA*
Medical certificate : First Class
 Last of medical : 04 August 2015
 Validity : 29 February 2016
 Medical limitation : Nil
Last proficiency check : *TBA*

Flying experience

Total hours : 1,605 hours
Total on type : 641 hours
Last 90 days : 170 hours 53 minutes
Last 60 days : 107 hours 58 minutes
Last 24 hours : 3 hours 38 minutes
This flight : 45 minutes

1.4 Aircraft Information

1.4.1 General

Registration Mark : PK-RSE
Manufacturer : Cessna Aircraft Company, USA
Type/ Model : Cessna 208B Grand Caravan
Serial Number : C208B-2283
Year of manufacture : 2011
Certificate of Airworthiness
 Issued : 3 August 2015

Validity	: 2 August 2016
Category	: Normal
Limitations	: None
Certificate of Registration	
Number	: 2030
Issued	: 3 August 2015
Validity	: 2 August 2016
Time Since New	: 3,381.18 hours
Cycles Since New	: 4,762 cycles
Last Major Check	: 2 August 2015
Last Major Check	: 15 April 2015

1.4.2 Engines

Manufacturer	: Pratt & Whitney, Canada
Type/Model	: PT6A-114A
Serial Number engine	: PCE-PC1866
▪ Time Since New	: 3,357.68 hours
▪ Cycles Since New	: 4,762 cycles

1.5 Meteorological Information

The detail of meteorological information will be included in final report.

1.6 Aerodrome Information

Airport Name	: Sinak Airport
Airport Identification	: WABS / NKD
Airport Operator	: Directorate General of Civil Aviation
Coordinate	: 03°49'18.75"S 137°50'17.29"E
Elevation	: 7,292.36 feet
Runway Direction	: 08/26
Runway Length	: 641 m
Runway Width	: 13 m
Surface	: Asphalt

1.7 Wreckage and Impact Information

The aircraft touched the ground at about 75 meters before runway 26 then veered off to the left and stopped at 10 meters on the left side of beginning runway 26.

There were debris such as grass, small wood stalk, and mud was found on screen of the engine compressor air intake.



Figure 3: The aircraft final position



Figure 4: Debris on the screen of the engine compressor air intake

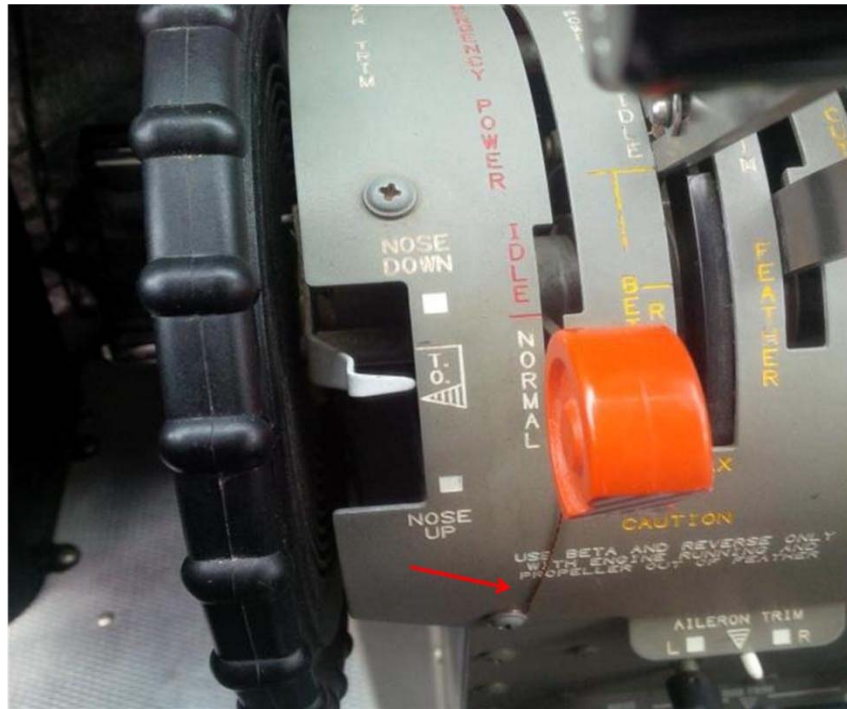


Figure 5: The emergency power lever safety wire found intact

1.8 Organizational and Management Information

Aircraft Owner	:	Cessna Finance Export Corporation
Address	:	100 North Broadway, Suite 600 Wichita, USA
Aircraft Operator	:	PT. Enggang Air Service
Address	:	Halim Perdanakusuma International Airport, Terminal Building 2 nd Floor No. A14 PK, Jakarta 13610 Indonesia
Certificate Number	:	AOC/135-045

The operator operated several types of aircraft including Cessna Caravan, executive jets and helicopter. The operator has Company Operation Manual and Safety Management System Manuals as required and approved by the Directorate General of Civil Aviation (DGCA).

