KOMITE NASIONAL KESELAMATAN TRANSPORTASI
REPUBLIC OF INDONESIA

SHORT SUMMARY REPORT

KNKT.16.34.10.04

Aircraft Serious Incident Investigation Report

Aero Flyer Institute

Cessna 172P; PK-HAN

Cakrabhuwana Airport, Cirebon

Republic of Indonesia

13 October 2016

2018

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Jakarta, October 2018

KOMITE NASIONAL
KESELAMATAN TRANSPORTASI
CHAIRMAN

SOERJANTO TJAHJONO

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1 FACTUAL INFORMATION

On Thursday, 13 October 2016 Cessna 172P aircraft registered PK-HAN was being operated by Aero Flyer Institute on dual flight training exercise.

The investigation is based on the data collected on site, interview and recorded radio communication.

The aircraft experienced runway excursion and stop on the right runway shoulder approximately 1,400 meters from the beginning of runway 04 of Cakrabhuwana[1] airport (WICD), Cirebon, West Java.

On board the flight were one instructor pilot and two student pilots.

At 14:05 LT (07:05:02 UTC[2]), the instructor conducted initial contact with Cakrabhuwana tower controller (Tower) requested for taxi clearance for dual training area to Karang Ampel area.

At 14:18 LT, the aircraft took off from runway 04 and maintained runway heading until 1,000 feet.

At 14:24 LT, the aircraft reached point Suranenggala which was approximately North of Cakrabhuwana.

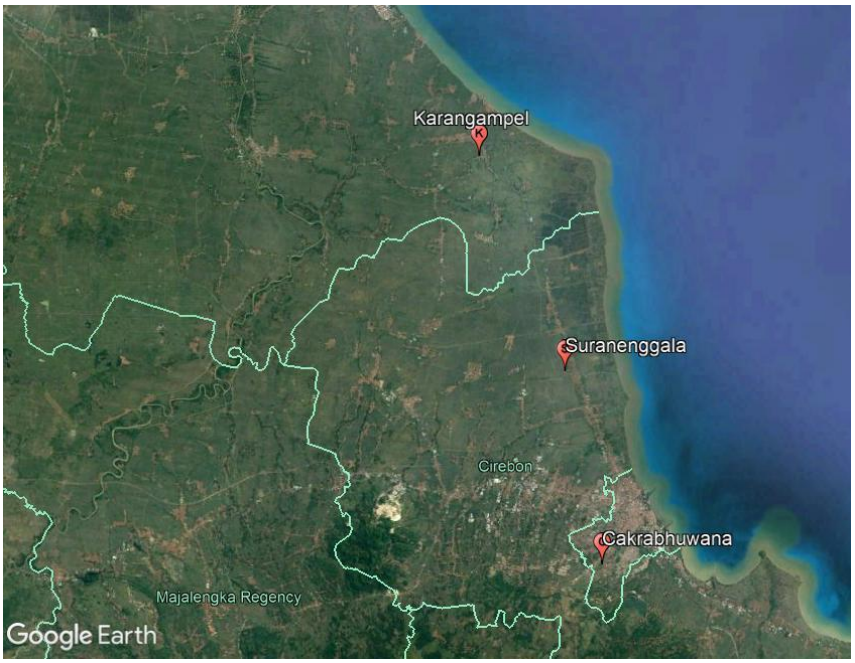


Figure 1: The area of the flight

At 14:29 LT, the aircraft reached Karang Ampel area and instructed by the Tower to maintain flight altitude below 2,000 feet.

1 Cakrabhuwana airport (WICD), Cirebon, West Java, Indonesia will be named as Cakrabhuana for the purpose of this report.

2 The 24-hours clock in Universal Time Coordinated (UTC) is used in this report to describe the local time as specific events occured. Local time (LT) at Cakrabhuana airport is UTC+7 hours.

At 15:11 LT, the Tower called to the instructor pilot and instructed to return to Cakrabhuwana as requested by the company with the reason of decreasing weather condition. The aircraft left Karang Ampel training area immediately after called by the Tower.

At 15:16 LT, the aircraft reached point Suranenggala. All the training exercises were conducted by the student pilots until the landing preparation.

At 15:20 LT, the aircraft entered the left downwind runway 04 at altitude of 1,500 feet. The student pilot instructed by the Tower to follow the traffic ahead (PK-AYL) which was preparing for landing. During landing, the pilot of PK-AYL reported that the wind was gusty.

On the base leg of runway 04, the instructor took over the aircraft control due to the wind condition was gusty.

At 15:23 LT, the aircraft touched down with the flapless configuration. The investigation could not define why the aircraft was in the flapless configuration. At the same time the Tower observed the windsock condition and noticed that the wind direction had changed from approximately 360° with the speed of 10 knot to approximately 270° with the speed of 10 knot. The Tower witnessed that the aircraft was touched down in the middle of the runway 04. The wind change was too rapid and the Tower had no time to inform to the instructor as the aircraft was just touched down.

