



**KOMITE NASIONAL KESELAMATAN TRANSPORTASI
REPUBLIC OF INDONESIA**

PRELIMINARY

KNKT.20.12.27.04

Aircraft Serious Incident Investigation Report

PT. Smart Cakrawala Aviation

PK-SNR, Cessna 208B

Sela Airstrip, Papua

Republic of Indonesia

26 December 2020

2021

This Preliminary Report was published 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.

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Jakarta, 24 February 2021

**KOMITE NASIONAL
KESELAMATAN TRANSPORTASI
CHAIRMAN**



SOERJANTO TIAHJONO

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ABBREVIATIONS AND DEFINITIONS

ACL	:	Authorization, Condition and Limitations
AIP	:	Aeronautical Information Publication
AOC	:	Air Operator Certificate
APE	:	Aircraft Payload Extender
C	:	Celsius
C of A	:	Certificate of Airworthiness
C of R	:	Certificate of Registration
CASR	:	Civil Aviation Safety Regulation
CPL	:	Commercial Pilot License
CVDR	:	Cockpit Voice and Data Recorder
DGCA	:	Directorate General of Civil Aviation
FAA	:	Federal Aviation Administration
FOO	:	Flight Operation Officer
ft	:	Feet
GPS	:	Global Positioning System
GRD	:	Ground
IAS	:	Indicated Air Speed
KNKT	:	<i>Komite Nasional Keselamatan Transportasi</i>
lbs	:	pound (mass)
LT	:	Local Time
MFD	:	Multi-Function Display
Ng	:	gas generator Rotation per Minute (RPM) which indicates the percent of gas generator RPM based on a figure of 100% being 37,500 RPM.
OBS	:	Obstacle
OM	:	Operation Manuals
PF	:	Pilot Flying
PIC	:	Pilot in Command
PM	:	Pilot Monitoring
PRESS ALT	:	Pressure Altitude
RPM	:	Rotation Per Minute
SD	:	Secure Digital
SIC	:	Second in Command
STC	:	Supplemental Type Certificates
STOL	:	Short Takeoff and Landing
TC	:	Type Certificate

TIBA : Traffic Information Broadcast by Aircraft
UTC : Universal Time Coordinated
VHF : Very High Frequency
WT : Weight

SYNOPSIS

On 26 December 2020, a Cessna 208B aircraft registered PK-SNR was being operated by PT. Smart Cakrawala Aviation (Smart Aviation) as unscheduled passenger and cargo flight from Nop Goliat Dekai Airport (WAVD), Dekai, Papua to Sela Airstrip, Papua.

At 0347 UTC (1247 LT), on daylight condition, the aircraft departed from Dekai. On board the aircraft was two pilots and ten passengers. The Pilot in Command (PIC) acted as Pilot Flying (PF), while the Second in Command (SIC) acted as Pilot Monitoring (PM).

The aircraft climbed and cruised at altitude of 7,000 feet. The flight continued uneventfully until commencing to approach at Sela.

At 13:03:15 LT, the Cockpit Voice and Data Recorder (CVDR) recorded sound of aircraft touched down when the aircraft was on 160 meters from the beginning runway. The pilots recalled that during landing the main landing gear touched down the runway first followed by the nose wheel.

After touchdown, the PIC set the brake to maximum and the power lever to BETA range position. The pilots felt that the aircraft did not decelerate as intended, then about 30 meters from end of runway, the PIC set the power lever to maximum REVERSE position.

The aircraft stopped and impacted higher ground at the end of the runway. The PIC then shutdown the engine and the SIC assisted the passenger evacuation. No one injured in this occurrence.

Following this occurrence, the Smart Aviation has taken safety actions. The KNKT acknowledges the safety actions taken by Smart Aviation and considered that the safety actions were relevant to improve safety, however there still safety issues remain to be considered. Therefore, the KNKT issued safety recommendations to the Directorate General of Civil Aviation to address safety issues identified in this report.

The investigation is continuing, 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 26 December 2020, a Cessna 208B aircraft registered PK-SNR was being operated by PT. Smart Cakrawala Aviation (Smart Aviation) as unscheduled passenger and cargo flight from Nop Goliat Dekai Airport (WAVD), Dekai, Papua¹ to Sela Airstrip, Papua². Prior to the departure, the Flight Operation Officer (FOO) received information from local resident at Sela that the weather was good, the FOO then relayed the information to the pilot. The information did not include the information of the runway condition. The pilots then decided to depart to Sela.