1.8.1 Standard Operating Procedure Cessna 208B of PT. Enggang Air Service

CHAPTER 4: EMERGENCY AND ABNORMAL PROCEDURES

4.4.3 FORCED LANDINGS

Emergency Landing Without Engine Power

- 1. Seats, Seat Belts, Shoulder Harnesses – SECURE*
- 2. Airspeed – 100 KIAS (flaps up)
80 KIAS (flaps down)*

3. Power Lever – IDLE
4. Propeller Control Lever – FEATHER
5. Fuel Condition Lever – CUTOFF
6. Fuel Boost Switch – OFF
7. Ignition Switch – NORM
8. Standby Power Switch – OFF
9. Non Essential Equipment (if installed) – OFF
10. Fuel Shutoff – OFF (pull out)
11. Fuel Tank Selectors – OFF (warning horn will sound)
12. Wing Flaps – AS REQUIRED (full recommended)
13. Crew Doors – UNLATCH PRIOR TO TOUCHDOWN
14. Battery Switch – OFF when landing is assured
15. Touchdown – SLIGHTLY TAIL LOW
16. Brakes – APPLY HEAVILY

4.4.5 ENGINE MALFUNCTION

Fuel Control Unit Malfunction in the Pneumatic or Governor Sections (Engine Power Falls Back to Idle)

1. Power Lever – IDLE.
2. Emergency Power Lever – AS REQUIRED (maintain 65% Ng minimum during flight).

1.8.2 Pratt & Whitney Canada Service Information Letter (S.I.L NO. PT6A-053R1)

Applicability PT6A-114/-114A

The Cessna Caravan 208/208B aircraft are equipped with a fuel control incorporating an emergency manual override system which is intended to be used in the event of a loss of Power Lever (PLA) control due to loss of air pressure to the Fuel Control Unit (FCU) during flight. The system is activated through the Emergency Power Lever (EPL) in the cockpit.

The EPL should only be used to modulate engine power to allow the pilot to continue flight to the nearest airport should one of the following conditions occur:

1. *Uncommanded engine power roll back and unable to recover with the Power Lever Assembly (PLA).*
2. *No response to PLA movement when starting from or around idle.*
3. *PLA becomes stuck at or around idle.*

The EPL does not duplicate the function of the PLA and should not to be used as an optional means of controlling the engine. It must be left in the "NORMAL" position during all normal engine operation.

If one of the three conditions described above is encountered, please note that the EPL is more sensitive in operation than the PLA and the EPL should be operated as follows:

Slowly advance the EPL from "NORMAL" position, to increase engine power. Slowly decrease the EPL position, to reduce engine power.

NOTES:

- *There may be some lever travel, where the EPL movement results in no change in engine power. This condition is called "deadband" and is typically at least the first 1/4 inch of travel past the opening detent, which is normal.*
- *In the existing installation, EPL sensitivity is further accentuated because maximum EPL travel is attained approximately two inches before the forward range of the slot on the pedestal.*

1.9 Additional Information

The investigation is continuing and will include information of engine teardown. Should any further relevant safety issues emerge during the course of the investigation, KNKT will immediately bring the issues to the attention of the relevant parties and publish as required.

1.10 Useful or Effective Investigation Techniques

The investigation was conducted in accordance with the KNKT approved policies and procedures, and in accordance with the standards and recommended practices of Annex 13 to the Chicago Convention.

2 FINDINGS⁴

According to factual information during the investigation, the Komite Nasional Keselamatan Transportasi identified initial findings as follows:

1. The aircraft had a valid Certificate of Airworthiness.
2. The pilot had a valid licenses and medical certificate.
3. This flight was the second experience for both pilots to fly to Sinak.
4. The aircraft started to descend, thereafter at about 12 Nm from Sinak, while passing altitude of 9,000 feet the pilot felt that the aircraft lost engine power. Furthermore, the PIC briefed the SIC regarding engine loss power procedures.
5. The pilot maintained speed at 95 knots and opened power lever three times, however there was no respond from the engine. The pilot continued to descend with rate of descend of 800 feet per minute.
6. During final approach on runway 26, the aircraft experienced head wind about 13 knots then changed to tail wind about 13 knots. The pilot had difficulty to control the aircraft in this condition and decided to perform emergency landing procedure.
7. The fuel shut of valve was closed a few seconds prior to touch down.
8. The aircraft landed at about 75 metres before beginning of runway 26 and veered to the left side. The aircraft stopped at about 10 meters on the left side of beginning runway 26.
9. All occupants evacuated and no one injured in this occurrence.
10. The aircraft was substantially damaged.
11. There were debris such as grass, small wood stalk, and mud was found on screen of the engine compressor air intake.
12. The emergency power lever safety wire found intact.