The aircraft stop at the right shoulder of the stopway approximately 1,400 meters from the beginning of runway 04.

The instructor and two student pilots evacuated from the aircraft. No damage found to the aircraft and no one injured in this occurrence.

Figure 2: PK-HAN on the runway shoulder

The instructor had accumulated 700 flying hours and held the valid license. The student pilots held valid license.

The Cakrabhuwana Airport was located in the West Java at coordinate 06°45’22” S; 108°32’18” E with runway length of 1280 × 30 meters and azimuth of 04 and 22.

The pilot landed prior to the serious incident flight reported gust wind. The Approach and Landing Accident Reduction (ALAR) briefing note chapter 8.1

(https://www.skybrary.aero/bookshelf/books/865.pdf) described as follows.

Weather factors

- *Runway condition (wet or contaminated by standing water, snow, slush or ice);*
- *Wind shear;*
- *Crosswind;*
- *Inaccurate information on wind conditions and/or runway conditions; and,*
- *Reverse-thrust effect in a crosswind and on a wet runway or a contaminated runway*

Accident-Prevention Strategies and Lines of Defense

The following company accident-prevention strategies and personal lines of defense are recommended:

Policies

- *Define policy to promote readiness and commitment to go around (discouraging any attempt to "rescue" a situation that is likely to result in a hazardous landing);*
- *Define policy to ensure that inoperative brakes ("cold brakes") are reported in the aircraft logbook and that they receive attention in accordance with the MEL/DDG;*
- *Define policy for a rejected landing (bounce recovery);*
- *Define policy prohibiting landing beyond the touchdown zone; and,*
- *Define policy encouraging a firm touchdown when operating on a contaminated runway.*

The ALAR briefing note described that the organization shall establish the policy that if safe landing cannot be made or likely to result in a hazardous landing, or landing beyond the touch down zone, go around or rejected landing shall be made.

In the rapid change of wind over the runway, the ATC controller had critical role to provide the information immediately. The Civil Air Navigation Services Organization (CANSO) described the ATC controller role in this situation (see https://www.skybrary.aero/bookshelf/books/2267.pdf).

What Role does Air Traffic Control play?

ATC can influence the safety and stability of an approach in two general areas.

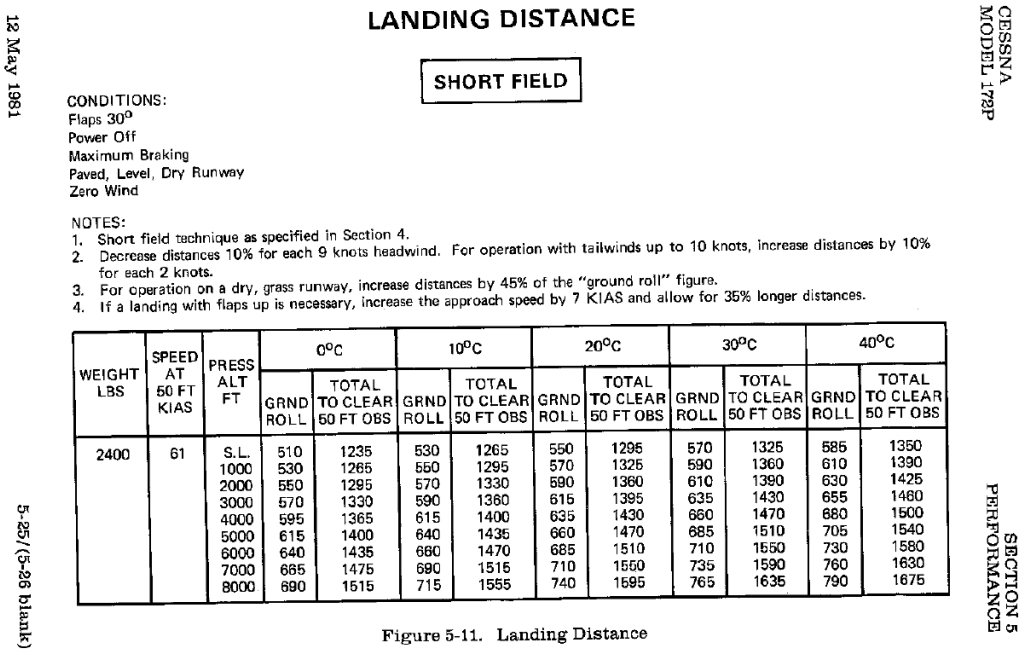
First, the instructions and clearances that are issued to the pilot can be significant factors in determining if an approach will become unstable. For example, if a descent clearance is delayed and the aircraft is close-in to the runway, the aircraft may be high on the approach, leading to a flight profile that is both above the glide slope and at a high sink rate.