At 0347 UTC (1247 LT³), on daylight condition, the aircraft departed from Dekai. On board the aircraft was two pilots and ten passengers. The Pilot in Command (PIC) acted as Pilot Flying (PF), while the Second in Command (SIC) acted as Pilot Monitoring (PM).

The aircraft climbed and cruised at altitude of 7,000 feet. The flight continued uneventfully until commencing to approach at Sela.

The approach to Runway 21⁴ at Sela was conducted via the left downwind, where the pilot selected the flaps to 20° position. Prior to join the final the pilot selected the flaps to full down position.

On final area of Runway 21, there was a hill with height about 6,200 feet (about 250 feet above runway elevation). After passed the hill, the PF felt that the wind was strong and the PM advised that the wind was 7 knots. The Global Positioning System (GPS) data log indicated that when the aircraft was on final, the Indicated Air Speed (IAS) was decreasing from 87 knots while the Ng⁵ was reducing from 80%. The PIC recalled that from final until the touchdown the power lever was never set to IDLE, considering that the runway was up slope.

At 13:03:15 LT, the Cockpit Voice and Data Recorder (CVDR) recorded sound of aircraft touched down when the aircraft was on 160 meters from the beginning runway. The pilots recalled that during landing the main landing gear touched down the runway first followed by the nose wheel. The GPS data log recorded that during touchdown, the IAS was about 79 knots and the Ng was about 63%.

After touchdown, the PIC set the brake to maximum and the power lever to BETA range position⁶ while the Ng recorded increasing and the IAS recorded decreasing. The pilots felt that the aircraft did not decelerate as intended, then about 30 meters from end of runway, the PIC set the power lever to maximum REVERSE position.

1 Sela Airstrip, Papua will be named as Sela for the purpose of this report.

2 Nop Goliat Dekai Airport (WAVD), Dekai, Papua will be named as Dekai for the purpose of this report.

3 The 24-hours clock in Local Time (LT) is used in this report. Local time is Universal Time Coordinated (UTC) +9 hours.

4 Smart Aviation advised that the runway designation number at Sela was 03-21, while the Aeronautical Information Publication (AIP) stated 02-20.

5 Ng is gas generator Rotation per Minute (RPM) which indicates the percent of gas generator RPM based on a figure of 100% being 37,500 RPM.

6 BETA range position means the engine is set to Beta Mode which the propeller blade pitch is controlled by the power lever.

The aircraft stopped and impacted higher ground at the end of the runway. The PIC then shutdown the engine and the SIC assisted the passenger evacuation. After disembarked the aircraft, the pilots noticed that the runway was slightly wet.

1.2 Injuries to Persons

No one injured in this occurrence.

1.3 Damage to Aircraft

The aircraft was substantially damaged.

1.4 Other Damage

No other damage to property and/or the environment.

1.5 Personnel Information

1.5.1 Pilot in Command

The PIC was 42 years old, Indonesian, held valid Commercial Pilot License (CPL) with qualification as Single Engine Land aircraft pilot, included Cessna 208B aircraft. The PIC had valid first-class medical certificate with limitation to wear glasses that correct for near vision.

The PIC joined the Smart Aviation on 16 October 2020.

The last proficiency check result was satisfactory which was conducted on 16 August 2020 by the previous aircraft operator. The last line check for the PIC was conducted on 26 October 2020 and the result was satisfactory.

According to the information provided by Smart Aviation, the PIC had accumulated total flying hours of 4,794 hours, including 4,494 hours on Papua area. In the last 24 hours, the PIC had flown for 3 hours 52 minutes and for the occurrence flight was about 15 minutes.

1.5.2 Second in Command

The SIC was 29 years old, Indonesian, who had valid CPL with qualification as Single Engine Land aircraft pilot, included Cessna 208B aircraft. The SIC had valid first-class medical certificate with limitation to wear corrective lenses.

The SIC joined the Smart Aviation on 19 December 2019.

The last proficiency check for the SIC was conducted on 1 November 2020 and the result was satisfactory with several remarks.

Based on the information provided by Smart Air, the SIC had accumulated total flying hours of 707 hours 49 minutes, including 538 hours 49 minutes on Papua area. In the last 24 hours, the SIC had flown for 3 hours 52 minutes and the occurrence flight was about 15 minutes.

1.6 Aircraft Information

1.6.1 General

The Cessna 208B registered PK-SNR was manufactured by Textron Aviation Inc. in 2018 with serial number of 208B2290. The aircraft had valid Certificate of Airworthiness (C of A) and Certificate of Registration (C of R).