⁴ Findings are statements of all significant conditions, events or circumstances in the accident sequence. The findings are significant steps in the accident sequence, but they are not always causal, or indicate deficiencies. Some findings point out the conditions that pre-existed the accident sequence, but they are usually essential to the understanding of the occurrence, usually in chronological order.

3 SAFETY ACTION

At the time of issuing this preliminary report, the *Komite Nasional Keselamatan Transportasi* (KNKT) has not been informed of any safety actions taken by relevant parties resulting from this occurrence.

4 SAFETY RECOMMENDATIONS

According to factual information and findings, the *Komite Nasional Keselamatan Transportasi* (KNKT) issued safety recommendations to address safety issues identified in this investigation. The Directorate General of Civil Aviation shall ensure the recommendation addressed to PT. Enggang Air Services issued in this preliminary report is well implemented.


4.1 PT. Enggang Air Services

- **04.O-2016-60.1**

To emphasize the pilot emergency training related to engine malfunction.

5 APPENDICES

5.1 Weight and Balance Load Sheet



WEIGHT & BALANCE LOAD SHEET

REGISTRATION: <u>PK-RSE</u>		CESSNA 208B GRAND CARAVAN	
DATE / TIME: <u>27 OCTOBER 2015</u>		FLIGHT: <u>1</u>	
FROM: <u>WAMENA</u>		TO: <u>SINAK</u>	
TIME: _____		CAPTAIN: <u>RIO PASARIBU</u>	

Load Calculation				Weight		Arm	Moment
				kg	lbs		
Empty Weight					4911.77	188.69	926802
Useable Fuel (FOB)					800	203.77	163016
Pilots				180	353	135.50	47804
Passengers	Row 1 (1-3)		0		174.00	0	
	Row 2 (4-6)		0		210.00	0	
	Row 3 (7-9)		0		246.00	0	
	Row 4 (10-12)		0		282.00	0	
	Row 5 (10a-12a)		0		344.00	0	
MAX							
Cargo	Zone 1 (1780 lbs / 807 kg)	324	714	172.10		122952	
	Zone 2 (3100 lbs / 1409 kg)	304	647	217.60		184416	
	Zone 3 (1900 lbs / 862 kg)	434	957	264.40		253023	
	Zone 4 (1380 lbs / 626 kg)		0	284.50		0	
	Zone 5 (1270 lbs / 578 kg)		0	316.50		0	
Zone 6 (320 lbs / 145 kg)	36	79	344.00		27307		
Pod A (230 lbs / 104 kg)					0	132.40	0
Pod B (310 lbs / 141 kg)					0	152.10	0
Pod C (270 lbs / 122 kg)					0	233.40	0
Pod D (280 lbs / 127 kg)					0	257.50	0
Ramp Weight				1178	8882.08	199.18	1725319
Start & Taxi fuel					36	203.77	-7.20
Takeoff Weight & Moment					8927	199.89	1725326.4
(Ramp - 800)					8750		
Fuel Used (Trip)					140	203.77	28528
Landing Weight & Moment					8427	199.93	1696798.6
(Ramp - 800)					8100		

Weight with no arms		
RSC	RSD	RSE
4922.85	4932.22	4911.77
188.63	189.63	188.69
		lbs
		lbm