Second, ATC plays a critical role in providing information to the pilot. For example, if the surface winds suddenly shift from a headwind to a tailwind, the aircraft's flight profile may be significantly affected. If the wind information is promptly and accurately relayed to the pilot by ATC, the pilot would then be able to anticipate and compensate for the effects of the wind, making the necessary corrections to ensure a

stable approach or request an alternate runway.

Refer to the wind information of 10 knots with direction of 270°, the wind component was approximately sin (270 – 040) × 10 knots = –7.6 knots (tailwind about 8 knots).

The tail wind would affect the Cessna 172P landing performance. The landing performance of Cessna 172P is as follow:



12 May 1981

CESSNA MODEL 172P

LANDING DISTANCE

SHORT FIELD

CONDITIONS:
Flaps 30°
Power Off
Maximum Braking
Paved, Level, Dry Runway
Zero Wind

NOTES:
1. Short field technique as specified in Section 4.
2. Decrease distances 10% for each 9 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.
3. For operation on a dry, grass runway, increase distances by 45% of the "ground roll" figure.
4. If a landing with flaps up is necessary, increase the approach speed by 7 KIAS and allow for 35% longer distances.

WEIGHT LBS	SPEED AT 50 FT KIAS	PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
			GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS
2400	61	S.L.	510	1235	530	1265	550	1295	570	1325	585	1350
		1000	530	1265	550	1295	570	1325	590	1360	610	1390
		2000	550	1295	570	1330	590	1360	610	1390	630	1425
		3000	570	1330	590	1360	615	1395	635	1430	655	1460
		4000	595	1365	615	1400	635	1430	660	1470	680	1500
		5000	615	1400	640	1435	660	1470	685	1510	705	1540
		6000	640	1435	660	1470	685	1510	710	1550	730	1580
		7000	665	1475	690	1515	710	1550	735	1590	760	1630
		8000	690	1515	715	1555	740	1595	765	1635	790	1675

Figure 5-11. Landing Distance

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SECTION 5 PERFORMANCE

Figure 3: Landing Performance Cessna 172P

Assumed the temperature at the time of occurrence was 30°C with normal landing speed of 61 knots and base on the landing performance of Cessna 172P, therefore the landing roll of the aircraft required 570 feet. The aircraft was landing with tail wind condition, therefore the landing roll required would be 570 feet + (570 + ((8 ÷ 2) × 10%)) = 798 feet. Since the aircraft landed with flapless condition, the additional landing roll required should be 798 feet + (798 × 35%) = 1,077.3 feet or approximately 328 meters.

The aircraft was reported touched down in the middle of the runway. Assumed the landing was precisely at the middle runway or approximately 640 meters from the beginning runway 04, the total landing distance would be 640 meters + 328 meters = 968 meters from the beginning runway 04. The runway should be sufficient for the aircraft to stop.

2 SAFETY MESSAGE

The change of the wind direction, runway condition or any other situation that led unanticipated aircraft behaviour should be informed by the ATC to the pilot immediately. However, the rapid change of the wind over the runway sometime led dilemmatic for the ATC to provide the wind information to the pilot especially when the aircraft on final approach to landing since the ATC controller assumed that the pilot would be in high concentration for landing preparation.

In the pilot point of view, any information regarding the runway condition including the wind direction is valuable to make any decision during landing. In such condition the pilot should anticipate any condition of the runway during landing. The pilot decision to committed go-around is deemed necessary even the aircraft has been touched down (provided the propeller had not been reversed or the thrust reverser had not been deployed – if applicable) to avoid any unanticipated aircraft behaviour.

Even though the aircraft landed on the middle of the runway with the flapless, the remaining runway length of Cakrabhuwana Airport was sufficient for the landing performance of Cessna 172P in 8 knots tail wind condition. However, the aircraft stopped at the right shoulder of the stopway approximately 1,400 meters from the beginning of runway 04. The reason of the runway became insufficient was unable to be determined.

The ALAR briefing 8.1 runway excursion, clearly provide the information encountering any condition that led runway excursion which include to encourage the management to provide policy for promoting readiness and commitment to go around, discouraging any attempt to rescue the situation that is likely to result in a hazardous landing.

KOMITE NASIONAL KESELAMATAN TRANSPORTASI REPUBLIK INDONESIA
Jl. Medan Merdeka Timur No.5 Jakarta 10110 INDONESIA
Phone : (021) 351 7606 / 384 7601 Fax : (021) 351 7606 Call Center : 0812 12 655 155
website 1 : http://knkt.dephub.go.id/webknkt/ website 2 : http://knkt.dephub.go.id/knkt/
email : knkt@dephub.go.id