The total time since new of the aircraft was 3,225 hours and 26 minutes and the total cycle since new was 4,643 cycles.

Prior to the departure, there was no record or report of aircraft system malfunction including the aircraft brake system.

1.6.2 Payload Extender⁷

The aircraft was installed with Aircraft Payload Extender (APE) II, III, and Short Takeoff and Landing (STOL) system developed by AeroAcoustics Aircraft System Inc. in the United States of America (USA).

The APE II is aerodynamic device consisting of two 16-inch-long stall fences/strakes attached to the wing leading edge, just outboard of the landing light. The device could increase Maximum Takeoff Weight from 8,807 to 9,062 lbs. This APE II is approved by Federal Aviation Administration of USA (FAA) with Supplemental Type Certificates (STC)⁸ number SA00392SE.

The APE III modification primarily consists of replacing the existing, life-limited, main landing gear axle with an improved, high cycle axle. The modification could increase Maximum Landing Weight from 8,500 to 9,000 lbs. This APE III is approved by FAA with STC number SA01213SE.

The APE STOL is a unique aerodynamic device attached to the trailing edge flaps, which can reduce takeoff and landing field length performance up to 20%. The APE STOL is approved by FAA with STC number SA01805SE.

1.6.3 Global Positioning System

The aircraft was equipped with Garmin G1000 Global Positioning System (GPS), which has capability of flight data logging. According to the Garmin G1000 Integrated Flight Deck Pilot's Guide, the data logging capability would automatically store critical flight and engine data on a Secure Digital (SD) data card inserted into the top card slot of the Multi-Function Display (MFD). The data logging is recorded on the SD data card every second when the MFD is powered ON.

The logging data is capable to record 64 parameters including time, coordinate, GPS altitude, indicated airspeed, vertical speed, ground speed, pitch attitude angle, and roll attitude angle. All recorded parameters could be downloaded.

⁷ Accessed on 26 January 2021, the detail explanation of APE system can be found in the following link:

<http://aeroacoustics.com/files/208bproducts.htm>

⁸ STC is a Type Certificate (TC) issued when an applicant has received FAA approval to modify an aeronautical product from its original design.

After the occurrence, the data of the SD data card of the Garmin G1000 installed on PK-SNR was successfully retrieved. The data consisted of 125 recorded files between 11 to 26 December 2020, including the occurrence flight. The recorded file of the occurrence flight recorded 16 minutes 29 seconds of aircraft movement.

1.6.4 Flight Following System

The aircraft operator utilized flight following system provided by Spider Tracks Limited with type/model Spider 7, which manufactured in New Zealand. The tracking and flight data from the aircraft transmitted to the Spidertracks website and monitored by Smart Aviation staff in Jakarta.

The aircraft operator subscribed the Spidertracks flight following system with 2 minutes interval data reporting for each fleet, including the PK-SNP aircraft. The reporting parameters in the tracking system contained several data, including time, coordinate, aircraft altitude, speed, and bearing. The tracking system begins to send position report when the device is powered in open area.

The aircraft operator provided the downloaded Spidertracks data of the day of the occurrence, which contained 5 hours 48 minutes of reporting data record.

1.6.5 Weight and Balance

The weight and balance form of the occurrence flight provided by the Smart Aviation contained the relevant information as follows:

ramp weight ⁹	: 8,903.2 lbs (maximum 9,097 lbs)
takeoff weight ¹⁰	: 8,868.19 lbs (maximum 9,062 lbs)
landing weight ¹¹	: 8,793.19 lbs (maximum 9,000 lbs)

The aircraft was operated within the weight and balance limitation.

1.6.6 Landing Performance

The Pilot's Operating Handbook and FAA Approved Airplane Flight Manual Supplement (POHS) applicable for PK-SNR aircraft described the landing performance of the aircraft as follow:

CONDITIONS:

- *Flaps 30°*
- *Power Lever - Idle after clearing obstacles, BETA range (lever against spring) after touchdown.*
- *Propeller Control Lever - MAX*
- *Paved, Level, Dry Runway*
- *Zero Wind*
- *Cargo Pod Installed*
- *APE III System Installed*

⁹ Ramp weight is weight during ground maneuver. Consisting aircraft empty weight, usable fuel, total occupants and cargo on board weight.

¹⁰ Takeoff weight is weight during the start of the takeoff roll. Calculating from ramp weight minus the fuel burned for taxi and start-up engine.