FILL THE SHADED BOXES ONLY

Single seat	Double seat	Std Person	(lbs)
29	51	143	Female
		176	Male

lbs AVTUR	lbs
1000	
to Ltr	
567	ltr

ltr AVTUR	ltr
1000	
to lbs	
1764	lbs

lbs AVTUR	lbs
1000	
to Hours	
3.3	hrs

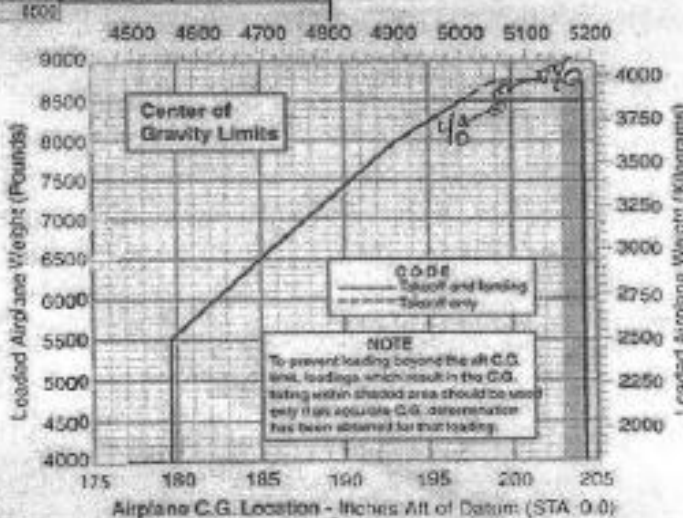
ltr AVTUR	ltr
1000	
to kg	
800	kg

* excluding reserves
Fuel burn = 300 lbs/hr

kg	kg
1000	
to lbs	
2205	lbs

lbs	lbs
1000	
to kg	
454	kg

Center of Gravity Limits



Airplane C.G. Location - inches Aft of Datum (STA 0.0)

PREPARED BY: _____

SIGN: _____

APPROVED BY: _____

SIGN: _____

REMARKS: _____

5.3 Pratt & Whitney Canada Service Information Letter



S.I.L NO. PT6A-053R1

SERVICE INFORMATION LETTER

Subject Emergency Power Lever (EPL)/
Fuel Control Manual Override System

Applicability PT6A-114/-114A

The Cessna Caravan 208/208B aircraft are equipped with a fuel control incorporating an emergency manual override system which is intended to be used in the event of a loss of Power Lever (PLA) control due to loss of air pressure to the Fuel Control Unit (FCU) during flight. The system is activated through the Emergency Power Lever (EPL) in the cockpit.

The EPL should only be used to modulate engine power to allow the pilot to continue flight to the nearest airport should one of the following conditions occur:

- 1- Uncommanded engine power roll back and unable to recover with the Power Lever Assembly (PLA).
- 2- No response to PLA movement when starting from or around idle.
- 3- PLA becomes stuck at or around idle.

The EPL does not duplicate the function of the PLA and should not to be used as an optional means of controlling the engine. It must be left in the "NORMAL" position during all normal engine operation.

If one of the three conditions described above is encountered, please note that the EPL is more sensitive in operation than the PLA and the EPL should be operated as follows:

Slowly advance the EPL from "NORMAL" position, to increase engine power. Slowly decrease the EPL position, to reduce engine power.

NOTES: -There may be some lever travel, where the EPL movement results in no change in engine power. This condition is called "deadband" and is typically at least the first ¼ inch of travel past the opening detent, which is normal.
-In the existing installation, EPL sensitivity is further accentuated because maximum EPL travel is attained approximately two inches before the forward range of the slot on the pedestal.

This Service Information Letter is valid for one year from date of issue

ISSUED: 24 Feb. 1998
Rev.1 August 9/00

Page 1

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MARIE-VICTORIN, LONGUEUIL
QUEBEC, CANADA J4G 1A1
PRINTED IN CANADA

**PRATT & WHITNEY CANADA
SERVICE INFORMATION LETTER**

PWC: PT6A-053R1

Use of the Emergency Power Lever (EPL) results in the pilot directly operating the fuel metering valve located in the Fuel Control Unit (FCU), which directly overrides the normal fuel control unit automatic functions. EPL sensitivity for engine power requirements increases with altitude.

Extreme caution and close monitoring of the engine parameters are required to ensure that engine surge, over-temperature, over-speed and over-torque conditions do not occur.

CAUTION: Rapid movements of the EPL should not be made for any reason, whatsoever. Inappropriate use of the EPL system may adversely affect engine durability.

NOTE: Log and report any engine parameter exceedances, take appropriate action as specified in the Maintenance Manual.

Should it be needed, the adjustment/test procedure for the EPL is outlined in the PT6A-114/114A Maintenance Manual Chap. 71-00-00 and should only be carried out by experienced maintenance personnel.

P&WC would like to re-emphasize that the system is intended “ for emergency purposes only” as outlined in the applicable Cessna Pilot’s Operating Handbook (POH) and should be used accordingly. The system can also be used for training purposes under experienced supervision in order to maintain emergency practices proficiency.

NOTE: It is suggested that familiarization training with the EPL be conducted on the ground to ensure better control, less distraction, and close monitoring of the engine parameters for exceedances.

Yours truly,

PRATT & WHITNEY CANADA CORP.

Giovanni Mulas
Interim Manager,
PT6A OEM Programs & Reliability

This Service Information Letter is valid for one year from date of issue

ISSUED: 24 Feb. 1998
Rev.1 August 9/00

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