¹¹ Landing weight is weight during touchdown. Calculating from takeoff weight minus the fuel burned for enroute.

NOTES:

1. Short field technique as specified in Section 4¹².
2. Decrease distances 10% for each 11 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 40% of the "ground roll" figure.
4. If a landing with flaps up is necessary, increase the approach speed by 15 KIAS and allow for 40% longer distances.
5. Use of maximum reverse thrust after touchdown reduces ground roll by approximately 10%.
6. Where distance values have been replaced by dashes, operating temperature limits of the airplane would be greatly exceeded. Those distances which are included but for which the operation slightly exceeds the temperature limit are provided for interpolation purposes only.

WT LBS	SPEED AT 50 FT KIAS	PRESS ALT FT	20 °C	
			GRD ROLL FT	TOTAL FEET TO CLEAR 50 FT OBS
9000	80	SL	780	1615
		2000	825	1695
		4000	870	1755
		6000	925	1850
		8000	985	1940
		10000	1045	2035
		12000	1115	2155

1.7 Meteorological Information

There was no meteorological information provider in the Sela Airstrip. The pilot recalled that the weather over Sela Airstrip was clear, the visibility was good. Based on the aircraft GPS, when the aircraft was on final until touchdown, the wind velocity decreased from 7.8 knots to 6.2 knots and the direction changed from 174° to 125°, and the recorded outside air temperature when the aircraft touched down was 20° C.

After the occurrence, a local resident advised the SIC that Sela was raining at previous night.

¹² The short field technique can be found in subchapter 1.17.1.1 of this report.

1.8 Aids to Navigation

A ground-based navigation aid was not available in the Sela.

The aircraft was fitted with Global Positioning System (GPS) Garmin G1000 which can provide navigation data. The G1000 allows the pilot to create, edit and store up to 20 flight plans with up to 31 waypoints on each flight plan. The G1000 allows navigation selection of direct track from a point to another point to provide guidance from a certain point or position to another point on the flight plan.

The Smart Aviation developed route guide guidance that was used for internal use, as follow:

Dekai To Sela				GPS Flight Plan	Flight Time 0.25	WAJJ SELA
WAVD S03'49.33' E 137'50.47'	OVH Kwelamdua E 140'10.24' S 04'48.59'	SELA S 04'33.08' E 139'44.03'				
Reporting Points -						
RADIO INFORMATION						
Stations: 121.0						
DEKAI TO SELA			SELA TO DEKAI			
ALTITUDES						
Recommended Altitude : 8.000' 10.000'	VNAV : 8000' overhead Kwelamdua @1000FPM	Recommended Altitude : 11.000' 13.000'	VNAV : 8000' overhead Kwelamdua @500FPM			
CLIMB PROCEDURES						
Non visual climb outs require adherence with the specified MSA. Departure Radial:			Visual only climb out. Be established at required altitude before entering non visual conditions.			
ENROUTE PROCEDURES						
Emergency Airstrips: - Reversal Procedures: by visual			Emergency Airstrips: - Reversal Procedures: by visual			
DESCENT/ARRIVAL PROCEDURES						
Visual descent only on the VNAV or steeper if operationally required. Be familiar with Remote Destination Safety Procedure and follow when deemed necessary.			Non Visual descent approved adhering to published MSAs and RADAR altitudes. Advise ATC of deviations from inbound radial			

Figure 1: The route guidance from Dekai to Sela and return

1.9 Communications

After departure from Dekai, the pilot switched the radio communication to frequency of 121.0 MHz. This frequency was a Traffic Information Broadcast by Aircraft (TIBA) frequency for Paniai Area, which according to the AIP Supplement number 05/18, the procedure of using TIBA frequency has been terminated since 29 June 2018.

Based on Aeronautical Information Publication (AIP) Volume I ENR 6.2-A (FIR Ujung Pandang), after 5 Nm from Dekai until Sela, flight information service would be provided by Jayapura Flight Service Station (FSS) on frequency 6,631 kHz.

The pilot used two-way Very High Frequency (VHF) radio communication to communicate with Dekai Flight Information Service personnel and when made broadcast on the TIBA frequency. None of the communication in the Dekai Flight Information Service frequency and TIBA frequency was recorded.

1.10 Aerodrome Information

The AIP Volume IV page PAPUA SELA – 1 dated 1 September 2009 published by the Directorate General of Civil Aviation (DGCA) provided aerodrome information of Sela. In this document described the airstrip reference point of Sela was located at coordinate 04°32'00" S 139°43'00" E with elevation of 6,050.16 feet. This location was about 1 Nm on bearing 136° from the actual location of the airstrip. The runway information provided in the AIP Volume IV was as follow:

designation number	: 02 – 20
length	: 488 meters
width	: 20 meters
slope	: 4%
surface	: grass

The aerodrome information provided by INDOAVIS¹³ dated 2 January 2020, provided an updated airstrip reference point of Sela which was located at coordinate 04°33.08' S 139°44.03 'E. The INDOAVIS also provided airstrip elevation of 5,950 feet, and included runway information as follow:

designation number	: 02 – 20
length	: 427 meters
width	: 18 meters
slope	: 4%
surface	: Grass

Sela was located on mountainous area and the runway was located on a mountain slope. The runway was a one-way runway which means the landing only can be made from the Runway 20 and the takeoff only can be made from Runway 02. On the final area of the Runway 20 there was a hill with height about 6,200 feet (about 250 feet above threshold Runway 20). The airstrip was equipped with windsock located on the left side of Runway 20.

¹³ INDOAVIS is Indonesian private company that provides geo informatics and aeronautical navigation support.

The airspace over the airstrip was classified as Class G airspace.

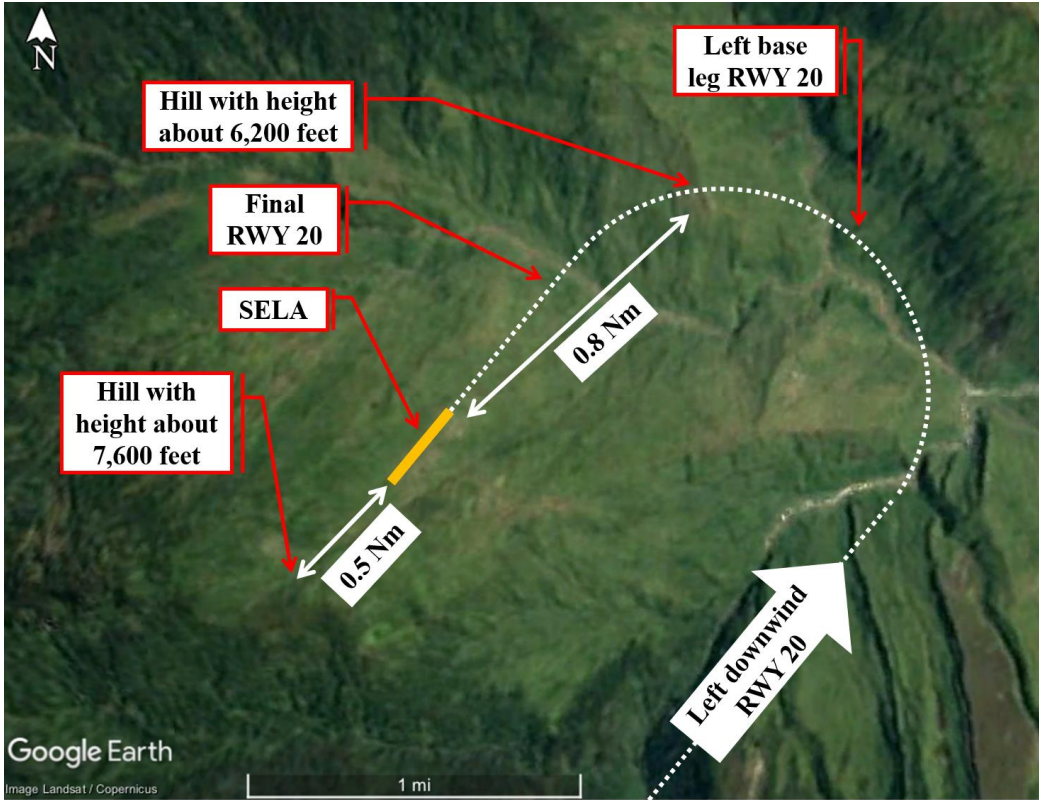


Figure 2: The airstrip location

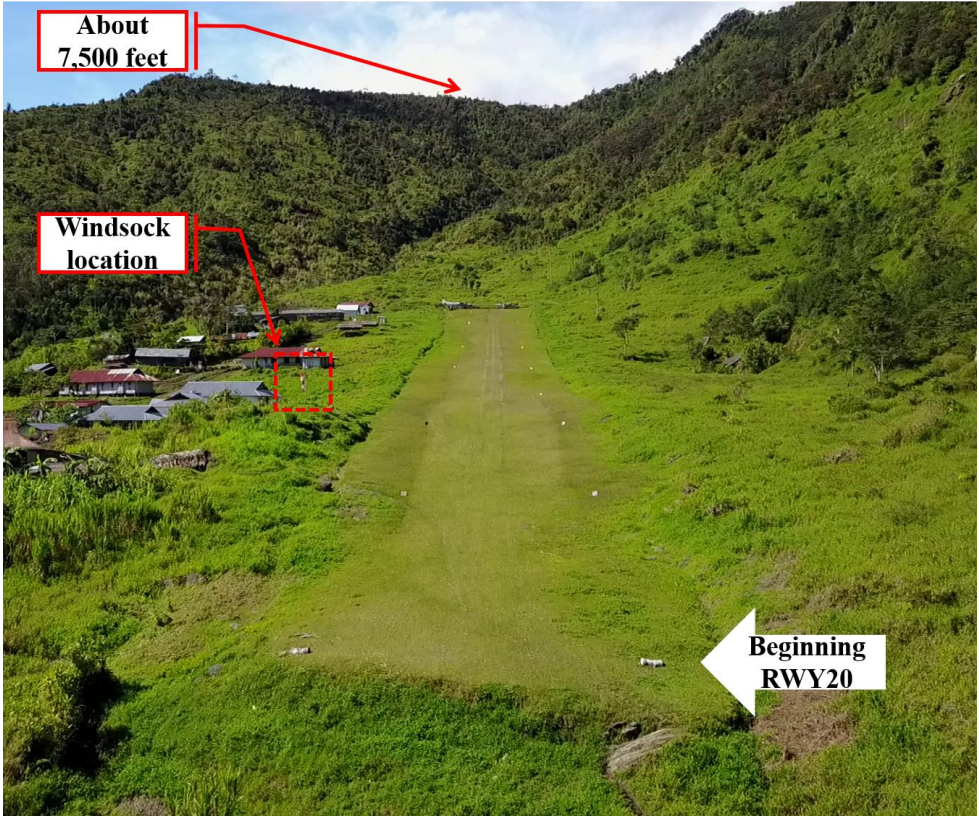


Figure 3: The runway 20 and the location of the windsock (red square)

The investigation also retrieved aerodrome information document dated 7 June 2018 from the other aircraft operator that used for internal use. The location of the airstrip was in accordance with the aerodrome information provided by the INDOAVIS. This airport information from the other aircraft operator also included runway information of Sela as follow:

length	: 415 meters
width	: 18 meters
touch down slope	: 7%
surface	: grass

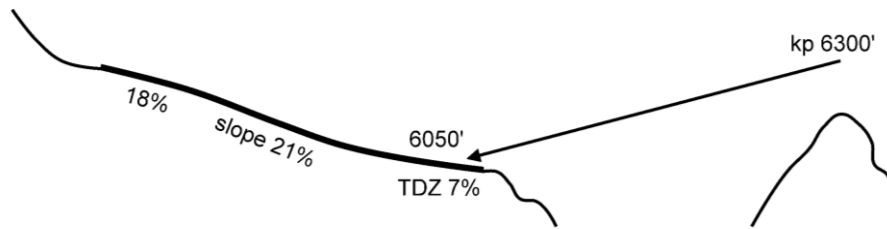


Figure 4: The runway illustration provided in the airport information of other aircraft operator

Smart Aviation advised that the runway designation number at Sela was 03-21 which was not in accordance with the information stated in AIP or INDOAVIS publication.

1.11 Flight Recorders

The aircraft was fitted with a FA2100 Cockpit Voice and Data Recorder (CVDR) manufactured by L3Harris Technologies with part number 2100-3083-51 and serial number 000662298. The CVDR has capability to record up to 2 hours high quality recording on four channels and minimum of 25 hours of flight data. The CVDR was transported to the KNKT recorder facility for data downloading.

The CVDR recorded 2 hours 4 minutes of audio record on four channels with hearable quality. The detail data of the CVDR will be included in the final report.

1.12 Wreckage and Impact Information

Based on the CVDR, the aircraft touched down about 160 meters from the beginning runway. The investigation could not identify the touchdown mark on the runway. The aircraft stopped after impacting higher ground at the end of the runway, about 260 meters from the location of the aircraft touched down. The propeller blades bent as the result of the impact with the higher ground.



Figure 5: The damaged of the propeller blades

1.13 Medical and Pathological Information

This information was not available at the time of the issuance of this report. Should any medical and/or pathological information be obtained in the course of this investigation that is of relevance to this investigation, it will be included in the final report.

1.14 Fire

There was no evidence of in-flight and post-flight fire.

1.15 Survival Aspects

After the aircraft stopped, the occupant self-evacuated from the aircraft.

1.16 Test and Research

This information was not available at the time of the issuance of this report. Should any test and research be obtained in the course of this investigation that is of relevance to this investigation, it will be included in the final report.

1.17 Organizational and Management Information

1.17.1 Aircraft Operator

The aircraft was operated by PT. Smart Cakrawala Aviation (Smart Aviation) which had valid Air Operator Certificate (AOC) number 135-062. The Smart Aviation is authorized to conduct air transportation carrying passengers and cargo in scheduled and non-scheduled operation within and outside Indonesia for aircraft operations under Civil Aviation Safety Regulation (CASR) Part 135.

The Smart Aviation developed Operation Manuals (OM)s which contains policy and procedure approved by the Directorate General of Civil Aviation.

1.17.1.1 Landing Procedures

The Pilot's Operating Handbook and FAA Approved Airplane Flight Manual (POH) applicable for PK-SNR aircraft described landing procedure for short field as follow:

SHORT FIELD LANDING WITH APE STOL (FLAPS 30)

- 1. Wing Flaps - FULL DOWN.*
- 2. Airspeed - 80 KIAS (Refer to Section 5 for speeds at reduced weights).*
- 3. Power Lever - REDUCE to IDLE after clearing obstacles.*
- 4. Touchdown - MAIN WHEELS FIRST.*
- 5. Power Lever - BETA range (lever against spring) after TOUCHDOWN.*

NOTE

Further reduction of landing roll will result from use of reverse thrust (See Section 5, Landing Distance - Short Field, Note 5 on page 22 & 23 of this AFMS)

- 6. Brakes - APPLY HEAVILY while holding elevator control full aft.*
- 7. Wing Flaps - RETRACT for maximum brake effectiveness at light weights*

1.17.1.2 Route and Aerodrome Information

The Authorization, Condition and Limitations (ACL) approved by the DGCA, described that Smart Aviation obtained airport aeronautical data providing by INDOAVIS, AIP and Jeppesen.

The Smart Aviation developed Operation Manual Part C (OM-C) that contained specific instruction and information pertaining to navigation, communication and aerodromes within company approved area of operation.

1.17.1.3 Hazard Identification and Risk Assessment for Sela Flight Operation

On 1 October 2020, the Smart Aviation conducted hazard identification and risk assessment for the flight operation at Sela. There were several hazards had been identified including the runway area was slippery when wet. Considering this hazard, the Smart Aviation developed mitigation as follow:

- 1. To ensure runway dry condition at Sela prior to fly.*
- 2. Make sure the aircraft load is suitable for takeoff and landing.*
- 3. To ensure the moss/algae is always scalped off the strip.*

1.18 Additional Information

The data collection in the occurrence site was limited due to the travel limitation during the Corona virus (COVID-19) pandemic. The investigation is continuing, 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.

1.19 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 FINDINGS

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.

According to factual information during the investigation, the KNKT identified initial findings as follows:

1. The aircraft had valid Certificate of Airworthiness (C of A) and Certificate of Registration (C of R). Prior to the departure, there was no record or report of aircraft system malfunction.
2. The aircraft was installed with Aircraft Payload Extender (APE) II, III, and Short Takeoff and Landing (STOL) system which increased takeoff and landing weight limitations, and reduced takeoff and landing field length performance.
3. The aircraft was equipped with Garmin G1000 Global Positioning System (GPS), which has capability of flight data logging.
4. The weight and balance form of the occurrence provided by the Smart Aviation indicated that the aircraft was operated within the weight and balance limitation.
5. Prior to the departure, there was no record or report of aircraft system malfunction including the aircraft brake system.
6. The pilots held valid commercial pilot licenses which qualified as single engine land pilot and had valid first-class medical certificates.
7. Prior to the departure, the Flight Operation Officer (FOO) received information from local resident at Sela that the weather was good, the FOO then relayed the information to the pilot. The information did not include the information of the runway condition.
8. The approach to Runway 21 at Sela was conducted the left downwind, where the pilot selected the flaps to 20° position. Prior to join the final the PF selected the flaps to full down position.
9. There was no meteorological information provider in the Sela Airstrip. The pilot recalled that the weather over Sela Airstrip was clear, the visibility was good.
10. Based on the aircraft Global Positioning System (GPS) data log, when the aircraft was on final until touchdown, the wind velocity decreased from 7.8 knots to 6.2 knots with direction changed from 174° to 125°, and the recorded outside air temperature when the aircraft touched down was 20° C.
11. The GPS data log indicated that when the aircraft on final, the Air Speed (IAS) was reducing from 87 knots.
12. At 13:03:15 LT, the Cockpit Voice and Data Recorder (CVDR) recorded sound of aircraft touched down when the aircraft was on 160 meters from the beginning runway.

13. The pilots recalled that during landing the main landing gear touched down the runway first followed by the nose wheel. During the touchdown, the GPS data log recorded the Indicated Air Speed (IAS) was about 79 knots.
14. The aircraft stopped after impacting higher ground at the end of the runway, about 260 meters from the location of the aircraft touched down.
15. The Authorization, Condition and Limitations (ACL) approved by the Directorate General of Civil Aviation (DGCA), described that Smart Aviation obtained airport aeronautical data providing by INDOAVIS, AIP and Jeppesen.
16. Sela was located on mountainous area and the runway was located on mountain slope. On the final area of the runway that used for landing there was hill with height about 6,200 feet. The airstrip was equipped with windsock located on the left side of runway 21.
17. According to the Aeronautical Information Publication (AIP) Volume IV page PAPUA SELA – 1 dated 1 September 2009, the airstrip reference point of Sela was located at coordinate 04°32'00" S 139°43'00" E. This location was about 1 Nm on bearing 136° from the actual location of the airstrip.
18. The aerodrome information provided by INDOAVIS dated 2 January 2020, the Smart Aviation route guidance, and aerodrome information document from other aircraft operator described an updated airstrip reference point of Sela which was located at coordinate 04°33.08' S 139°44.03' E.
19. The runway length information provided in the AIP Volume IV, INDOAVIS and other aircraft operator provided difference runway lengths. The AIP Volume IV provided the longest length of 488 meters.
20. Smart Aviation advised that the runway designation number at Sela was 03-21 which was not in accordance with the information stated in AIP or INDOAVIS publication.
21. On 1 October 2020, the Smart Aviation identified several hazards for the Sela flight operation including the runway area was slippery when wet. Considering this hazard, the Smart Aviation developed several mitigations included to ensure runway was dry prior to fly and to ensure the moss/algae was always scalped off.

3 SAFETY ACTION

At the time of issuing this report, the *Komite Nasional Keselamatan Transportasi* (KNKT) had been informed of safety actions resulting from this occurrence.

3.1 Smart Aviation

The Smart Aviation retrained basic indoctrination for the PK-SNR pilots and conducted internal investigation to determine safety issue of the occurrence.

The Smart Aviation issued Operation Notice to all pilot for ensuring:

- to conduct aircraft takeoff and landing performance calculation for the destination aerodrome.
- to obtain information of runway condition from the ground personnel at the destination aerodrome.
- the runway at the destination is dry prior the departure, especially when the runway is grass runway.

4 SAFETY RECOMMENDATIONS

The KNKT acknowledges the safety actions taken by Smart Aviation and considered that the safety actions were relevant to improve safety, however there still safety issues remain to be considered. Therefore, the KNKT issued safety recommendations to address safety issues identified in this report.

4.1 Directorate General of Civil Aviation

- **04.R-2019-27.1**

According to the Aeronautical Information Publication (AIP) Volume IV page PAPUA SELA – 1 dated 1 September 2009 published by the DGCA, the airstrip reference point of Sela was located at coordinate 04°32'00" S 139°43'00" E. This location was about 1 Nm on bearing 136° from the actual location of the airstrip.

The aerodrome information provided by INDOAVIS dated 2 January 2020, the Smart Aviation route guidance, and aerodrome information document from other aircraft operator described an updated airstrip reference point of Sela which was located at coordinate 04°33.08' S 139°44.03' E.

The runway length information provided in the AIP Volume IV, INDOAVIS and other aircraft operator provided difference runway lengths. The AIP Volume IV provided the longest length of 488 meters. The runway designation number described in the AIP also differed with the information provided by the Smart Aviation.

The inaccurate information of aerodrome data considered hazard for aircraft operation.

Therefore, KNKT recommends the DGCA to review the aerodrome information provided in the AIP Volume IV to ensure the information is correct and accurate.

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